

**Sayı:** 25931695-TİM.OAİB.27.ARG5.2023/61-3168  
**Konu:** RUSYA-İTHALAT TALEBİ

Ankara, 21/03/2023

### **SİRKÜLER (2023/İ)**

Moskova Büyükelçiliği Ticaret Müşavirliği'nden alınan bir elektronik iletide, Rusya'nın Volgograd bölgesinde mukim JSC Volzhsky Orgsynthese isimli bir kimya firması tarafından aşağıda yer alan ürünlerin talep edilmekte olduğu belirtilmiş olup ilgili firmaların, bilgileri yer alan kişi ile iletişime geçmeleri önem arz etmektedir.

**Musa DEMİR**  
Genel Sekreter

#### **Talep Edilen Ürünler:**

- Blower
- Blower Chamber
- Central Dedusting System
- Compressor for compression of N2
- Filter for filtration of spray liquids
- Heat Exchanger
- Receiving Vessel
- Rotary Valve
- Ventilator

#### **Satın Alma Sorumlusu İletişim Bilgileri**

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**EK:** Talep Edilen Ürün Listesi (105 Sayfa)



## MEQS 019

### specification pneumatic transport blower C-350

|              |             |                   |                |                 |                                    |
|--------------|-------------|-------------------|----------------|-----------------|------------------------------------|
|              |             |                   |                |                 |                                    |
| b            | 06.01.2023  | ys                | jk             |                 | revised flange connection & sketch |
| a            | 03.06.2022  | ys                | Kp             | schz            | Erstausgabe                        |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b>                     |

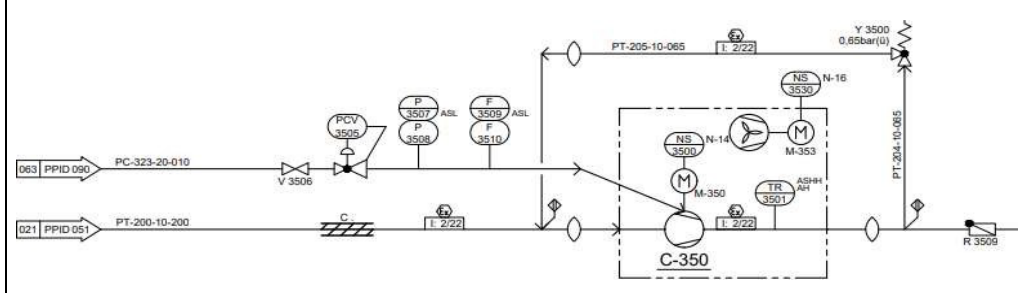
specification pneumatic transport blower C-350

| #  | Name                                           |                                                                                                                    | pneumatic transport blower |                                        |          |      | E                                          | Iss.    |   |
|----|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------|----------|------|--------------------------------------------|---------|---|
|    | TAG                                            |                                                                                                                    | C-350                      |                                        |          |      |                                            |         |   |
| 1  | General Data                                   |                                                                                                                    |                            |                                        |          |      | Remarks                                    |         |   |
| 2  | Application                                    | comprimation of process gas (nitrogen with additives) for pneumatic transport system, positive displacement blower |                            |                                        |          |      |                                            | a       |   |
| 3  | Quantity                                       | Operation                                                                                                          | units                      | 1                                      |          |      | a                                          |         |   |
| 4  |                                                | Stand-By                                                                                                           | units                      | 0                                      |          |      | a                                          |         |   |
| 5  | Operation Mode                                 |                                                                                                                    |                            | continuous operation                   |          |      |                                            | a       |   |
| 6  | Operation Time                                 |                                                                                                                    |                            | 24 h day / 7 days a week / 8000 h/year |          |      |                                            | a       |   |
| 7  | Standards und guidlines to be used             |                                                                                                                    |                            |                                        |          |      | Remarks                                    |         |   |
| 8  | General sets of rules                          |                                                                                                                    | see                        | general design conditions              |          |      | 2115_GDCB001                               | a       |   |
| 9  | Special standards and guideline                |                                                                                                                    | -                          | (*)                                    |          |      |                                            | a       |   |
| 10 | Mechanical Design Data                         |                                                                                                                    |                            |                                        |          |      | Remarks                                    |         |   |
| 11 | Max Allowed Pressure (PS)                      |                                                                                                                    | bar(g)                     | -0,4 / 0,4 //-0,4 / 0,69               |          |      | suction side // pressure side              | a       |   |
| 12 | Max./Min. Allowed Temperature (TS)             |                                                                                                                    | °C                         | -30 / +160                             |          |      |                                            | a       |   |
| 13 | Installation Conditions                        |                                                                                                                    |                            |                                        |          |      | Remarks                                    |         |   |
| 14 | Installation Location                          |                                                                                                                    |                            | Inside the production building         |          |      |                                            | a       |   |
| 15 | Ambient Temperature                            |                                                                                                                    |                            | °C                                     | 5 ... 40 |      |                                            | a       |   |
| 16 | Heigt above sea level                          |                                                                                                                    |                            | 80 m above sea level                   |          |      |                                            | a       |   |
| 17 | Hygienic Zone/Room Classification              |                                                                                                                    |                            | n.a.                                   |          |      |                                            | a       |   |
| 18 | Max. Sound Pressure Level                      |                                                                                                                    | dB (A)                     | 85 (*)                                 |          |      | 1m Distance                                | a       |   |
| 19 | Horizontal/Vertical Orientation                |                                                                                                                    |                            | horizontal                             |          |      |                                            | a       |   |
| 20 | Ex Zone inside                                 |                                                                                                                    |                            | 2                                      |          |      | 22 deleted, because filter on suction side | c       |   |
| 21 | Ex Zone outside                                |                                                                                                                    |                            | 22 / 2                                 |          |      |                                            | a       |   |
| 22 | Process Design Data                            |                                                                                                                    |                            | min                                    | norm     | max  | design                                     | Remarks |   |
| 23 | Medium                                         |                                                                                                                    |                            | process gas N2 with additives          |          |      |                                            | a       |   |
| 24 | Mediencode                                     |                                                                                                                    |                            | PT                                     |          |      |                                            | a       |   |
| 25 | Flow Rate                                      |                                                                                                                    | kg/h                       | 1250                                   | 1425     | 1470 | 1500                                       |         | a |
| 26 | water content                                  |                                                                                                                    | g/kg                       | 0                                      | 15       | 57   | 15                                         |         | a |
| 27 | density (inlet)                                |                                                                                                                    | kg/m³                      | 1,00                                   | 1,14     | 1,18 | 1,18                                       |         | a |
| 28 | temperature (inlet)                            |                                                                                                                    | °C                         | 5                                      | 22       | 30   | 35                                         |         | a |
| 29 | Flow Rate (inlet)                              |                                                                                                                    | Bm³/h                      | 1250                                   | 1250     | 1250 | 1250                                       |         | a |
| 30 | Flow Rate (inlet)                              |                                                                                                                    | Nm³/h                      | (*)                                    | (*)      | (*)  | (*)                                        |         | a |
| 31 | pressure suction side                          |                                                                                                                    | mbar(g)                    | -5                                     | 100      | 170  | 50                                         |         | a |
| 32 | pressure discharge side                        |                                                                                                                    | mbar(g)                    | 100                                    | 300      | 500  | 650                                        |         | a |
| 33 | pressure difference                            |                                                                                                                    | mbar                       | (*)                                    | (*)      | (*)  | 600                                        |         | a |
| 34 | temperature (discharge)                        |                                                                                                                    | °C                         | (*)                                    | (*)      | (*)  | (*)                                        |         | a |
| 35 | density (discharge)                            |                                                                                                                    | kg/m³                      | (*)                                    | (*)      | (*)  | (*)                                        |         | a |
| 36 | rotaional speed                                |                                                                                                                    | min <sup>-1</sup>          | (*)                                    | (*)      | (*)  | (*)                                        |         | a |
| 37 | power consumption                              |                                                                                                                    | kW                         | (*)                                    | (*)      | (*)  | (*)                                        |         | a |
| 38 | Chemical and Physical Properties of fluid      |                                                                                                                    |                            |                                        |          |      | Remarks                                    |         |   |
| 39 | description Medium                             |                                                                                                                    |                            | process gas N2 with additives          |          |      |                                            | a       |   |
| 40 | Composition                                    |                                                                                                                    |                            | min                                    | max      | norm | design                                     |         | a |
| 41 | Oxygen O2                                      | Mass-%                                                                                                             | 0                          | 3,5                                    | 2        | 2    |                                            | a       |   |
| 42 | n-Butanol, C4H10O                              | Mass-%                                                                                                             | 0                          | 2,7                                    | 0,52     | 0,52 |                                            | a       |   |
| 43 | Carbon disulphide, CS2                         | Mass-%                                                                                                             | 0                          | 1                                      | 0,7      | 0,7  |                                            | a       |   |
| 44 | water, H2O                                     | Mass-%                                                                                                             | 0                          | 2,7                                    | 1        | 1    |                                            | a       |   |
| 45 | Special characteristics                        |                                                                                                                    |                            | dust                                   |          |      |                                            | a       |   |
| 46 | Particle content                               |                                                                                                                    | mg/Nm³                     | < 0,1                                  |          |      |                                            | a       |   |
| 47 | Particle Size                                  |                                                                                                                    | µm                         | 1..3                                   |          |      |                                            | a       |   |
| 48 | Particle Structure                             |                                                                                                                    |                            | powder                                 |          |      |                                            | a       |   |
| 49 | pH-Wert der Staubpartikel beim Lösen in Wasser |                                                                                                                    |                            | -                                      |          |      |                                            | a       |   |
| 50 | kind of dust                                   |                                                                                                                    |                            | Butyl potassium xanthate               |          |      |                                            | a       |   |
| 51 | characteristics of dust                        |                                                                                                                    |                            | water soluble, hygroscopic, toxic      |          |      |                                            | a       |   |

specification pneumatic transport blower C-350

| #   | Name                                                      |       | pneumatic transport blower |           |                          |     |          |        | E                                                   | Iss. |
|-----|-----------------------------------------------------------|-------|----------------------------|-----------|--------------------------|-----|----------|--------|-----------------------------------------------------|------|
|     | TAG                                                       |       | C-350                      |           |                          |     |          |        |                                                     |      |
| 52  | Construction details blower                               |       |                            |           |                          |     |          |        | Remarks                                             |      |
| 53  | blower type                                               |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 54  | size                                                      |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 55  | diameter impeller mm                                      |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 56  | Rotor design / number of blades no.                       |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 57  | drive system (direct with/without coupling or belt drive) |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 58  | gear ratio                                                |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 59  | bearing type                                              |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 60  | lubrication                                               |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 61  | Pipe connection for suction side Y/N                      |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 62  | Cleaning/Sanitisation/Sterilisation                       |       |                            |           |                          |     |          |        | Remarks                                             |      |
| 63  | Cleaning Media Product Side                               |       |                            |           | dry cleaning             |     |          |        |                                                     | a    |
| 64  | Cleaning Temperatur Product Side °C                       |       |                            |           | < 50°C                   |     |          |        |                                                     | a    |
| 65  | Sanitisation/Sterilisation Medium                         |       |                            |           | n.a.                     |     |          |        |                                                     | a    |
| 66  | Sanitisation Temperature °C                               |       |                            |           | -                        |     |          |        |                                                     | a    |
| 67  | Cleaning outside                                          |       |                            |           | dry cleaning             |     |          |        |                                                     | a    |
| 68  | Weights and Dimensions                                    |       |                            |           |                          |     |          |        | Remarks                                             |      |
| 69  | Total Length mm                                           |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 70  | Total Width mm                                            |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 71  | Total Height mm                                           |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 72  | Total Weight                                              | Empty | Operating                  | Catastro. | kg                       | (*) | (*)      | (*)    | -                                                   | a    |
| 73  | Materials and Surface Treatments, Coatings, Certificates  |       |                            |           |                          |     |          |        | Remarks                                             |      |
| 74  | Surface with Product Contact                              |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 75  | material casing                                           |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 76  | material impeller                                         |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 77  | External Surface                                          |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 78  | Seals/Gaskets with Product Contact                        |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 79  | compensators                                              |       |                            |           | AISI 304 or higher grade |     |          |        |                                                     | a    |
| 80  | Coating System of non SS Parts                            |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 81  | Shaft Sealing System                                      |       |                            |           |                          |     |          |        | Remarks                                             |      |
| 82  | Type                                                      |       |                            |           | nitrogen purge gas       |     |          |        | with pressure gauges, pressure reducer, flow switch | a    |
| 83  | Accessories                                               |       |                            |           |                          |     |          |        | Remarks                                             |      |
| 84  | suction filter Y/N                                        |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 85  | base plate/base frame Y/N                                 |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 86  | grounding connection Y/N                                  |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 87  | lifting lugs Y/N                                          |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 88  | safety valve at discharge side Y/N                        |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 89  | safety valve set pressure bar(Ü)                          |       |                            |           | (*)                      |     |          |        |                                                     | a    |
| 90  | noise hood Y/N                                            |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 91  | blower for noise hood Y/N                                 |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 92  | compensators at inlet and outlet Y/N                      |       |                            |           | Y                        |     |          |        |                                                     | a    |
| 93  | Explosion Protection according to DIN EN 60079/80079      |       |                            |           |                          |     |          |        | Remarks                                             |      |
| 94  | Ex-protection version for the following Ex-zone -         |       |                            |           | inside:                  | 2   | outside: | 22 / 2 |                                                     | a    |
| 95  | Medium conditioning the Ex zone                           |       |                            |           | nitrogen                 |     |          |        |                                                     | a    |
| 96  | Hybrid mixture Y/N                                        |       |                            |           | N                        |     | N        |        |                                                     | a    |
| 97  | Permitted surface temperature max. °C                     |       |                            |           | 150                      |     |          |        |                                                     | a    |
| 98  | Permitted temperature class -                             |       |                            |           | T4                       |     |          |        |                                                     | a    |
| 99  | Permitted equipment group                                 |       |                            |           | IIIB, IIIC, IIB, IIC     |     |          |        |                                                     | a    |
| 100 | Permitted Equipment protection level (EPL)                |       |                            |           | -                        |     | -        |        |                                                     | a    |

specification pneumatic transport blower C-350

| #   | Name                                                                                 |                               | pneumatic transport blower |                    |             |                                                              | Iss.             |
|-----|--------------------------------------------------------------------------------------|-------------------------------|----------------------------|--------------------|-------------|--------------------------------------------------------------|------------------|
|     | TAG                                                                                  |                               | C-350                      |                    |             |                                                              |                  |
| 101 | Explosion protection type (mechanical)                                               |                               |                            | inside             | outside     | Remarks                                                      |                  |
| 102 | Type of ignition protection                                                          |                               |                            | -                  | -           | acc. DIN/EN 80079-36/37, DIN EN 60079-0 & DIN EN 13463-1...8 | a                |
| 103 | Explosion proof design                                                               |                               |                            | Y/N                | N           | If YES specify pressure                                      | a                |
| 104 | Explosion pressure shock resistant design                                            |                               |                            | Y/N                | N           | If YES specify pressure                                      | a                |
| 105 | Required design pressure                                                             |                               |                            | bar(Ü)             | -           |                                                              | a                |
| 106 | Explosion protection type (electrical)                                               |                               |                            |                    |             | Remarks                                                      |                  |
| 107 | Type of ignition protection electric motor                                           |                               |                            | -                  | -           | acc. DIN EN 60079-0...31                                     | a                |
| 108 | Type of ignition protection other electrical parts                                   |                               |                            |                    | -           | acc. DIN EN 60079-0...31                                     | a                |
| 109 | Special requirements Motor                                                           |                               |                            |                    |             | Remarks                                                      |                  |
| 110 | Frequency Controlled operation                                                       |                               |                            | Y/N                | N           |                                                              | a                |
| 111 | Allowed frequency range / speed                                                      |                               |                            | min/max            | (*)         | (*)                                                          | a                |
| 112 | Electric motor with forced ventilation                                               |                               |                            | Y/N                | (*)         |                                                              | a                |
| 113 | Electrical Accessories                                                               |                               |                            |                    |             | Remarks                                                      |                  |
| 114 | Frequency Converter                                                                  |                               |                            | Y/N                | N           | note doc. 2115_IEQS001, specify manufacturer & type          | a                |
| 115 | Ventilation device for acoustic hood                                                 |                               |                            | Y/N                | (*)         | note doc. 2115_IEQS001, specify voltage and power            | a                |
| 116 | Measuring Devices                                                                    |                               |                            | Y/N                | Y           | note doc. 2115_IEQS001, specify manufacturer & type          | a                |
| 117 | Listing of measuring devices (electrical accessories) and signal exchange            |                               |                            |                    |             |                                                              |                  |
| 118 | Pos.                                                                                 | Designation                   | Type                       | TAG ()             | Signal type | Remarks                                                      |                  |
| 119 | 1                                                                                    | local pressure gauge          |                            |                    | -           |                                                              | a                |
| 120 | 2                                                                                    | local dP filter               |                            |                    | -           |                                                              | a                |
| 121 | 3                                                                                    | pressure switch for sealing   |                            |                    | 0/1         |                                                              | a                |
| 122 | 4                                                                                    | flow switch for sealing       |                            |                    | 0/1         |                                                              | a                |
| 123 | 5                                                                                    | temperature of compressed gas |                            |                    | analog      |                                                              | a                |
| 124 | 6                                                                                    | (*)                           |                            |                    |             |                                                              | a                |
| 125 | Nozzles List                                                                         |                               |                            |                    |             |                                                              |                  |
| 126 | Pos.                                                                                 | NPS                           | PN                         | Type of connection | Norm        | Sealing Face                                                 | Service          |
| 127 | N-01                                                                                 | (*)                           | 10                         | flange             | EN 1092-1   |                                                              | inlet            |
| 128 | N-02                                                                                 | (*)                           | 10                         | flange             | EN 1092-1   |                                                              | outlet           |
| 129 | N-03                                                                                 | (*)                           |                            |                    |             |                                                              | condensate drain |
| 130 | N-04                                                                                 | (*)                           | 10                         | flange             | EN 1092-1   |                                                              | safety valve     |
| 131 | N-05                                                                                 | (*)                           |                            |                    | EN 1092-1   |                                                              | purge gas        |
| 132 | Sketch, PID-Section                                                                  |                               |                            |                    |             |                                                              |                  |
| 133 |  |                               |                            |                    |             |                                                              |                  |

specification pneumatic transport blower C-350

| #   | Name                                                |                                                                                                                                                                                                                               | pneumatic transport blower |     |                       | Iss. |
|-----|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----|-----------------------|------|
|     | TAG                                                 |                                                                                                                                                                                                                               | C-350                      |     |                       |      |
| 134 | Further requirements / Required further information |                                                                                                                                                                                                                               |                            |     | Remarks               |      |
| 135 | Design acc.to Technical Instruction Air             |                                                                                                                                                                                                                               | Y/N                        | N   | German rule 'TA-Luft' | a    |
| 136 | Sound power level                                   |                                                                                                                                                                                                                               | dB(A)                      | (*) |                       | a    |
| 137 | heat                                                |                                                                                                                                                                                                                               | kW                         | (*) |                       | a    |
| 138 | cooling air                                         |                                                                                                                                                                                                                               | m³/h                       | (*) | if aplicable          | a    |
| 139 |                                                     |                                                                                                                                                                                                                               |                            |     |                       | a    |
| 140 | Additional documents                                |                                                                                                                                                                                                                               |                            |     | Dok.-Nr.              |      |
| 141 | 1x                                                  | General design conditions                                                                                                                                                                                                     |                            |     | 2115_GDCB001          | a    |
| 142 | 1x                                                  | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |                            |     | 2115_IEQS001          | a    |
| 143 | 1x                                                  | Safety characteristics                                                                                                                                                                                                        |                            |     | 2115_SSDS001          | a    |
| 144 |                                                     |                                                                                                                                                                                                                               |                            |     |                       | a    |
| 145 |                                                     |                                                                                                                                                                                                                               |                            |     |                       | a    |
| 146 | Editing instructions                                |                                                                                                                                                                                                                               |                            |     |                       |      |
| 147 | SIGNAL IN                                           | Signal goes to                                                                                                                                                                                                                |                            |     |                       | a    |
| 148 | SIGNAL OUT                                          | Signal comes from                                                                                                                                                                                                             |                            |     |                       | a    |
| 149 | -                                                   | not applicable                                                                                                                                                                                                                |                            |     |                       | a    |
| 150 | (n.e.)                                              | not required                                                                                                                                                                                                                  |                            |     |                       | a    |
| 151 | (n.b.)                                              | not known                                                                                                                                                                                                                     |                            |     |                       | a    |
| 152 | (i.B.)                                              | In operating condition                                                                                                                                                                                                        |                            |     |                       | a    |
| 153 | (*)                                                 | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |                            |     |                       | a    |

## MEQS 022

### specification blower chamber 8 C-343

|       |            |            |         |          |                                    |
|-------|------------|------------|---------|----------|------------------------------------|
|       |            |            |         |          |                                    |
|       |            |            |         |          |                                    |
| b     | 06.01.2023 | ys         |         |          | revised flange connection & sketch |
| a     | 07.06.2022 | ys         | jk      | schz     | first issue                        |
| Issue | Date       | Originated | Checked | Approved | Remarks                            |

specification blower chamber 8 C-343

|    | Name                               |                                                                                           | blower chamber 8      |                                        |          |              | E           | Iss.    |  |
|----|------------------------------------|-------------------------------------------------------------------------------------------|-----------------------|----------------------------------------|----------|--------------|-------------|---------|--|
| #  | TAG                                |                                                                                           | C-343                 |                                        |          |              |             |         |  |
| 1  | General Data                       |                                                                                           |                       |                                        |          |              | Remarks     |         |  |
| 2  | Application                        | process gas (nitrogen with additives) for drying granulates in fluidized bed of chamber 8 |                       |                                        |          |              |             | a       |  |
| 3  | Quantity                           | Operation                                                                                 | units                 | 1                                      |          |              | a           |         |  |
| 4  |                                    | Stand-By                                                                                  | units                 | 0                                      |          |              | a           |         |  |
| 5  | Operation Mode                     |                                                                                           |                       | continuous operation                   |          |              | a           |         |  |
| 6  | Operation Time                     |                                                                                           |                       | 24 h day / 7 days a week / 8000 h/year |          |              | a           |         |  |
| 7  | Standards und guidlines to be used |                                                                                           |                       |                                        |          |              | Remarks     |         |  |
| 8  | General sets of rules              |                                                                                           | see                   | general design conditions              |          | 2115_GDCB001 | a           |         |  |
| 9  | Special standards and guideline    |                                                                                           | -                     | (*)                                    |          |              | a           |         |  |
| 10 | Mechanical Design Data             |                                                                                           |                       |                                        |          |              | Remarks     |         |  |
| 11 | Min./max. allowed Pressure         |                                                                                           | PS                    | bar(g)                                 | -0,23    | 0,23         | a           |         |  |
| 12 | Min./max. allowed temperature      |                                                                                           | TS <sub>min/max</sub> | °C                                     | 0        | 150          | a           |         |  |
| 13 | Test Pressure                      |                                                                                           |                       | bar(g)                                 | (*)      |              | a           |         |  |
| 14 | Installation Conditions            |                                                                                           |                       |                                        |          |              | Remarks     |         |  |
| 15 | Installation Location              |                                                                                           |                       | Inside the production building         |          |              | a           |         |  |
| 16 | Ambient Temperature                |                                                                                           |                       | °C                                     | 5 ... 40 |              | a           |         |  |
| 17 | Heigt above sea level              |                                                                                           |                       | 80 m above sea level                   |          |              | a           |         |  |
| 18 | Hygienic Zone/Room Classification  |                                                                                           |                       | n.a.                                   |          |              | a           |         |  |
| 19 | Max. Sound Pressure Level          |                                                                                           |                       | dB (A)                                 | 85       |              | 1m Distance | a       |  |
| 20 | Horizontal/Vertical Orientation    |                                                                                           |                       | horizontal                             |          |              | a           |         |  |
| 21 | Ex Zone inside                     |                                                                                           |                       | 22 / 2                                 |          |              | a           |         |  |
| 22 | Ex Zone outside                    |                                                                                           |                       | 22 / 2                                 |          |              | a           |         |  |
| 23 | Process Design Data                |                                                                                           |                       | min                                    | norm     | max          | design      | Remarks |  |
| 24 | Medium                             |                                                                                           |                       | process gas N2 with additives          |          |              | a           |         |  |
| 25 | Mediencode                         |                                                                                           |                       | PI                                     |          |              | a           |         |  |
| 26 | Flow Rate                          |                                                                                           | kg/h                  | 6250                                   | 11675    | 12781        |             | a       |  |
| 27 | water content                      |                                                                                           | g/kg                  | 0                                      | 15       | 57           |             | a       |  |
| 28 | density (inlet)                    |                                                                                           | kg/m³                 | 0,90                                   | 1,04     | 1,18         |             | a       |  |
| 29 | temperature (inlet)                |                                                                                           | °C                    | 5                                      | 70       | 75           | 75          | a       |  |
| 30 | Flow Rate (inlet)                  |                                                                                           | Bm³/h                 | 5297                                   | 11230    | 14300        | 14300       | a       |  |
| 31 | Flow Rate (inlet)                  |                                                                                           | Nm³/h                 | (*)                                    | (*)      | (*)          | (*)         | a       |  |
| 32 | pressure suction side              |                                                                                           | mbar(g)               | -170                                   | 61       | 170          |             | a       |  |
| 33 | pressure discharge side            |                                                                                           | mbar(g)               | -170                                   | 81       | 170          |             | a       |  |
| 34 | pressure difference                |                                                                                           | mbar                  | -                                      | 20       | 30           | 30          | a       |  |
| 35 | temperature (discharge)            |                                                                                           | °C                    | (*)                                    | (*)      | (*)          | (*)         | a       |  |
| 36 | density (discharge)                |                                                                                           | kg/m³                 | (*)                                    | (*)      | (*)          | (*)         | a       |  |
| 37 | rotaional speed                    |                                                                                           | min <sup>-1</sup>     | (*)                                    | (*)      | (*)          | (*)         | a       |  |
| 38 | power consumption                  |                                                                                           | kW                    | (*)                                    | (*)      | (*)          | (*)         | a       |  |

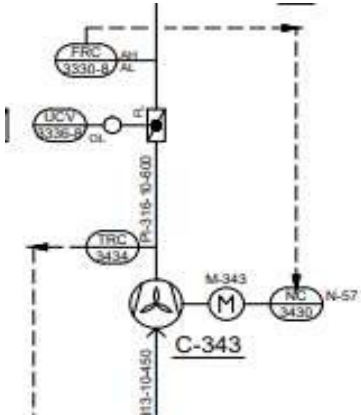
specification blower chamber 8 C-343

| #  | Name                                                      |       | blower chamber 8 |           |                                   |     |      |        | E       | Iss. |
|----|-----------------------------------------------------------|-------|------------------|-----------|-----------------------------------|-----|------|--------|---------|------|
| #  | TAG                                                       |       | C-343            |           |                                   |     |      |        |         |      |
| 39 | Chemical and Physical Properties of fluid                 |       |                  |           |                                   |     |      |        | Remarks |      |
| 40 | description Medium                                        |       |                  |           | process gas N2 with additives     |     |      |        |         | a    |
| 41 | Composition                                               |       |                  |           | min                               | max | norm | design |         | a    |
| 42 | Oxygen O2                                                 |       |                  | Mass-%    | 0                                 | 3,5 | 2    | 2      |         | a    |
| 43 | n-Butanol, C4H10O                                         |       |                  | Mass-%    | 0                                 | 2,7 | 0,52 | 0,52   |         | a    |
| 44 | Carbon disulphide, CS2                                    |       |                  | Mass-%    | 0                                 | 1   | 0,7  | 0,7    |         | a    |
| 45 | water, H2O                                                |       |                  | Mass-%    | 0                                 | 2,7 | 1    | 1      |         | a    |
| 46 | Special characteristics                                   |       |                  |           | dust                              |     |      |        |         | a    |
| 47 | Partikelgehalt                                            |       |                  | mg/Nm³    | < 0,1                             |     |      |        |         | a    |
| 48 | Particle Size                                             |       |                  | µm        | 1..3                              |     |      |        |         | a    |
| 49 | Particle Structure                                        |       |                  |           | powder                            |     |      |        |         | a    |
| 50 | pH-Wert der Staubpartikel beim Lösen in Wasser            |       |                  |           | -                                 |     |      |        |         | a    |
| 51 | kind of dust                                              |       |                  |           | Butyl potassium xanthate          |     |      |        |         | a    |
| 52 | characteristics of dust                                   |       |                  |           | water soluble, hygroscopic, toxic |     |      |        |         | a    |
| 53 | Construction details blower                               |       |                  |           |                                   |     |      |        | Remarks |      |
| 54 | blower type                                               |       |                  |           | (*)                               |     |      |        |         | a    |
| 55 | size                                                      |       |                  |           | (*)                               |     |      |        |         | a    |
| 56 | diameter impeller                                         |       |                  | mm        | (*)                               |     |      |        |         | a    |
| 57 | Rotor design / number of blades                           |       |                  | no.       | (*)                               |     |      |        |         | a    |
| 58 | drive system (direct with/without coupling or belt drive) |       |                  |           | (*)                               |     |      |        |         | a    |
| 59 | gear ratio                                                |       |                  |           | (*)                               |     |      |        |         | a    |
| 60 | bearing type                                              |       |                  |           | (*)                               |     |      |        |         | a    |
| 61 | lubrication                                               |       |                  |           | (*)                               |     |      |        |         | a    |
| 62 | Pipe connection for suction side                          |       |                  | Y/N       | Y                                 |     |      |        |         | a    |
| 63 | Cleaning/Sanitisation/Sterilisation                       |       |                  |           |                                   |     |      |        | Remarks |      |
| 64 | Cleaning Media Product Side                               |       |                  |           | dry cleaning                      |     |      |        |         | a    |
| 65 | Cleaning Temperatur Product Side                          |       |                  | °C        | < 50°C                            |     |      |        |         | a    |
| 66 | Sanitisation/Sterilisation Medium                         |       |                  |           | n.a.                              |     |      |        |         | a    |
| 67 | Sanitisation Temperature                                  |       |                  | °C        | -                                 |     |      |        |         | a    |
| 68 | Cleaning outside                                          |       |                  |           | dry cleaning                      |     |      |        |         | a    |
| 69 | Weights and Dimensions                                    |       |                  |           |                                   |     |      |        | Remarks |      |
| 70 | Total Length                                              |       |                  | mm        | (*)                               |     |      |        |         | a    |
| 71 | Total Width                                               |       |                  | mm        | (*)                               |     |      |        |         | a    |
| 72 | Total Height                                              |       |                  | mm        | (*)                               |     |      |        |         | a    |
| 73 | Total Weight                                              | Empty | Operating        | Catastro. | kg                                | (*) | (*)  | (*)    | -       | a    |
| 74 | Materials and Surface Treatments, Coatings, Certificates  |       |                  |           |                                   |     |      |        | Remarks |      |
| 75 | Surface with Product Contact                              |       |                  |           | (*)                               |     |      |        |         | a    |
| 76 | material casing                                           |       |                  |           | (*)                               |     |      |        |         | a    |
| 77 | material impeller                                         |       |                  |           | (*)                               |     |      |        |         | a    |
| 78 | External Surface                                          |       |                  |           | (*)                               |     |      |        |         | a    |
| 79 | Seals/Gaskets with Product Contact                        |       |                  |           | (*)                               |     |      |        |         | a    |
| 80 | compensators                                              |       |                  |           | AISI 304 or higher grade          |     |      |        |         | a    |
| 81 | Coating System of non SS Parts                            |       |                  |           | (*)                               |     |      |        |         | a    |

specification blower chamber 8 C-343

| #   | Name                                                 |         | blower chamber 8     |                    |          |                                                              | E                                                   | Iss. |
|-----|------------------------------------------------------|---------|----------------------|--------------------|----------|--------------------------------------------------------------|-----------------------------------------------------|------|
|     | TAG                                                  |         | C-343                |                    |          |                                                              |                                                     |      |
| 82  | Shaft Sealing System                                 |         |                      |                    |          |                                                              | Remarks                                             |      |
| 83  | Type                                                 |         |                      | nitrogen purge gas |          |                                                              | with pressure gauges, pressure reducer, flow switch | a    |
| 84  | Accessories                                          |         |                      |                    |          |                                                              | Remarks                                             |      |
| 85  | suction filter                                       | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 86  | base plate/base frame                                | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 87  | grounding connection                                 | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 88  | lifting lugs                                         | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 89  | safety valve at discharge side                       | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 90  | safety valve set pressure                            | bar(Ü)  | (*)                  |                    |          |                                                              | a                                                   |      |
| 91  | noise hood                                           | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 92  | blower for noise hood                                | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 93  | compensators at inlet and outlet                     | Y/N     | Y                    |                    |          |                                                              | a                                                   |      |
| 94  | Explosion Protection according to DIN EN 60079/80079 |         |                      |                    |          |                                                              | Remarks                                             |      |
| 95  | Ex-protection version for the following Ex-zone      | -       | inside:              | 22 / 2             | outside: | 22 / 2                                                       | a                                                   |      |
| 96  | Medium conditioning the Ex zone                      |         | nitrogen             |                    |          |                                                              | a                                                   |      |
| 97  | Hybrid mixture                                       | Y/N     | N                    |                    | N        |                                                              | a                                                   |      |
| 98  | Permitted surface temperature                        | max. °C | 150                  |                    |          |                                                              | a                                                   |      |
| 99  | Permitted temperature class                          | -       | T4                   |                    |          |                                                              | a                                                   |      |
| 100 | Permitted equipment group                            |         | IIIB, IIIC, IIB, IIC |                    |          |                                                              | a                                                   |      |
| 101 | Permitted Equipment protection level                 | (EPL)   | Da                   |                    | Dc       |                                                              | a                                                   |      |
| 102 | Explosion protection type (mechanical)               |         | inside               |                    | outside  | Remarks                                                      |                                                     |      |
| 103 | Type of ignition protection                          | -       | -                    |                    | -        | acc. DIN/EN 80079-36/37, DIN EN 60079-0 & DIN EN 13463-1...8 | a                                                   |      |
| 104 | Explosion proof design                               | Y/N     | N                    |                    | -        | If YES specify presure                                       | a                                                   |      |
| 105 | Explosion pressure shock resistant design            | Y/N     | N                    |                    | -        | If YES specify presure                                       | a                                                   |      |
| 106 | Required dession pressure                            | bar(Ü)  | -                    |                    | -        |                                                              | a                                                   |      |
| 107 | Explosion protection type (electrical)               |         |                      |                    |          |                                                              | Remarks                                             |      |
| 108 | Type of ignition protection electric motor           | -       | -                    |                    |          | acc. DIN EN 60079-0...31                                     | a                                                   |      |
| 109 | Type of ignition protection other electrical parts   |         | -                    |                    |          | acc. DIN EN 60079-0...31                                     | a                                                   |      |
| 110 | Special requirements Motor                           |         |                      |                    |          |                                                              | Remarks                                             |      |
| 111 | Frequency Controlled operation                       | Y/N     | N                    |                    |          |                                                              | a                                                   |      |
| 112 | Allowed frequency range / speed                      | min/max | (*)                  |                    | (*)      |                                                              | a                                                   |      |
| 113 | Electric motor with forced ventilation               | Y/N     | (*)                  |                    |          |                                                              | a                                                   |      |
| 114 | Electrical Accessories                               |         |                      |                    |          |                                                              | Remarks                                             |      |
| 115 | Frequency Converter                                  | Y/N     | N                    |                    |          | note doc. 2115_IEQS001, specify manufacturer & type          | a                                                   |      |
| 116 | Ventilation device for acoustic hood                 | Y/N     | (*)                  |                    |          | note doc. 2115_IEQS001, specify voltage and power            | a                                                   |      |
| 117 | Measuring Devices                                    | Y/N     | Y                    |                    |          | note doc. 2115_IEQS001, specify manufacturer & type          | a                                                   |      |

specification blower chamber 8 C-343

| #   | Name                                                                               |                                                   | blower chamber 8 |                    |             |              | E                     |      |
|-----|------------------------------------------------------------------------------------|---------------------------------------------------|------------------|--------------------|-------------|--------------|-----------------------|------|
|     | TAG                                                                                |                                                   | C-343            |                    |             |              |                       | Iss. |
| 118 | Listing of measuring devices (electrical accessories) and signal exchange          |                                                   |                  |                    |             |              |                       |      |
| 119 | Pos.                                                                               | Designation                                       | Type             | TAG ()             | Signal type | Remarks      |                       |      |
| 120 | 1                                                                                  | local pressure gauge                              | (*)              |                    | -           |              | a                     |      |
| 121 | 2                                                                                  | local dP filter                                   | (*)              |                    | -           |              | a                     |      |
| 122 | 3                                                                                  | pressure switch for sealing                       | (*)              |                    | 0/1         |              | a                     |      |
| 123 | 4                                                                                  | flow switch for sealing                           | (*)              |                    | 0/1         |              | a                     |      |
| 124 | 5                                                                                  | temperature of compressed gas                     | (*)              |                    | analog      |              | a                     |      |
| 125 | 6                                                                                  | (*)                                               |                  |                    |             |              | a                     |      |
| 126 | Nozzles List                                                                       |                                                   |                  |                    |             |              |                       |      |
| 127 | Pos.                                                                               | NPS                                               | PN               | Type of connection | Norm        | Sealing Face | Service               |      |
| 128 | N-01                                                                               | (*)                                               | 10               | flange             | EN 1092-1   |              | inlet                 |      |
| 129 | N-02                                                                               | (*)                                               | 10               | flange             | EN 1092-1   |              | outlet                |      |
| 130 | N-03                                                                               | (*)                                               | 10               | blind flange       | EN 1092-1   |              | condensate drain      |      |
| 131 | N-04                                                                               | (*)                                               |                  |                    |             |              | a                     |      |
| 132 | Sketch, PID-Section                                                                |                                                   |                  |                    |             |              |                       |      |
| 133 |  |                                                   |                  |                    |             |              |                       |      |
| 134 | Further requirements / Required further information                                |                                                   |                  |                    |             |              | Remarks               |      |
| 135 | Dessign acc.to Technical Instruction Air                                           |                                                   |                  | Y/N                | N           |              | German rule 'TA-Luft' | a    |
| 136 | Sound power level                                                                  |                                                   |                  | dB(A)              | (*)         |              |                       | a    |
| 137 | heat                                                                               |                                                   |                  | kW                 | (*)         |              |                       | a    |
| 138 | cooling air                                                                        |                                                   |                  | m³/h               | (*)         |              | if applicable         | a    |
| 139 |                                                                                    |                                                   |                  |                    |             |              |                       | a    |
| 140 | Additional documents                                                               |                                                   |                  |                    |             |              | Dok.-Nr.              |      |
| 141 | 1x                                                                                 | General design conditions                         |                  |                    |             | 2115_GDCB001 |                       | a    |
| 142 | 1x                                                                                 | Electrical, Instrumentation, Control Requirements |                  |                    |             | 2115_IEQS001 |                       | a    |
| 143 | 1x                                                                                 | Safety characteristics                            |                  |                    |             | 2115_SSDS001 |                       | a    |
| 144 |                                                                                    |                                                   |                  |                    |             |              |                       | a    |
| 145 |                                                                                    |                                                   |                  |                    |             |              |                       | a    |

specification blower chamber 8 C-343

| #   | Name                 |                                                                                                                                                                                                                               | blower chamber 8 |  | E |
|-----|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--|---|
|     | TAG                  |                                                                                                                                                                                                                               |                  |  |   |
| 146 | Editing instructions |                                                                                                                                                                                                                               |                  |  |   |
| 147 | SIGNAL IN            | Signal goes to                                                                                                                                                                                                                |                  |  | a |
| 148 | SIGNAL OUT           | Signal comes from                                                                                                                                                                                                             |                  |  | a |
| 149 | -                    | not applicable                                                                                                                                                                                                                |                  |  | a |
| 150 | (n.e.)               | not required                                                                                                                                                                                                                  |                  |  | a |
| 151 | (n.b.)               | not known                                                                                                                                                                                                                     |                  |  | a |
| 152 | (i.B.)               | In operating condition                                                                                                                                                                                                        |                  |  | a |
| 153 | (*)                  | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |                  |  | a |
| 154 |                      |                                                                                                                                                                                                                               |                  |  | a |
| 155 |                      |                                                                                                                                                                                                                               |                  |  | a |

**2115 MEQS 013****specification central dedusting system S-372**

|                         |                      |                               |                           |                                |                                    |
|-------------------------|----------------------|-------------------------------|---------------------------|--------------------------------|------------------------------------|
|                         |                      |                               |                           |                                |                                    |
| c                       | 25.01.2023           | ys                            | kp                        |                                | revised design value               |
| b                       | 06.01.2023           | ys                            |                           |                                | revised flange connection & sketch |
| a                       | 08.06.2022           | ys                            | jk                        | schz                           | first issue                        |
| <b>Issue</b><br>Ausgabe | <b>Date</b><br>Datum | <b>Originated</b><br>Erstellt | <b>Checked</b><br>Geprüft | <b>Approved</b><br>Freigegeben | <b>Remarks</b><br>Bemerkung        |

|    | Name                                       | central dedusting and aspiration system                                                |                          |                                          |       |       | Remarks             | Iss. |   |
|----|--------------------------------------------|----------------------------------------------------------------------------------------|--------------------------|------------------------------------------|-------|-------|---------------------|------|---|
| No | TAG                                        | S-372, C-373, U-374                                                                    |                          |                                          |       |       |                     |      |   |
| 1  | General Data                               |                                                                                        |                          |                                          |       |       |                     |      |   |
| 2  | Application                                | Aspiration and filtration of vent gas/air from fluidized bed granulation drying system |                          |                                          |       |       |                     | a    |   |
| 3  |                                            |                                                                                        |                          |                                          |       |       |                     | a    |   |
| 4  | Quantity                                   | Operation                                                                              | units                    | 1                                        |       |       |                     | a    |   |
| 5  |                                            | Stand-By                                                                               | units                    | 0                                        |       |       |                     | a    |   |
| 6  | Operation Mode                             |                                                                                        |                          | continuous operation                     |       |       |                     |      | a |
| 7  | Operation Time                             |                                                                                        |                          | 24 h Tag / 7 Tage je Woche / 8000Bh/Jahr |       |       |                     |      | a |
| 8  | Standards und guidelines to be used        |                                                                                        |                          |                                          |       |       | Remarks             |      |   |
| 9  | General sets of rules                      |                                                                                        | see                      | general design conditions                |       |       | Dok.: 2115_GDCB001  | a    |   |
| 10 | Special standards and guideline            |                                                                                        |                          | (*)                                      |       |       |                     |      | a |
| 11 | Mechanical Design Data                     |                                                                                        |                          | Remarks                                  |       |       |                     |      |   |
| 12 | Min./max. allowed Pressure                 |                                                                                        | PS bar(g)                | -0,1                                     |       | 0,1   |                     | a    |   |
| 13 | Min./max. allowed temperature              |                                                                                        | TS <sub>min/max</sub> °C | 0                                        |       | 100   |                     | a    |   |
| 14 | Test Pressure                              |                                                                                        | bar(g)                   | (*)                                      |       |       | a                   |      |   |
| 15 | Installation Conditions                    |                                                                                        |                          |                                          |       |       |                     |      |   |
| 16 | Installation Location                      |                                                                                        |                          | Inside the production building           |       |       | indoor installation | a    |   |
| 17 | Ambient Temperature                        |                                                                                        | °C                       | 0 - 40°C                                 |       |       | a                   |      |   |
| 18 | Height above sea level                     |                                                                                        | m                        | 80 m above sea level                     |       |       | a                   |      |   |
| 19 | Hygienic Zone/Room Classification          |                                                                                        |                          | (n.a.)                                   |       |       | a                   |      |   |
| 20 | Seismic Zone                               |                                                                                        |                          | (n.a.)                                   |       |       | a                   |      |   |
| 21 | Max. Sound Pressure Level                  |                                                                                        | dB (A)                   | < 85                                     |       |       | 1m Distance         | a    |   |
| 22 | Process Data                               |                                                                                        |                          | min                                      | norm  | max   | Design              |      |   |
| 23 | Medium                                     |                                                                                        |                          | process gas N2 with additives            |       |       | a                   |      |   |
| 24 | Mass flow Inlet                            |                                                                                        | kg/h                     | 0                                        | 750   | 775   | 1000                | b    |   |
| 25 | Volume flow inlet                          |                                                                                        | m³/h                     | 0                                        | 682   | 705   | 910                 | b    |   |
| 26 | Temperature Inlet                          |                                                                                        | °C                       | 15                                       | 30    | 60    | 60                  | a    |   |
| 27 | Mass flow outlet 1                         |                                                                                        | kg/h                     | -                                        | -     | -     |                     | a    |   |
| 28 | Mass flow outlet 2                         |                                                                                        | kg/h                     | -                                        | -     | -     |                     | a    |   |
| 29 | Pressure filter Inlet                      |                                                                                        | mbar(g)                  | -20                                      | -10   | -5    | -20                 | a    |   |
| 30 | Pressure Outlet                            |                                                                                        | mbar(g)                  | 0                                        | 0     | 2     | fan discharge       | a    |   |
| 31 | Pressure drop                              |                                                                                        | mbar                     | (*)                                      | (*)   | (*)   |                     | a    |   |
| 32 | Solid content after filter                 |                                                                                        | mg/Nm³                   | 0                                        | (*)   | 2     |                     | a    |   |
| 33 | Chemical and Physical Properties of fluids |                                                                                        |                          | min                                      | norm  | max   | Design              |      |   |
| 34 | Characteristics dust                       |                                                                                        |                          | water soluble, hygroscopic, toxic        |       |       | a                   |      |   |
| 35 | Particle size dust                         |                                                                                        | mm                       |                                          | < 0,3 | 3     |                     | a    |   |
| 36 | bulk density dust                          |                                                                                        | kg/m³                    | 550                                      | 650   | 760   |                     | a    |   |
| 37 | Humidity dust                              |                                                                                        | Mass-%                   | 0                                        | 0,02  | 0,05  |                     | a    |   |
| 38 | Composition process gas                    |                                                                                        |                          | min                                      | norm  | max   |                     | a    |   |
| 39 | Nitrogen N2                                |                                                                                        | Mass-%                   | 99                                       | 99    | 100   |                     | a    |   |
| 40 | n-Butanol, C4H10O                          |                                                                                        | Mass-%                   | 0                                        | 0,5   | 1     |                     | a    |   |
| 41 | Carbon disulphide, CS2                     |                                                                                        | Mass-%                   | 0                                        | 0     | 0,01  |                     | a    |   |
| 42 | water, H2O                                 |                                                                                        | Mass-%                   | 0,2                                      | 0,5   | 2     |                     | a    |   |
| 43 | Dust content                               |                                                                                        | mg/Nm³                   | 0                                        | 3000  | 25000 |                     | a    |   |
| 44 | Specific volume resistance dust            |                                                                                        | Ohm*m                    | >10⁶                                     |       |       | acc. EN 61241-2-2   | a    |   |

| No | Name                                                                     | central dedusting and aspiration system |                                                 |     |      |     | Remarks | Iss.                  |   |
|----|--------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------|-----|------|-----|---------|-----------------------|---|
|    | TAG                                                                      | S-372, C-373, U-374                     |                                                 |     |      |     |         |                       |   |
| 45 | Medium back purge gas                                                    |                                         |                                                 | min | norm | max | Design  |                       |   |
| 46 | gas                                                                      |                                         | nitrogen                                        |     |      |     |         |                       | a |
| 47 | Pressure                                                                 |                                         | bar(g)                                          | 5   | 6    | 6,5 |         |                       | a |
| 48 | temperature purge gas                                                    |                                         | °C                                              | 5   | 20   | 40  |         |                       | a |
| 49 | Mass flow purge gas                                                      |                                         | kg/h                                            | (*) | (*)  | (*) |         |                       | a |
| 50 | Cleaning/Sanitisation/Sterilisation                                      |                                         |                                                 |     |      |     |         |                       |   |
| 51 | Cleaning Product Side                                                    |                                         | Dry cleaning                                    |     |      |     |         |                       | a |
| 52 | Cleaning External Surface                                                |                                         | Dry cleaning                                    |     |      |     |         |                       | a |
| 53 | Design, Dimensions and Weights                                           |                                         |                                                 |     |      |     |         |                       |   |
| 54 | Total Volume                                                             | m³                                      | (*)                                             |     |      |     |         |                       | a |
| 55 | length                                                                   | mm                                      | (*)                                             |     |      |     |         |                       | a |
| 56 | widgth                                                                   | mm                                      | (*)                                             |     |      |     |         |                       | a |
| 57 | Height                                                                   | mm                                      | (*)                                             |     |      |     |         |                       | a |
| 58 | Length of filer hose                                                     | mm                                      | (*)                                             |     |      |     |         |                       | a |
| 59 | Discharge Height                                                         | mm                                      | (*)                                             |     |      |     |         |                       | a |
| 60 | Shell Design                                                             | -                                       | (*)                                             |     |      |     |         |                       | a |
| 61 | Wall Thickness                                                           | mm                                      | (*)                                             |     |      |     |         |                       | a |
| 62 | Insulation Type                                                          | -                                       | (*)                                             |     |      |     |         |                       | a |
| 63 | Insulation Thickness                                                     | mm                                      | (*)                                             |     |      |     |         |                       | a |
| 64 | Total Weight (empty)                                                     | kg                                      | (*)                                             |     |      |     |         |                       | a |
| 65 | Emergency Weight                                                         | kg                                      | (*)                                             |     |      |     |         |                       | a |
| 66 | Type of Supports                                                         | -                                       | support brackets                                |     |      |     |         | position is to define | a |
| 67 | Materials and Surface Treatments, Coatings, Certificates                 |                                         |                                                 |     |      |     |         |                       |   |
| 68 | Metal Parts with Product Contact                                         |                                         | AISI 304 or higher grade                        |     |      |     |         | filter, fan and vat   | a |
| 69 | Surface with Product Contact                                             |                                         | (*)                                             |     |      |     |         |                       | a |
| 70 | External Surface                                                         |                                         | (*)                                             |     |      |     |         |                       | a |
| 71 | Welding Seams w. Product Contact                                         |                                         | (*)                                             |     |      |     |         |                       | a |
| 72 | External Welding Seams                                                   |                                         | (*)                                             |     |      |     |         |                       | a |
| 73 | Seals/Gaskets w. Product Contact                                         |                                         | (*)                                             |     |      |     |         |                       | a |
| 74 | Metal Parts without Product Contact                                      |                                         | (*)                                             |     |      |     |         |                       | a |
| 75 | Coating System of non SS Parts                                           |                                         | (*)                                             |     |      |     |         |                       | a |
| 76 | Material filter elements                                                 |                                         | (*)                                             |     |      |     |         |                       | a |
| 77 | Material of Supports                                                     |                                         | (*)                                             |     |      |     |         |                       | a |
| 78 | Material of Insulation                                                   |                                         | (*)                                             |     |      |     |         |                       | a |
| 79 | Explosion Protection                                                     |                                         |                                                 |     |      |     |         |                       |   |
| 80 | Ex-Zone filter raw gas chamber with flap valve                           |                                         | 20/2                                            |     |      |     |         |                       | a |
| 81 | Ex-Zone filter clean gas chamber                                         |                                         | 21/2                                            |     |      |     |         |                       | a |
| 82 | Ex-Zone raw gas pipe and clean gas pipe inside                           |                                         | 21/2                                            |     |      |     |         |                       | a |
| 83 | Ex-Zone filter, raw gas pipe, clean gas pipe, flap valve and vat outside |                                         | 22                                              |     |      |     |         |                       | a |
| 84 | Ex-Zone fan and vat inside                                               |                                         | 22/2                                            |     |      |     |         |                       | a |
| 85 | Ex-Zone fan outside                                                      |                                         | 22/2                                            |     |      |     |         |                       | a |
| 86 | Protection System                                                        |                                         | Filter pressure shock resistant with decoupling |     |      |     |         |                       | a |

| No  | Name                                         | central dedusting and aspiration system |                           | Remarks                                                                                                                                    | Iss. |
|-----|----------------------------------------------|-----------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------|
|     | TAG                                          | S-372, C-373, U-374                     |                           |                                                                                                                                            |      |
| 87  | General Accessories                          |                                         |                           |                                                                                                                                            |      |
| 88  | Name Fan                                     | Y/N                                     | Y                         | C373                                                                                                                                       | a    |
| 89  | Total pressure increase                      | mbar                                    | (*)                       |                                                                                                                                            | a    |
| 90  | Suction operation                            | %                                       | 98                        |                                                                                                                                            | a    |
| 91  | Pressuring operation                         | %                                       | 2                         |                                                                                                                                            | a    |
| 92  | Mech. design pressure                        | mbarg                                   | (*)                       |                                                                                                                                            | a    |
| 93  | Mech. design temperature                     | °C                                      | (*)                       |                                                                                                                                            | a    |
| 94  | Shaft power                                  | kW                                      | (*)                       |                                                                                                                                            | a    |
| 95  | Type of drive                                | -                                       | (*)                       |                                                                                                                                            | a    |
| 96  | Impeller rotation speed                      | 1/min                                   | (*)                       |                                                                                                                                            | a    |
| 97  | Tightness of housing                         | -                                       | gas tight                 |                                                                                                                                            | a    |
| 98  | Installation position                        | -                                       | top right seen from motor |                                                                                                                                            | a    |
| 99  | Silencer fan outlet                          | Y/N                                     | Y                         | U-374                                                                                                                                      | a    |
| 100 | Clean gas chamber                            | Y/N                                     | Y                         | not walkable                                                                                                                               | a    |
| 101 | Cleaning nozzles /cleaning system/ WIP       | Y/N                                     | N                         |                                                                                                                                            | a    |
| 102 | Compressed gas vessel                        | Y/N                                     | Y                         |                                                                                                                                            | a    |
| 103 | Explosion decupling system dust discharge    | Y/N                                     | Y                         | Warex double flap system                                                                                                                   | a    |
| 104 | Protection device                            | Y/N                                     | Y                         |                                                                                                                                            | a    |
| 105 | Dust hopper                                  | Y/N                                     | Y                         | plus 1 reserve container with lid                                                                                                          | a    |
| 106 | Manways                                      | Y/N                                     | Y                         | gas tight                                                                                                                                  | a    |
| 107 | Lifting Lugs                                 | Y/N                                     | Y                         | on Top                                                                                                                                     | a    |
| 108 | Lifting device for clean gas chamber         | Y/N                                     | Y                         | manual chain hoist HV                                                                                                                      | a    |
| 109 | Plugs for housing                            | Y/N                                     | Y                         | if necessary                                                                                                                               | a    |
| 110 | Design for assembling welding                | Y/N                                     | N                         |                                                                                                                                            | a    |
| 111 | Inspection opening                           | Y/N                                     | Y                         | gas tight                                                                                                                                  | a    |
| 112 | Support for housing                          | Y/N                                     | Y                         | if necessary                                                                                                                               | a    |
| 113 | Flanges ex-suppression system                | Y/N                                     | N                         |                                                                                                                                            | a    |
| 114 | Impactors                                    | Y/N                                     | Y                         | from company Netter with control unit and mounting material (hand valve, maintenance unit with lubricator, MV, hose, nipple)               | a    |
| 115 | Impactor beam/support                        | Y/N                                     | Y                         |                                                                                                                                            | a    |
| 116 | Insulation                                   | Y/N                                     | N                         | prepared for insulation                                                                                                                    | a    |
| 117 | Earthing-connection                          | Y/N                                     | Y                         | All built-in parts completely grounded internally, with transfer to 1 piece ground connection                                              | a    |
| 118 | Membrane valves                              | Y/N                                     | Y                         |                                                                                                                                            | a    |
| 119 | Safety valve                                 | Y/N                                     | Y                         | Compressed gas chamber, if required                                                                                                        | a    |
| 120 | Pressure reducer valve / filter / hand valve | Y/N                                     | Y                         | in filter cleaning gas line (manual valve, pressure reducer with manometer, drainage)                                                      | a    |
| 121 | ex-protection system                         | Y/N                                     | Y                         | i.a. pressure cell, ventex valve, quick-action slide, IR sensor incl. control and cycle lock                                               | a    |
| 122 | Electrical Accessories                       |                                         |                           |                                                                                                                                            |      |
| 123 | Trace Heating                                | Y/N                                     | N                         |                                                                                                                                            | a    |
| 124 | Measuring Devices                            | Y/N                                     | Y                         | Differential pressure sensor (raw gas side mounted on raw gas inlet nozzle), level monitoring of dust collection container and filter cone | a    |
| 125 | Filter Control                               | Y/N                                     | Y                         |                                                                                                                                            | a    |
| 126 | Explosion Protection                         | Y/N                                     | Y                         | If YES specify type and Ex-Certification                                                                                                   | a    |



**MEQS 003****specification process gas compressor A-310**

|              |             |                   |  |  |                             |
|--------------|-------------|-------------------|--|--|-----------------------------|
|              |             |                   |  |  |                             |
| c            | 16.01.2023  | ys                |  |  | revidierte Stutzenzabelle   |
| b            | 13.10.2022  | ys                |  |  | revidierte TAG-Nummerierung |
| a            | 03.06.2022  | ys, ws            |  |  | first issue                 |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> |  |  | <b>Remarks</b>              |

## specification process gas compressor A-310

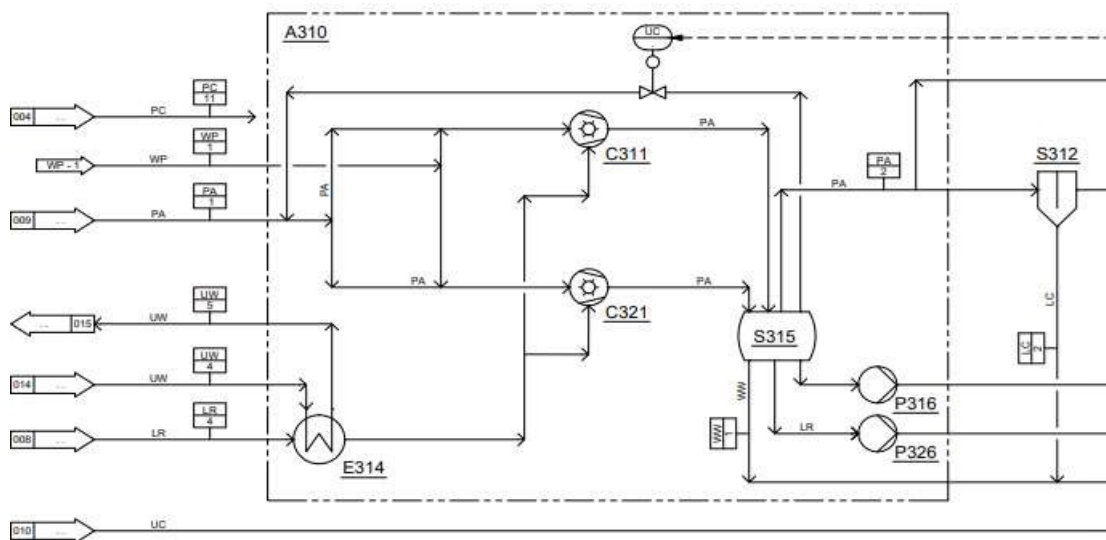
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| #  | Name                               |                                                                                                  | atomizing gas compressor                                      |                                         |        |      | E                     | Iss.                                        |   |
|----|------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------|--------|------|-----------------------|---------------------------------------------|---|
|    | TAG                                |                                                                                                  | A-310 (incl. C-311, C-321, S-315, E-314, P-316, P-326, S-312) |                                         |        |      |                       |                                             |   |
| 1  | General Data                       |                                                                                                  |                                                               |                                         |        |      | Remarks               |                                             |   |
| 2  | Application                        | Compression of N2 process gas to feed a two-substance nozzle for atomization of the spray liquid |                                                               |                                         |        |      |                       | a                                           |   |
| 3  | Quantity                           | Operation                                                                                        | units                                                         | 2 (1 x C-311, 1 x C-321)                |        |      |                       | b                                           |   |
| 4  |                                    | Stand-By                                                                                         | units                                                         | 0                                       |        |      |                       | a                                           |   |
| 5  | Operation Mode                     |                                                                                                  |                                                               | continuous operation                    |        |      |                       | a                                           |   |
| 6  | Operation Time                     |                                                                                                  |                                                               | 24 h day / 7 days per week /8000Bh/year |        |      |                       | a                                           |   |
| 7  | Standards und guidlines to be used |                                                                                                  |                                                               |                                         |        |      | Remarks               |                                             |   |
| 8  | General sets of rules              |                                                                                                  | see                                                           | general design conditions               |        |      | 2115_GDCB001          | a                                           |   |
| 9  | Special standards and guideline    |                                                                                                  | -                                                             | EN 1012                                 |        |      |                       | a                                           |   |
| 10 | Mechanical Design Data             |                                                                                                  |                                                               |                                         |        |      | Remarks               |                                             |   |
| 11 | Max Allowed Pressure (PS)          |                                                                                                  | bar(g)                                                        | +/- 0,23 // -0,23 / 6                   |        |      | inlet // outlet       | b                                           |   |
| 12 | Max./Min. Allowed Temperature (TS) |                                                                                                  | °C                                                            | 150                                     |        |      |                       | a                                           |   |
| 13 | Installation Conditions            |                                                                                                  |                                                               |                                         |        |      | Remarks               |                                             |   |
| 14 | Installation Location              |                                                                                                  |                                                               | Inside the production building          |        |      | installed on concrete | a                                           |   |
| 15 | Ambient Temperature                |                                                                                                  | °C                                                            | 5 ... 40                                |        |      |                       | a                                           |   |
| 16 | Heigt above sea level              |                                                                                                  |                                                               | 80 m above sea level                    |        |      |                       | a                                           |   |
| 17 | Hygienic Zone/Room Classification  |                                                                                                  |                                                               | n.a.                                    |        |      |                       | a                                           |   |
| 18 | Max. Sound Pressure Level          |                                                                                                  | dB (A)                                                        | 85 (*)                                  |        |      | 1m Distance           | a                                           |   |
| 19 | Horizontal/Vertical Orientation    |                                                                                                  |                                                               | horizontal                              |        |      |                       | a                                           |   |
| 20 | Ex Zone inside                     |                                                                                                  |                                                               | 2                                       |        |      |                       | a                                           |   |
| 21 | Ex Zone outside                    |                                                                                                  |                                                               | 2                                       |        |      |                       | a                                           |   |
| 22 | Process Design Data                |                                                                                                  |                                                               | min                                     | max    | norm | design                | Remarks                                     |   |
| 23 | Medium                             |                                                                                                  |                                                               | process gas N2 with additives           |        |      |                       | a                                           |   |
| 24 | Media code                         |                                                                                                  |                                                               | PA                                      |        |      |                       | a                                           |   |
| 25 | operation points                   |                                                                                                  |                                                               | (n.a.)                                  | (n.a.) | 1    | 2                     |                                             | a |
| 26 | Flow Rate                          |                                                                                                  | kg/h                                                          | 2813                                    | 5000   | 3875 | 5000                  | for 2 compressors 50% each to be considered | a |
| 27 | density inlet                      |                                                                                                  | kg/m³                                                         | 1,00                                    | 1,33   | 1,25 | 1,00                  |                                             | b |
| 28 | temperature inlet                  |                                                                                                  | °C                                                            | 5                                       | 30     | 22   | 30                    |                                             | a |
| 29 | Flow Rate (inlet)                  |                                                                                                  | Bm³/h                                                         | 2120                                    | 5000   | 3110 | 5000                  | In operating condition                      | b |
| 30 | Flow Rate (inlet) (0°C, 1,013 bar  |                                                                                                  | Nm³/h                                                         | (*)                                     | (*)    | 3100 | 4000                  |                                             | a |
| 31 | pressure (inlet)                   |                                                                                                  | mbar(g)                                                       | -5                                      | 170    | 100  | 100                   |                                             | a |
| 32 | pressure (discharge)               |                                                                                                  | mbar(g)                                                       | 800                                     | 3500   | 2500 | 3500                  | Pressure adjustable via control valve       | b |
| 33 | pressure difference)               |                                                                                                  | mbar                                                          | 800                                     | 3400   | 2400 | 3400                  |                                             | b |
| 34 | temperature discharge              |                                                                                                  | °C                                                            | (*)                                     | (*)    | (*)  | (*)                   |                                             | a |
| 35 | density discharge                  |                                                                                                  | kg/m³                                                         | (*)                                     | (*)    | (*)  | (*)                   |                                             | a |
| 36 | rotational speed                   |                                                                                                  | min <sup>-1</sup>                                             | (*)                                     | (*)    | (*)  | (*)                   |                                             | a |
| 37 | power consumption                  |                                                                                                  | kW                                                            | (*)                                     | (*)    | (*)  | (*)                   |                                             | a |

| #  | Name                                                      |        | atomizing gas compressor                                      |           |                               |      |      |        |   | E                                                                                        | Iss. |   |
|----|-----------------------------------------------------------|--------|---------------------------------------------------------------|-----------|-------------------------------|------|------|--------|---|------------------------------------------------------------------------------------------|------|---|
|    | TAG                                                       |        | A-310 (incl. C-311, C-321, S-315, E-314, P-316, P-326, S-312) |           |                               |      |      |        |   |                                                                                          |      |   |
| 38 | Chemical and Physical Properties of fluid                 |        |                                                               |           |                               |      |      |        |   | Remarks                                                                                  |      |   |
| 39 | Description medium                                        |        |                                                               |           | process gas N2 with additives |      |      |        |   |                                                                                          | a    |   |
| 40 | Composition                                               |        |                                                               |           | min                           | max  | norm | design |   | a                                                                                        |      |   |
| 41 | Oxygen O2                                                 | Mass-% | 0                                                             | 3,5       | 2                             | 2    |      |        |   | a                                                                                        |      |   |
| 42 | n-Butanol, C4H10O                                         | Mass-% | 0                                                             | 2,7       | 0,52                          | 0,52 |      |        |   | a                                                                                        |      |   |
| 43 | Carbon disulphide, CS2                                    | Mass-% | 0                                                             | 1         | 0,7                           | 0,7  |      |        |   | a                                                                                        |      |   |
| 44 | water, H2O                                                | Mass-% | 0                                                             | 2,7       | 1                             | 1    |      |        |   | a                                                                                        |      |   |
| 45 | Particle content                                          | mg/Nm³ | < 0,3                                                         |           |                               |      |      |        |   | b                                                                                        |      |   |
| 46 | Construction details blower                               |        |                                                               |           |                               |      |      |        |   | Remarks                                                                                  |      |   |
| 47 | blower type                                               |        | liquid ring compressor system                                 |           |                               |      |      |        |   |                                                                                          | b    |   |
| 48 | size                                                      |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 49 | diameter impeller                                         | mm     | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 50 | Rotor design / number of blades                           |        | no. (*)                                                       |           |                               |      |      |        |   |                                                                                          | a    |   |
| 51 | drive system (direct with/without coupling or belt drive) |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 52 | gear ratio                                                |        | (*)                                                           |           |                               |      |      |        |   | Oil-lubricated gear units initially filled with oil or oil provided for initial filling! | a    |   |
| 53 | bearing type                                              |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 54 | lubrication                                               |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 55 | Pipe connection for suction side                          | Y/N    | Y                                                             |           |                               |      |      |        |   |                                                                                          | a    |   |
| 56 | Cleaning/Sanitisation/Sterilisation                       |        |                                                               |           |                               |      |      |        |   | Remarks                                                                                  |      |   |
| 57 | Cleaning Media Product Side                               |        | dry cleaning                                                  |           |                               |      |      |        |   |                                                                                          | a    |   |
| 58 | Cleaning Temperatur Product Side                          |        | °C                                                            | <100°C    |                               |      |      |        |   |                                                                                          | a    |   |
| 59 | Sanitisation/Sterilisation Medium                         |        | n.a.                                                          |           |                               |      |      |        |   |                                                                                          | a    |   |
| 60 | Sanitisation Temperature                                  |        | °C                                                            | -         |                               |      |      |        |   |                                                                                          | a    |   |
| 61 | Cleaning outside                                          |        | dry cleaning                                                  |           |                               |      |      |        |   |                                                                                          | a    |   |
| 62 | Weights and Dimensions                                    |        |                                                               |           |                               |      |      |        |   | Remarks                                                                                  |      |   |
| 63 | Total Length                                              |        | mm                                                            | (*)       |                               |      |      |        |   |                                                                                          |      | a |
| 64 | Total Width                                               |        | mm                                                            | (*)       |                               |      |      |        |   |                                                                                          |      | a |
| 65 | Total Height                                              |        | mm                                                            | (*)       |                               |      |      |        |   |                                                                                          |      | a |
| 66 | Total Weight                                              | Empty  | Operating                                                     | Catastro. | kg                            | (*)  | (*)  | (*)    | - |                                                                                          | a    |   |
| 67 | Materials and Surface Treatments, Coatings, Certificates  |        |                                                               |           |                               |      |      |        |   | Remarks                                                                                  |      |   |
| 68 | Surface with Product Contact                              |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 69 | material casing                                           |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 70 | material impeller                                         |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 71 | External Surface                                          |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 72 | Seals/Gaskets with Product Contact                        |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 73 | Coating System of non SS Parts                            |        | (*)                                                           |           |                               |      |      |        |   |                                                                                          | a    |   |
| 74 | Shaft Sealing System                                      |        |                                                               |           |                               |      |      |        |   | Remarks                                                                                  |      |   |
| 75 | Type                                                      |        | Mechanical seal with thermosyphon                             |           |                               |      |      |        |   |                                                                                          | a    |   |

| #   | Name                                                 | atomizing gas compressor                                      |                    |   |                                                                                                                 | E                                                            | Iss. |
|-----|------------------------------------------------------|---------------------------------------------------------------|--------------------|---|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------|
|     | TAG                                                  | A-310 (incl. C-311, C-321, S-315, E-314, P-316, P-326, S-312) |                    |   |                                                                                                                 |                                                              |      |
| 76  | Accessories                                          |                                                               |                    |   |                                                                                                                 | Remarks                                                      |      |
| 77  | Compressor control by means of bypass                | Y/N                                                           | Y                  |   | Bypass control valve included in scope of                                                                       | a                                                            |      |
| 78  | heat exchanger for Start-up                          | Y/N                                                           | Y                  |   | Plate heat exchanger accepted                                                                                   | a                                                            |      |
| 79  | suction filter                                       | Y/N                                                           | N                  |   |                                                                                                                 | a                                                            |      |
| 80  | Safety valve on discharge side                       | Y/N                                                           | Y                  |   |                                                                                                                 | a                                                            |      |
| 81  | Safety valve set pressure                            | bar(Ü)                                                        | (*)                |   |                                                                                                                 | a                                                            |      |
| 82  | noise hood                                           | Y/N                                                           | N                  |   | The sound pressure level has to be specified!                                                                   | a                                                            |      |
| 83  | Ventilation device for noise hood                    | Y/N                                                           | N                  |   | separate E-drive is to be specify                                                                               | a                                                            |      |
| 84  | Elastic connecting elements Pipe connection          | Y/N                                                           | Y                  |   |                                                                                                                 | b                                                            |      |
| 85  | Air dehumidification device for intake air           | Y/N                                                           | N                  |   |                                                                                                                 | a                                                            |      |
| 86  | Recirculating water pumps                            | Y/N                                                           | Y                  |   |                                                                                                                 | b                                                            |      |
| 87  | Control valves and manual valves                     | Y/N                                                           | Y                  |   | All valves and fittings required for safe operation                                                             | b                                                            |      |
| 88  | Explosion Protection according to DIN EN 60079/80079 |                                                               |                    |   |                                                                                                                 | Remarks                                                      | a    |
| 89  | Ex-protection version for the following Ex-zone      | -                                                             | inside:            | 2 | outside:                                                                                                        | 2                                                            | a    |
| 90  | Medium conditioning the Ex zone                      | Medien-code                                                   | PA                 |   | PA                                                                                                              | 2115_SSDS001                                                 | b    |
| 91  | Hybrid mixture                                       | Y/N                                                           | N                  |   | N                                                                                                               |                                                              | b    |
| 92  | Permitted surface temperature                        | max. °C                                                       | -                  |   | for dust Ex areas!                                                                                              | a                                                            |      |
| 93  | Permitted temperature class                          | -                                                             | T4                 |   | for gas Ex areas!                                                                                               | b                                                            |      |
| 94  | Permitted equipment group                            |                                                               | IIB                |   | For non-electrical and electrical devices!                                                                      | b                                                            |      |
| 95  | Permitted Equipment protection level (EPL)           |                                                               | Ga, Gb, Gc         |   | For non-electrical and electrical devices!                                                                      | b                                                            |      |
| 96  | Explosion protection type (mechanical)               |                                                               | inside             |   | outside                                                                                                         | Remarks                                                      | a    |
| 97  | Type of ignition protection                          | -                                                             | N2 atmosphere      |   | -                                                                                                               | acc. DIN/EN 80079-36/37, DIN EN 60079-0 & DIN EN 13463-1...8 | b    |
| 98  | Explosion proof design                               | Y/N                                                           | N                  |   | -                                                                                                               | If YES specify presure                                       | a    |
| 99  | Explosion pressure shock resistant design            | Y/N                                                           | N                  |   | -                                                                                                               | If YES specify presure                                       | a    |
| 100 | Required dession pressure                            | bar(Ü)                                                        | -                  |   | -                                                                                                               | For the explosion-proof / pressure-shock-proof design!       | a    |
| 101 | Explosion protection type (electrical)               |                                                               |                    |   |                                                                                                                 | Remarks                                                      | a    |
| 102 | Type of ignition protection electric motor           | -                                                             | (*)                |   | acc. DIN EN 60079-0...31                                                                                        | b                                                            |      |
| 103 | Type of ignition protection other electrical parts   |                                                               | (*)                |   | acc. DIN EN 60079-0...31                                                                                        | b                                                            |      |
| 104 | Special requirements Motor                           |                                                               |                    |   |                                                                                                                 | Remarks                                                      | a    |
| 105 | Frequency Controlled operation                       | Y/N                                                           | N                  |   |                                                                                                                 | a                                                            |      |
| 106 | Allowed frequency range / speed                      | min/max                                                       | (*)                |   | (*)                                                                                                             | a                                                            |      |
| 107 | Electric motor with forced ventilation               | Y/N                                                           | (*)                |   |                                                                                                                 | a                                                            |      |
| 108 | Motor with soft starter                              | Y/N                                                           | Y, offer as option |   |                                                                                                                 | b                                                            |      |
| 109 | Electrical Accessories                               |                                                               |                    |   |                                                                                                                 | Remarks                                                      | a    |
| 110 | Frequency Converter                                  | Y/N                                                           | N                  |   | 2115_IEQS001                                                                                                    | a                                                            |      |
| 111 | Ventilation device for acoustic hood                 | Y/N                                                           | (*)                |   | 2115_IEQS001                                                                                                    | a                                                            |      |
| 112 | Measuring Devices                                    | Y/N                                                           | Y                  |   | (all sensors and indicators necessary for safe operation).<br>See doc.: 2115_IEQS001; specify manufacturer&Type | b                                                            |      |

| #   | Name                                                                      |                         |    | atomizing gas compressor                                      |             |              | E                                                                      | Iss. |
|-----|---------------------------------------------------------------------------|-------------------------|----|---------------------------------------------------------------|-------------|--------------|------------------------------------------------------------------------|------|
|     | TAG                                                                       |                         |    | A-310 (incl. C-311, C-321, S-315, E-314, P-316, P-326, S-312) |             |              |                                                                        |      |
| 113 | Listing of measuring devices (electrical accessories) and signal exchange |                         |    |                                                               |             |              |                                                                        | a    |
| 114 | Pos.                                                                      | Designation             |    | Type                                                          | TAG ()      | Signal type  | Remarks                                                                | a    |
| 115 | 1                                                                         | pressure sensor         |    | (*)                                                           | HOLD        | 4-20mA       | gas outlet                                                             | b    |
| 116 | 2                                                                         | temperature sensor      |    | (*)                                                           | HOLD        | 4-20mA       | gas outlet                                                             | b    |
| 117 | 3                                                                         | temperature sensor      |    | (*)                                                           | HOLD        | 4-20mA       | circulating water inlet                                                | b    |
| 118 | 4                                                                         | flow rate               |    | (*)                                                           | HOLD        | 4-20mA       | circulating water inlet                                                | b    |
| 119 | 5                                                                         | level gauge, local      |    | (*)                                                           | HOLD        | -            | water reservoir                                                        | b    |
| 120 | 6                                                                         | level transmitter ASLL  |    | (*)                                                           | HOLD        | 0/24V DC     | water reservoir                                                        | b    |
| 121 | 7                                                                         | level transmitter AL    |    | (*)                                                           | HOLD        | 0/24V DC     | water reservoir                                                        | b    |
| 122 | 8                                                                         | level transmitter AH    |    | (*)                                                           | HOLD        | 0/24V DC     | water reservoir                                                        | b    |
| 123 | 9                                                                         | level transmitter ASHH  |    | (*)                                                           | HOLD        | 0/24V DC     | water reservoir                                                        | b    |
| 124 | 10                                                                        | level transmitter ASHHH |    | (*)                                                           | HOLD        | 0/24V DC     | water reservoir                                                        | b    |
| 125 | 11                                                                        |                         |    |                                                               |             |              | If necessary, others according to supplier recommendation and standard | a    |
| 126 | 12                                                                        |                         |    |                                                               |             |              |                                                                        | a    |
| 127 | Nozzles List                                                              |                         |    |                                                               |             |              |                                                                        | a    |
| 128 | Pos.                                                                      | NPS                     | PN | Type of connection                                            | Norm        | Sealing Face | Service                                                                | a    |
| 129 | N1                                                                        | 300                     | 16 | flange                                                        | DIN EN 1092 | (*)          | gas inlet - PA                                                         | c    |
| 130 | N2                                                                        | 200                     | 16 | flange                                                        | DIN EN 1092 | (*)          | gas outlet - PA                                                        | c    |
| 131 | N3                                                                        | 100                     | 16 | flange                                                        | DIN EN 1092 | (*)          | process water inlet - WP                                               | c    |
| 132 | N4                                                                        | 50                      | 16 | flange                                                        | DIN EN 1092 | (*)          | waste water outlet - WW                                                | c    |
| 133 | N5                                                                        | 150                     | 16 | flange                                                        | DIN EN 1092 | (*)          | cooling water inlet - UW                                               | c    |
| 134 | N6                                                                        | 150                     | 16 | flange                                                        | DIN EN 1092 | (*)          | cooling water outlet - UW                                              | c    |
| 135 | N7.1                                                                      | 15                      | 16 | flange                                                        | DIN EN 1092 | (*)          | cooling water inlet - UW                                               | c    |
| 136 | N7.2                                                                      | 15                      | 16 | flange                                                        | DIN EN 1092 | (*)          | cooling water inlet - UW                                               | c    |
| 137 | N8.1                                                                      | 15                      | 16 | flange                                                        | DIN EN 1092 | (*)          | cooling water outlet - UW                                              | c    |
| 138 | N8.2                                                                      | 15                      | 16 | flange                                                        | DIN EN 1092 | (*)          | cooling water outlet - UW                                              | c    |
| 139 | N9.1                                                                      | G 1/2"                  |    |                                                               | DIN EN 1092 | (*)          | nitrogen inlet - PC                                                    | c    |
| 140 | N9.2                                                                      | G 1/2"                  |    |                                                               | DIN EN 1092 | (*)          | nitrogen inlet - PC                                                    | c    |
| 141 | N10                                                                       | 50                      | 16 | flange                                                        | DIN EN 1092 | (*)          | circulating water outlet 1 - LR                                        | c    |
| 142 | N11                                                                       | 50                      | 16 | flange                                                        | DIN EN 1092 | (*)          | circulating water outlet 2 - LR                                        | c    |
| 143 | N12                                                                       | 150                     | 16 | flange                                                        | DIN EN 1092 | (*)          | instrument air inlet (UA)                                              | c    |
| 144 | N13                                                                       | 15                      | 16 | flange                                                        | DIN EN 1092 | (*)          | cooling water safety valve blowout                                     | c    |
| 145 |                                                                           |                         |    |                                                               |             |              | If necessary, others according to supplier recommendation and standard | b    |

| Name |                                                                                               | atomizing gas compressor                                                                                                                                                                                                      |     | E                                  |      |
|------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------|------|
| #    | TAG                                                                                           | A-310 (incl. C-311, C-321, S-315, E-314, P-316, P-326, S-312)                                                                                                                                                                 |     |                                    | Iss. |
| 146  | Sketch, PID-Section                                                                           |                                                                                                                                                                                                                               |     |                                    | a    |
| 147  | <div></div> |                                                                                                                                                                                                                               |     |                                    | b    |
| 148  | Further requirements / Required further information                                           |                                                                                                                                                                                                                               |     | Remarks                            | a    |
| 149  | Design acc.to Technical Instruction Air                                                       | Y/N                                                                                                                                                                                                                           | N   | German rule 'TA-Luft'              | a    |
| 150  | Sound power level                                                                             | dB(A)                                                                                                                                                                                                                         | (*) | with/without noise hood            | a    |
| 151  | heat load                                                                                     | kW                                                                                                                                                                                                                            | (*) |                                    | a    |
| 152  | flow rate of cooling air                                                                      | m³/h                                                                                                                                                                                                                          | (*) | temperature increase is to specify | a    |
| 153  |                                                                                               |                                                                                                                                                                                                                               |     |                                    | a    |
| 154  | Additional documents                                                                          |                                                                                                                                                                                                                               |     | Dok.-Nr.                           | a    |
| 155  | 1x                                                                                            | General design conditions                                                                                                                                                                                                     |     | 2115_GDCB001                       | a    |
| 156  | 1x                                                                                            | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |     | 2115_IEQS001                       | a    |
| 157  | 1x                                                                                            | Safety characteristics                                                                                                                                                                                                        |     | 2115_SS001                         | a    |
| 158  |                                                                                               |                                                                                                                                                                                                                               |     |                                    | a    |
| 159  |                                                                                               |                                                                                                                                                                                                                               |     |                                    | a    |
| 160  | Editing instructions                                                                          |                                                                                                                                                                                                                               |     |                                    | a    |
| 161  | SIGNAL IN                                                                                     | Signal goes to                                                                                                                                                                                                                |     |                                    | a    |
| 162  | SIGNAL OUT                                                                                    | Signal comes from                                                                                                                                                                                                             |     |                                    | a    |
| 163  | -                                                                                             | not applicable                                                                                                                                                                                                                |     |                                    | a    |
| 164  | (n.e.)                                                                                        | not required                                                                                                                                                                                                                  |     |                                    | a    |
| 165  | (n.b.)                                                                                        | not known                                                                                                                                                                                                                     |     |                                    | a    |
| 166  | (i.B.)                                                                                        | In operating condition                                                                                                                                                                                                        |     |                                    | a    |
| 167  | (*)                                                                                           | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |     |                                    | a    |
| 168  |                                                                                               |                                                                                                                                                                                                                               |     |                                    | a    |
| 169  |                                                                                               |                                                                                                                                                                                                                               |     |                                    | a    |

## MEQS 023

### specification filter spraying liquid S-302

|              |             |                   |                |                 |                |
|--------------|-------------|-------------------|----------------|-----------------|----------------|
|              |             |                   |                |                 |                |
| b            | 06.01.2023  | ys                | kp             |                 | revised sketch |
| a            | 08.06.2022  | ys                | jk             | schz            | first issue    |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b> |

specification filter spraying liquid S-302

|    |                                   |                                        |                                           |       |       |             |         |
|----|-----------------------------------|----------------------------------------|-------------------------------------------|-------|-------|-------------|---------|
| #  | Name                              | filter spraying liquid                 |                                           |       |       | E           | Iss.    |
|    | TAG                               | S-302A/B                               |                                           |       |       |             |         |
| 1  | <b>General Data</b>               |                                        |                                           |       |       | Remarks     |         |
| 2  | Application                       | Filtration of spray liquids (solution) |                                           |       |       |             | a       |
| 3  | Quantity                          | Operation                              | units                                     | 1     |       |             | a       |
| 4  |                                   | Stand-By                               | units                                     | 1     |       |             | a       |
| 5  | Operation Mode                    |                                        | continuous operation                      |       |       |             | a       |
| 6  | Operation Time                    |                                        | 24 h day / 7 days per week / 8000 Bh/year |       |       |             | a       |
| 7  | <b>Angaben für Druckgeräte</b>    |                                        |                                           |       |       |             |         |
| 8  | applicable regulations            |                                        | PED2014/68/EU, AD-2000                    |       |       |             | a       |
| 9  | Fluid group according to PED      |                                        | 1                                         |       |       |             | a       |
| 10 | state of aggregation              |                                        | liquid                                    |       |       |             | a       |
| 11 | category                          |                                        | (*)                                       |       |       |             | a       |
| 12 | module                            |                                        | (*)                                       |       |       |             | a       |
| 13 | <b>Mechanical Design Data</b>     |                                        |                                           |       |       | Remarks     |         |
| 14 | Min./max. allowed Pressure        | PS                                     | bar(g)                                    | 6     |       |             | a       |
| 15 | Min./max. allowed temperature     | TS <sub>min/max</sub>                  | °C                                        | 0 100 |       |             | a       |
| 16 | Test Pressure                     | bar(g)                                 |                                           | (*)   |       |             | a       |
| 17 | <b>Installation Conditions</b>    |                                        |                                           |       |       | Remarks     |         |
| 18 | Installation Location             |                                        | Inside the production building            |       |       |             | a       |
| 19 | Ambient Temperature               |                                        | °C 5 ... 40                               |       |       |             | a       |
| 20 | Hygienic Zone/Room Classification |                                        | (n.a.)                                    |       |       |             | a       |
| 21 | Max. Sound Pressure Level         | dB (A)                                 |                                           | <85   |       | 1m Distance | a       |
| 22 | Horizontal/Vertical Orientation   |                                        | vertical                                  |       |       |             | a       |
| 23 | Ex Zone inside                    |                                        | 1                                         |       |       |             | a       |
| 24 | Ex Zone outside                   |                                        | 22/2                                      |       |       |             | a       |
| 25 | Seismic Zone                      |                                        | n.a.                                      |       |       |             | a       |
| 26 | <b>Load Definitions</b>           |                                        |                                           |       |       |             |         |
| 27 | Wind Load                         | Y/N                                    | n.a.                                      |       |       |             | a       |
| 28 | Pressure Load Cycle               | 1/a                                    | n.a.                                      |       |       |             | a       |
| 29 | Temperature Load Cycle            | 1/a                                    | n.a.                                      |       |       |             | a       |
| 30 | Life Cycle                        | a                                      | n.a.                                      |       |       |             | a       |
| 31 | <b>Process Data</b>               |                                        | min                                       | norm  | max   | design      | Remarks |
| 32 | Medium                            |                                        | spraying liquid                           |       |       |             | a       |
| 33 | Fluid code                        |                                        | LS                                        |       |       |             | a       |
| 34 | mass flow rate                    | kg/h                                   | 20000                                     | 25000 | 31000 | 31000       | b       |
| 35 | volume flow rate                  | m³/h                                   | 19,24                                     | 24,28 | 30,4  | 30,4        | b       |
| 36 | Operating Temperature             | °C                                     | 20                                        | 40    | 50    | 50          | a       |
| 37 | Pressure inlet                    | bar(g)                                 | 1                                         | 4     | 5,5   | 6           | a       |
| 38 | Pressure outlet                   | bar(g)                                 | (*)                                       | (*)   | (*)   |             | a       |

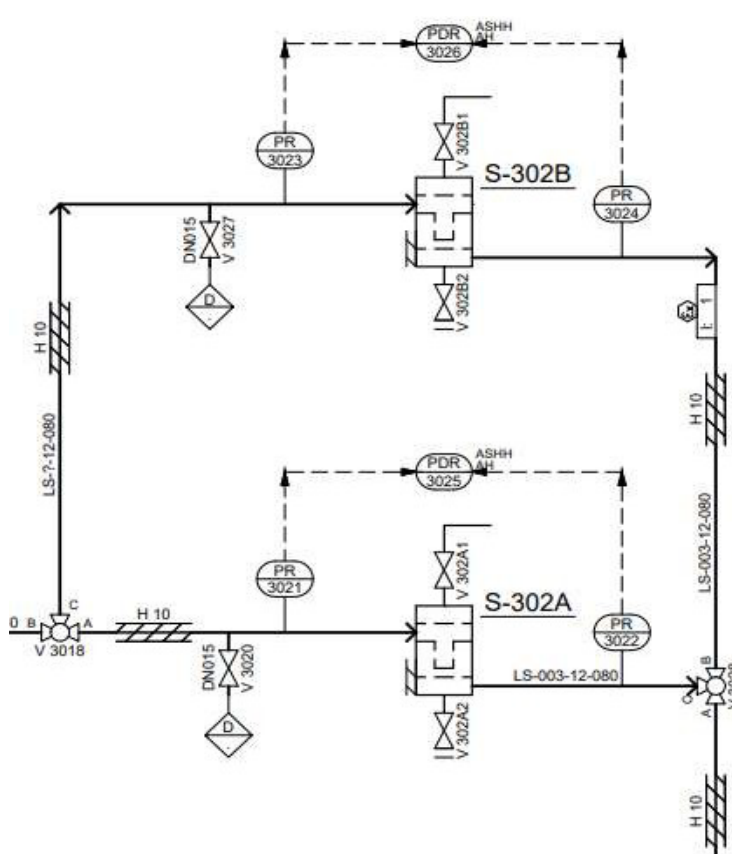
specification filter spraying liquid S-302

| #  | Name                                      | filter spraying liquid |                          |      |      | E                                 | Iss. |
|----|-------------------------------------------|------------------------|--------------------------|------|------|-----------------------------------|------|
|    | TAG                                       | S-302A/B               |                          |      |      |                                   |      |
| 39 | Chemical and Physical Properties of fluid |                        |                          |      |      | Remarks                           |      |
| 40 | Description medium                        |                        | spraying liquid/solution |      |      |                                   | a    |
| 41 | density                                   | kg/m³                  | 1020                     | 1030 | 1040 |                                   | a    |
| 42 | Composition gas                           |                        | min                      | norm | max  |                                   | a    |
| 43 | n-Butanol, C4H10O                         | Mass-%                 | 33                       | 33,6 | 37   |                                   | a    |
| 44 | Carbon disulphide, CS2                    | Mass-%                 | 0,01                     | 0,1  | 0,1  |                                   | a    |
| 45 | water, H2O                                | Mass-%                 | 25                       | 26   | 27   |                                   | a    |
| 46 | Viscosity (20°C)                          | mPas                   | 4                        | 6    | 10   |                                   | a    |
| 47 | Solid content                             | %                      | 35                       | 41   | 42   |                                   | a    |
| 48 | Particle size of insoluble substances     | mm                     | <0,01                    | 0,1  | 5    | single particles                  | a    |
| 49 | pH-Value                                  |                        | 7                        | 10   | 12   |                                   | a    |
| 50 | Chemical and Physical Properties of fluid |                        |                          |      |      | Remarks                           |      |
| 51 | Crystallize                               | Y/N                    | Y                        |      |      |                                   | a    |
| 52 | Abrasive                                  | Y/N                    | Y                        |      |      |                                   | a    |
| 53 | Toxic                                     | Y/N                    | Y                        |      |      |                                   | a    |
| 54 | Thixotropic                               | Y/N                    | N                        |      |      |                                   | a    |
| 55 | Sediment forming                          | Y/N                    | Y                        |      |      |                                   | a    |
| 56 | Corrosive                                 | Y/N                    | Y                        |      |      |                                   | a    |
| 57 | Sticking                                  | Y/N                    | N                        |      |      |                                   | a    |
| 58 | Paste                                     | Y/N                    | N                        |      |      |                                   | a    |
| 59 | Construction details filter               |                        |                          |      |      |                                   |      |
| 60 | type of filter                            |                        | basket strainer filter   |      |      | Double filter manually switchable | a    |
| 61 | filtration grade                          | µm                     | 500                      |      |      |                                   | a    |
| 62 | type of filter element                    |                        | (*)                      |      |      | designed as a basket sieve        | a    |
| 63 | number of filter elements                 | no.                    | (*)                      |      |      |                                   | a    |
| 64 | Free Filter Area                          | cm²                    | (*)                      |      |      |                                   | a    |
| 65 | type of housing                           |                        | (*)                      |      |      |                                   | a    |
| 66 | housing volume                            | dm³                    | (*)                      |      |      |                                   | a    |
| 67 | housing emptying                          | Y/N                    | Y                        |      |      | manually completely drainable     | a    |
| 68 | Cleaning/Sanitisation/Sterilisation       |                        |                          |      |      | Remarks                           |      |
| 69 | Cleaning Media Product Side               |                        | Water Cleaning           |      |      |                                   | a    |
| 70 | Cleaning Temperatur Product Side          | °C                     | <100                     |      |      |                                   | a    |
| 71 | Sanitisation/Sterilisation Medium         |                        | (n.a.)                   |      |      |                                   | a    |
| 72 | Sanitisation Temperature                  | °C                     | (n.a.)                   |      |      |                                   | a    |
| 73 | Cleaning outside                          |                        | Dry Cleaning             |      |      |                                   | a    |
| 74 | Weights and Dimensions                    |                        |                          |      |      | Remarks                           |      |
| 75 | Total Length                              | mm                     | (*)                      |      |      |                                   | a    |
| 76 | Total Width                               | mm                     | (*)                      |      |      |                                   | a    |
| 77 | Total Height                              | mm                     | (*)                      |      |      |                                   | a    |
| 78 | Total Weight                              | kg                     | (*)                      |      |      |                                   | a    |
| 79 | Heaviest Component                        | kg                     | (*)                      |      |      |                                   | a    |

specification filter spraying liquid S-302

| #   | Name                                               |                        | filter spraying liquid |                           |               | E                                            | Iss.                                          |   |
|-----|----------------------------------------------------|------------------------|------------------------|---------------------------|---------------|----------------------------------------------|-----------------------------------------------|---|
|     | TAG                                                |                        | S-302A/B               |                           |               |                                              |                                               |   |
| 80  | Materials and Surface Treatments, Coatings         |                        |                        |                           |               | Remarks                                      |                                               |   |
| 81  | Metal Parts with Product Contact                   |                        |                        | AISI 316L or higher grade |               |                                              | a                                             |   |
| 82  | Filter Modules                                     |                        |                        | (*)                       |               |                                              | a                                             |   |
| 83  | Metal Surface                                      |                        |                        | (*)                       |               |                                              | a                                             |   |
| 84  | External Surface                                   |                        |                        | (*)                       |               |                                              | a                                             |   |
| 85  | Welding Seams with Product Contact                 |                        |                        | (*)                       |               |                                              | a                                             |   |
| 86  | External Welding Seams                             |                        |                        | (*)                       |               |                                              | a                                             |   |
| 87  | Seals/Gaskets with Product Contact                 |                        |                        | EPDM / PTFE               |               |                                              | a                                             |   |
| 88  | Metal Parts without Product Contact                |                        |                        | (*)                       |               |                                              | a                                             |   |
| 89  | Coating System of non SS Parts                     |                        |                        | (*)                       |               |                                              | a                                             |   |
| 90  | Material of Supports                               |                        |                        | (*)                       |               |                                              | a                                             |   |
| 91  | Material of Insulation                             |                        |                        | (n.a.)                    |               |                                              | a                                             |   |
| 92  | Accessories                                        |                        |                        |                           |               | Remarks                                      |                                               |   |
| 93  | Name Plate                                         |                        | Y/N                    | Y                         |               |                                              | a                                             |   |
| 94  | Switching valves                                   |                        | Y/N                    | Y                         |               |                                              | a                                             |   |
| 95  | Easy removable for cleaning                        |                        | Y/N                    | Y                         |               |                                              | a                                             |   |
| 96  | Heating chamber housing                            |                        | Y/N                    | N                         |               | Hot water trace heating on site by purchaser | a                                             |   |
| 96  | Drain                                              |                        | Y/N                    | Y                         |               |                                              | a                                             |   |
| 97  | Aspiration                                         |                        | Y/N                    | Y                         |               |                                              | a                                             |   |
| 98  | Inspection opening                                 |                        | Y/N                    | Y                         |               | Lid demountable with quick release           | a                                             |   |
| 99  | Transport, Lifting Lugs                            |                        | Y/N                    | (*)                       |               |                                              | a                                             |   |
| 100 | Anchor Bolts                                       |                        | Y/N                    | N                         |               |                                              | a                                             |   |
| 101 | Insulation                                         |                        | Y/N                    | N                         |               |                                              | a                                             |   |
| 102 | Insulation Preparation                             |                        | Y/N                    | N                         |               |                                              | a                                             |   |
| 103 | Earthing Lug                                       |                        | Y/N                    | Y                         |               |                                              | a                                             |   |
| 104 | Explosionsschutzart (elektrisch)                   |                        |                        |                           |               | Remarks                                      |                                               |   |
| 105 | Type of ignition protection other electrical parts |                        |                        | (*)                       |               | acc. DIN EN 60079-0...31                     | a                                             |   |
| 106 | Electrical Accessories                             |                        |                        |                           |               | Remarks                                      |                                               |   |
| 107 | Measuring Devices                                  |                        |                        | Y/N                       | Y             |                                              | optional                                      | a |
| 108 | Auflistung Messgeräte und Signalaustausch          |                        |                        |                           |               |                                              |                                               |   |
| 109 | Pos.                                               | Bezeichnung            |                        | Type                      | TAG ()        | Signalart                                    | Bemerkungen                                   |   |
| 110 | 1                                                  | filter inside pressure |                        | gauge                     | PI 4651       | -                                            | with diaphragm pressure separators            | a |
| 111 | 2                                                  | filter inside pressure |                        | gauge                     | PI 4652       | -                                            | with diaphragm pressure separators            | a |
| 112 | Nozzles List                                       |                        |                        |                           |               |                                              |                                               |   |
| 113 | Pos.                                               | DN                     | PN                     | Verbindungsart            | Norm          | Sealing Face                                 | Service                                       |   |
| 114 | N1                                                 | 80                     | 16                     | flange                    | DIN EN 1092-1 | B1                                           | filter inlet                                  | a |
| 115 | N2                                                 | 80                     | 16                     | flange                    | DIN EN 1092-1 | B1                                           | filter outlet                                 | a |
| 116 | N3                                                 | G1/2"                  | 40                     | socket                    | EN 10241      | (*)                                          | drain filter 1                                | a |
| 117 | N4                                                 | G1/2"                  | 40                     | socket                    | EN 10241      | (*)                                          | drain filter 2                                | a |
| 118 | N5                                                 | G1/2"                  | 40                     | socket                    | EN 10241      | (*)                                          | vent filter 1                                 | a |
| 119 | N6                                                 | G1/2"                  | 40                     | socket                    | EN 10241      | (*)                                          | vent filter 2                                 | a |
| 120 | P1                                                 | G1/2"                  | 40                     | socket                    | EN 10241      | (*)                                          | pressure gauge filter 1<br>(closed with plug) | a |
| 121 | P2                                                 | G1/2"                  | 40                     | socket                    | EN 10241      | (*)                                          | pressure gauge filter 2<br>(closed with plug) | a |
| 122 |                                                    |                        |                        |                           |               |                                              |                                               |   |

specification filter spraying liquid S-302

|     |                                                                                     |                                                                                                                                                                                                                               |   |              |      |
|-----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------|------|
|     | Name                                                                                | filter spraying liquid                                                                                                                                                                                                        |   | E            |      |
| #   | TAG                                                                                 | S-302A/B                                                                                                                                                                                                                      |   |              | Iss. |
| 123 | Sketch, PID-Section                                                                 |                                                                                                                                                                                                                               |   |              |      |
| 124 |  |                                                                                                                                                                                                                               |   |              |      |
| 125 | Weitere Anforderungen / Erforderliche weitere Angaben                               |                                                                                                                                                                                                                               |   | Bemerkungen  |      |
| 126 | TA-Luft-Ausführung                                                                  | Y/N                                                                                                                                                                                                                           | N | a            |      |
| 127 |                                                                                     |                                                                                                                                                                                                                               |   |              |      |
| 128 |                                                                                     |                                                                                                                                                                                                                               |   |              |      |
| 129 |                                                                                     |                                                                                                                                                                                                                               |   |              |      |
| 130 | Additional Requirements                                                             |                                                                                                                                                                                                                               |   | Dok.-Nr.     |      |
| 131 | 1x                                                                                  | General design conditions                                                                                                                                                                                                     |   | 2115_GDCB001 | a    |
| 132 | 1x                                                                                  | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |   | 2115_IEQS001 | a    |
| 133 | 1x                                                                                  | Safety characteristics                                                                                                                                                                                                        |   | 2115_SSDS001 | a    |
| 134 |                                                                                     |                                                                                                                                                                                                                               |   |              |      |
| 135 |                                                                                     |                                                                                                                                                                                                                               |   |              |      |
| 136 | Remarks for Originator                                                              |                                                                                                                                                                                                                               |   |              |      |
| 137 | SIGNAL IN                                                                           | Signal goes to                                                                                                                                                                                                                |   |              | a    |
| 138 | SIGNAL OUT                                                                          | Signal comes from                                                                                                                                                                                                             |   |              | a    |
| 139 | (n.a.)                                                                              | not applicable                                                                                                                                                                                                                |   |              | a    |
| 140 | (n.e.)                                                                              | not required                                                                                                                                                                                                                  |   |              | a    |
| 141 | (n.b.)                                                                              | not known                                                                                                                                                                                                                     |   |              | a    |
| 142 | (*)                                                                                 | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |   |              | a    |

## MEQS 008

### specification heat exchanger E-332, E-342

|              |             |                   |                |                 |                         |
|--------------|-------------|-------------------|----------------|-----------------|-------------------------|
|              |             |                   |                |                 |                         |
| d            | 17.11.2022  | ys                |                |                 | revised steam condition |
| c            | 10.11.2022  | ys                |                |                 | revised design data     |
| b            | 02.11.2022  | ys                | schz           | schz            | FDL version h           |
| a            | 03.06.2022  | ys                | kp             | schz            | first issue             |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b>          |

specification heat exchanger E-332, E-342

|         | Name                                          | heat exchanger process gas heating                         |         |                                                                       |       | Iss.                                                         |        |         |
|---------|-----------------------------------------------|------------------------------------------------------------|---------|-----------------------------------------------------------------------|-------|--------------------------------------------------------------|--------|---------|
| No      | TAG                                           | E-332/E-342                                                |         |                                                                       |       |                                                              |        |         |
| Remarks |                                               |                                                            |         |                                                                       |       |                                                              |        |         |
| 1       | General Data                                  |                                                            |         |                                                                       |       |                                                              |        |         |
| 2       | Application                                   | steam heater downstream of water pre heating heatexchanger |         |                                                                       |       |                                                              | a      |         |
| 3       |                                               |                                                            |         |                                                                       |       |                                                              |        |         |
| 4       | Quantity                                      | Operation                                                  | units   | 2 (1 x E-332 / 1 x E-342)                                             |       |                                                              | a      |         |
| 5       |                                               | Stand-By                                                   | units   | 0                                                                     |       |                                                              | a      |         |
| 6       | Operation Mode                                |                                                            |         | 60 min/h (continuous)                                                 |       |                                                              | a      |         |
| 7       | Operation Time                                |                                                            |         | 24 h day / 7 days a week / 8000 h/year                                |       |                                                              | a      |         |
| 8       | Applicable Standards and Guidelines           |                                                            |         |                                                                       |       |                                                              |        |         |
| 9       | EC Machinery Directive                        |                                                            |         | 2006/42/EG                                                            |       |                                                              | a      |         |
| 10      | ATEX Directive                                |                                                            |         | 2014/34/EG                                                            |       |                                                              | a      |         |
| 11      |                                               |                                                            |         |                                                                       |       |                                                              | a      |         |
| 12      | other certificates                            |                                                            |         | CE certification, material certification according DIN EN 10204 - 2.2 |       |                                                              | a      |         |
| 13      | Pressure Equipment Data                       |                                                            |         |                                                                       |       |                                                              |        |         |
| 14      | Guideline                                     |                                                            |         | (n.a.)                                                                |       |                                                              | a      |         |
| 15      | Fluid Category                                |                                                            |         | (n.a.)                                                                |       |                                                              | a      |         |
| 16      | Aggregat State                                |                                                            |         | (n.a.)                                                                |       |                                                              | a      |         |
| 17      | Categorization                                |                                                            |         | (n.a.)                                                                |       |                                                              | a      |         |
| 18      | Module                                        |                                                            |         | (n.a.)                                                                |       |                                                              | a      |         |
| 19      | Mechanical Design Data                        |                                                            |         |                                                                       |       |                                                              |        |         |
| 20      | Max. Allowed Pressure (PS)                    |                                                            | bar(g)  | +/- 0,23 // 10                                                        |       | process gas // steam                                         | a      |         |
| 21      | Min./Max. allowed Temperature (TS)            |                                                            | °C      | 5 / 150 // 5 / 185                                                    |       | process gas // steam                                         | a      |         |
| 22      | Test Pressure                                 |                                                            | bar(g)  | -                                                                     |       |                                                              | a      |         |
| 23      | Installation Conditions                       |                                                            |         |                                                                       |       |                                                              |        |         |
| 24      | Installation Location                         |                                                            |         | Inside the production building                                        |       |                                                              | a      |         |
| 25      | Ambient Temperature                           |                                                            | °C      | 5 ... 40                                                              |       |                                                              | a      |         |
| 26      | Heigt above sea level                         |                                                            | m       | 80 m above sea level                                                  |       |                                                              | a      |         |
| 27      | Hygienic Zone/Room Classification             |                                                            |         | (n.a.)                                                                |       |                                                              | a      |         |
| 28      | Seismic Zone                                  |                                                            |         | (n.a.)                                                                |       |                                                              | a      |         |
| 29      | Earthquake Acceleration in the centre of mass |                                                            |         | m/s²                                                                  |       | to be considered (substitute acceleration in center of mass) | a      |         |
| 30      | Max. Sound Pressure Level                     |                                                            | dB (A)  | 85                                                                    |       | 1m Distance                                                  | a      |         |
| 31      | Process Data                                  |                                                            |         | min                                                                   | norm  | max                                                          | design | Remarks |
| 32      | Medium                                        |                                                            |         | process gas N2 with additives                                         |       |                                                              |        | a       |
| 33      | Filtertype Stage #1                           |                                                            |         | (n.a.)                                                                |       |                                                              |        | a       |
| 34      | Filtertype Stage #2                           |                                                            |         | (n.a.)                                                                |       |                                                              |        | a       |
| 35      | Filtertype Stage #3                           |                                                            |         | (n.a.)                                                                |       |                                                              |        | a       |
| 36      | Mass flow Inlet                               |                                                            | kg/h    | 25000                                                                 | 43950 | 51000                                                        | 51000  | b       |
| 37      | Volume flow Inlet                             |                                                            | m³/h    | 22000                                                                 | 39600 | 51000                                                        |        | a       |
| 38      | Temperature Inlet                             |                                                            | °C      | 5                                                                     | 27    | 55                                                           | 27     | a       |
| 39      | Temperature Outlet                            |                                                            | °C      | 5                                                                     | 115   | 130                                                          | 130    | c       |
| 40      | Pressure Inlet                                |                                                            | mbar(g) | -50                                                                   | 88    | 170                                                          |        | a       |
| 41      | Pressure Outlet                               |                                                            | mbar(g) | (*)                                                                   | (*)   | (*)                                                          |        | a       |
| 42      | Max. Pressure drop                            |                                                            | mbar    |                                                                       | 18    | 25                                                           |        | b       |

specification heat exchanger E-332, E-342

| No | Name                                            | heat exchanger processgas heating |                                   |       |      | Remarks | Iss.    |
|----|-------------------------------------------------|-----------------------------------|-----------------------------------|-------|------|---------|---------|
|    | TAG                                             | E-332/E-342                       |                                   |       |      |         |         |
| 43 | Chemical and Physical Properties of process gas |                                   |                                   |       |      | Remarks |         |
| 44 | Description medium                              |                                   | process gas N2 with additives     |       |      |         | a       |
| 45 | Composition                                     |                                   | min                               | norm  | max  |         | a       |
| 46 | Oxygen O2                                       | Mass-%                            | 0                                 | 2     | 3,5  |         | a       |
| 47 | n-Butanol, C4H10O                               | Mass-%                            | 0                                 | 0,45  | 2,7  |         | a       |
| 48 | Carbon disulphide, CS2                          | Mass-%                            | 0                                 | 0,001 | 1    |         | a       |
| 49 | water, H2O                                      | Mass-%                            | 0                                 | 0,34  | 2,7  |         | a       |
| 50 | Characteristics dust                            |                                   | water soluble, hygroscopic, toxic |       |      |         | a       |
| 51 | Dust Content                                    | mg/Nm³                            | -                                 | 0,1   | -    |         | a       |
| 52 | Particle size                                   | µm                                | -                                 | 1     | 2    |         | a       |
| 53 | Particle Structure                              |                                   | -                                 | -     | -    |         | a       |
| 54 | pH Value (min./max.)                            |                                   | -                                 | -     | -    |         | a       |
| 55 | Density                                         | kg/m³                             | 1                                 | 1,11  | 1,18 |         | a       |
| 56 | Humidity                                        | g/kg                              | 0                                 | 8,0   | 57,1 |         | b       |
| 57 | Heat media                                      |                                   | min                               | norm  | max  | design  | Remarks |
| 58 | Heat transfer medium                            |                                   | steam                             |       |      |         | a       |
| 59 | Fluid code                                      |                                   | US                                |       |      |         | a       |
| 60 | Mass flow                                       | kg/h                              | (*)                               | (*)   | (*)  | (*)     | b       |
| 61 | Temperature Inlet                               | °C                                |                                   | 152   | 156  | 185     | d       |
| 62 | Operating pressure                              | bar(g)                            | 3,45                              | 4     | 4,5  | 6       | d       |
| 63 | Max. allowable pressure drop                    | mbar                              | (*)                               | (*)   | (*)  |         | a       |
| 64 | Density                                         | kg/m³                             | 2,35                              | 2,4   | 2,45 |         | a       |
| 65 | Thermal Resistance Parameter                    | W/m²/K                            |                                   |       |      |         | a       |
| 66 | Fouling Factor                                  | m²*K/W                            |                                   |       |      |         | a       |
| 67 | Cleaning/Sanitisation/Sterilisation             |                                   |                                   |       |      |         |         |
| 68 | Cleaning Media Product Side                     |                                   | Dry cleaning                      |       |      |         | a       |
| 69 | Cleaning Temperatur Product Side                | °C                                | (n.a.)                            |       |      |         | a       |
| 70 | Sanitisation/Sterilisation Medium               |                                   | (n.a.)                            |       |      |         | a       |
| 71 | Sanitisation Temperature                        | °C                                | (n.a.)                            |       |      |         | a       |
| 72 | Cleaning outside                                |                                   | Dry cleaning                      |       |      |         | a       |

specification heat exchanger E-332, E-342

| No  | Name                                                     | heat exchanger processgas heating |                                      | Remarks                                              | Iss. |
|-----|----------------------------------------------------------|-----------------------------------|--------------------------------------|------------------------------------------------------|------|
|     | TAG                                                      | E-332/E-342                       |                                      |                                                      |      |
| 73  | Design, Dimensions and Weights                           |                                   |                                      |                                                      |      |
| 74  | Total Length                                             | mm                                | (*)                                  |                                                      | a    |
| 75  | Total Width                                              | mm                                | (*)                                  |                                                      | a    |
| 76  | Total Height                                             | mm                                | (*)                                  |                                                      | a    |
| 77  | Empty weight                                             | kg                                | (*)                                  |                                                      | a    |
| 78  | Emergency weight                                         | kg                                | (*)                                  |                                                      | a    |
| 79  | Insulation Type                                          | Y/N                               | Y                                    |                                                      | a    |
| 80  | Insulation Thickness                                     | mm                                | (*)                                  |                                                      | a    |
| 81  | Materials and Surface Treatments, Coatings, Certificates |                                   |                                      |                                                      |      |
| 82  | Metal Parts with Product Contact                         |                                   | 1.4571                               | pipes                                                | a    |
| 83  | Surface Treatment                                        |                                   | (*)                                  |                                                      | a    |
| 84  | External Surface                                         |                                   | (*)                                  |                                                      | a    |
| 85  | Weld. Seams with Product Contact                         |                                   | (*)                                  |                                                      | a    |
| 86  | External Welding Seams                                   |                                   | (*)                                  |                                                      | a    |
| 87  | Seals/Gaskets with Product Contact                       |                                   | suitable for temperature and Butanol |                                                      | a    |
| 88  | housing                                                  |                                   | 1.4301                               |                                                      | a    |
| 89  | Coating System of non SS Parts                           |                                   | (*)                                  |                                                      | a    |
| 90  | Material of Supports                                     |                                   | (*)                                  |                                                      | a    |
| 91  | Material of Insulation                                   |                                   | (*)                                  |                                                      | a    |
| 92  | Material steel frame                                     |                                   | (*)                                  | alternatively: CS galvanized                         | a    |
| 93  | Explosion Protection                                     |                                   |                                      |                                                      |      |
| 94  | Ex Zone inside                                           |                                   | 22 / 2                               |                                                      | a    |
| 95  | Ex Zone outside                                          |                                   | -                                    |                                                      | a    |
| 96  | Protection System                                        |                                   | N2- inertisation                     |                                                      | a    |
| 97  | General Accessories                                      |                                   |                                      |                                                      |      |
| 98  | Name Plate                                               | Y/N                               | Y                                    |                                                      | a    |
| 99  | frame for housing                                        | Y/N                               | Y                                    | with collums of 500 mm space between floor and frame | a    |
| 100 | Lifting Lugs                                             | Y/N                               | Y                                    |                                                      | a    |
| 101 | filter                                                   | Y/N                               | N                                    |                                                      | a    |
| 102 | compensator                                              | Y/N                               | Y                                    | at steam condensate outlet                           | a    |
| 103 | Earthing Lug                                             | Y/N                               | Y                                    |                                                      | a    |
| 104 | Inspection opening                                       | Y/N                               | Y                                    |                                                      | a    |
| 105 | Drain                                                    | Y/N                               | Y                                    | closed with a blind cap                              | a    |
| 106 | Local pressure differential gauge                        | Y/N                               | N                                    |                                                      | a    |
| 107 | Pressure Differential Transmitter                        | Y/N                               | N                                    |                                                      | a    |
| 108 | Socket for instrumentation                               | Y/N                               | N                                    |                                                      | a    |
| 109 | Bypass flap                                              | Y/N                               | N                                    |                                                      | a    |
| 110 | Silencer                                                 | Y/N                               | N                                    |                                                      | a    |
| 111 | Insulation                                               | Y/N                               | N                                    | prepared for insulation                              | a    |
| 112 | multi-leaf dampers                                       | Y/N                               | N                                    |                                                      | a    |
| 113 | Electrical Accessories                                   |                                   |                                      |                                                      |      |
| 114 | Measuring Devices                                        | Y/N                               | N                                    | If YES specify manufacturer and type                 | a    |
| 115 | Explosion Protection                                     | Y/N                               | N                                    | If YES specify type and Ex-Certification             | a    |



## MEQS 006

### specification heat exchanger E-337, E-347

|              |             |                   |                |                 |                |
|--------------|-------------|-------------------|----------------|-----------------|----------------|
|              |             |                   |                |                 |                |
| b            | 04.11.2022  | ys                | schz           | schz            | FDL version h  |
| a            | 03.06.2022  | ys                | kp             | schz            | first issue    |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b> |

specification heat exchanger E-337, E-347

|    | Name                                          | heat exchanger / condensator                                                                     |         |                                                   |                      | Remarks              | Iss.                                                            |                                       |
|----|-----------------------------------------------|--------------------------------------------------------------------------------------------------|---------|---------------------------------------------------|----------------------|----------------------|-----------------------------------------------------------------|---------------------------------------|
| No | TAG                                           | E-337/E-347                                                                                      |         |                                                   |                      |                      |                                                                 |                                       |
| 1  | General Data                                  |                                                                                                  |         |                                                   |                      |                      |                                                                 |                                       |
| 2  | Application                                   | heat exchanger for cooling and condensing process gas downstream of a pre cooling heat exchanger |         |                                                   |                      |                      | a                                                               |                                       |
| 3  |                                               |                                                                                                  |         |                                                   |                      |                      | a                                                               |                                       |
| 4  | Quantity                                      | Operation                                                                                        | units   | 2 (1 x E-337 / 1 x E-347)                         |                      |                      | a                                                               |                                       |
| 5  |                                               | Stand-By                                                                                         | units   | 0                                                 |                      |                      | a                                                               |                                       |
| 6  | Operation Mode                                |                                                                                                  |         | 60 min/h (continuous)                             |                      |                      |                                                                 | a                                     |
| 7  | Operation Time                                |                                                                                                  |         | 24 h day / 7 days a week / 8000 h/ year           |                      |                      |                                                                 | a                                     |
| 8  | Applicable Standards and Guidelines           |                                                                                                  |         |                                                   |                      |                      |                                                                 |                                       |
| 9  | EC Machinery Directive                        |                                                                                                  |         | 2006/42/EG                                        |                      |                      |                                                                 | a                                     |
| 10 | ATEX Directive                                |                                                                                                  |         | 2014/34/EG                                        |                      |                      |                                                                 | a                                     |
| 11 |                                               |                                                                                                  |         |                                                   |                      |                      |                                                                 | a                                     |
| 12 | other certificates                            |                                                                                                  |         | CE Zertifikat, Zertifikat nach DIN EN 10204 - 2.2 |                      |                      |                                                                 | a                                     |
| 13 | Pressure Equipment Data                       |                                                                                                  |         |                                                   |                      |                      |                                                                 |                                       |
| 14 | Guideline                                     |                                                                                                  |         | (n.a.)                                            |                      |                      |                                                                 | a                                     |
| 15 | Fluid Category                                |                                                                                                  |         | (n.a.)                                            |                      |                      |                                                                 | a                                     |
| 16 | Aggregat State                                |                                                                                                  |         | (n.a.)                                            |                      |                      |                                                                 | a                                     |
| 17 | Categorization                                |                                                                                                  |         | (n.a.)                                            |                      |                      |                                                                 | a                                     |
| 18 | Module                                        |                                                                                                  |         | (n.a.)                                            |                      |                      |                                                                 | a                                     |
| 19 | Mechanical Design Data                        |                                                                                                  |         |                                                   |                      |                      |                                                                 |                                       |
| 20 | Max. Allowed Pressure (PS)                    |                                                                                                  | bar(g)  | +/- 0,23 // 10                                    |                      | process gas // water |                                                                 | a                                     |
| 21 | Min./Max. allowed Temperature (TS)            |                                                                                                  | °C      | 5 / 150 // -10 / 100                              |                      | process gas // water |                                                                 | a                                     |
| 22 | Test Pressure                                 |                                                                                                  | bar(g)  | -                                                 |                      |                      |                                                                 | a                                     |
| 23 | Installation Conditions                       |                                                                                                  |         |                                                   |                      |                      |                                                                 |                                       |
| 24 | Installation Location                         |                                                                                                  |         | Inside the production building                    |                      |                      |                                                                 | a                                     |
| 25 | Ambient Temperature                           |                                                                                                  |         | °C                                                | 5 ... 40             |                      |                                                                 | a                                     |
| 26 | Heigt above sea level                         |                                                                                                  |         | m                                                 | 80 m above sea level |                      |                                                                 | a                                     |
| 27 | Hygienic Zone/Room Classification             |                                                                                                  |         | (n.a.)                                            |                      |                      |                                                                 | a                                     |
| 28 | Seismic Zone                                  |                                                                                                  |         | (n.a.)                                            |                      |                      |                                                                 | a                                     |
| 29 | Earthquake Accelaration in the centre of mass |                                                                                                  |         | m/s²                                              |                      |                      | to be considered<br>(substitute acceleration in center of mass) | a                                     |
| 30 | Max. Sound Pressure Level                     |                                                                                                  | dB (A)  | (n.a.)                                            |                      | 1m Distance          |                                                                 | a                                     |
| 31 | Process Data                                  |                                                                                                  |         | min                                               | norm                 | max                  | design                                                          | Remarks                               |
| 32 | Medium                                        |                                                                                                  |         | process gas N2 with additives                     |                      |                      |                                                                 | a                                     |
| 33 | Mass flow Inlet                               |                                                                                                  | kg/h    | 28000                                             | 51334                | 54000                | 55500                                                           | per heat axchanger                    |
| 34 | Volume flow Inlet                             |                                                                                                  | m³/h    | 22000                                             | 51030                | 58696                |                                                                 | a                                     |
| 35 | Temperature Inlet                             |                                                                                                  | °C      | 5                                                 | 28                   | 35                   | 35                                                              | heat reduction app 1100 kW            |
| 36 | Temperature Outlet                            |                                                                                                  | °C      | 5                                                 | 10                   | 15                   | 10                                                              | heat reduction app 1100 kW            |
| 37 | Pressure Inlet                                |                                                                                                  | mbar(g) | -170                                              | 11                   | 170                  |                                                                 | a                                     |
| 38 | Pressure Outlet                               |                                                                                                  | mbar(g) | (*)                                               | (*)                  | (*)                  |                                                                 | a                                     |
| 39 | Max. Pressure drop                            |                                                                                                  |         | mbar                                              |                      | 12                   | 20                                                              | a                                     |
| 40 | Mass flow condensat                           |                                                                                                  | kg/h    | 910,5                                             | 1821                 | 2150                 |                                                                 | total amount for 1 condensator St.1+2 |
| 41 | Volume flow condensat                         |                                                                                                  | m³/h    | 0,92                                              | 2                    | 2,7                  |                                                                 | total amount for 1 condensator St.1+2 |

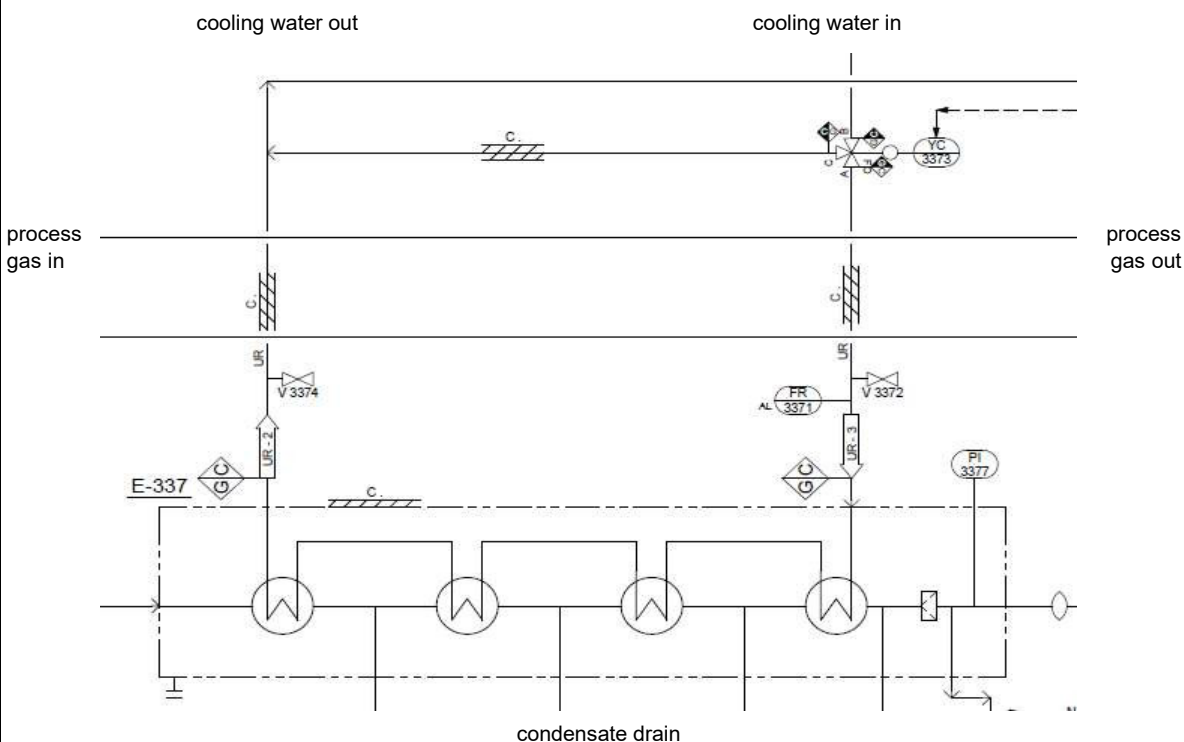
specification heat exchanger E-337, E-347

| No | Name                                            | heat exchanger / condensator |                                      |      |      | Remarks                    | Iss. |
|----|-------------------------------------------------|------------------------------|--------------------------------------|------|------|----------------------------|------|
|    | TAG                                             | E-337/E-347                  |                                      |      |      |                            |      |
| 42 | Chemical and Physical Properties of process gas |                              |                                      |      |      | Remarks                    |      |
| 43 | Description medium                              |                              | process gas N2 with additives        |      |      |                            | a    |
| 44 | Composition                                     |                              | min                                  | norm | max  |                            | a    |
| 45 | Oxygen O2                                       | Mass-%                       | 0                                    | 2    | 3,5  |                            | a    |
| 46 | n-Butanol, C4H10O                               | Mass-%                       | 0                                    | 2,02 | 2,7  |                            | a    |
| 47 | Carbon disulphide, CS2                          | Mass-%                       | 0                                    | 0,7  | 1    |                            | a    |
| 48 | water, H2O                                      | Mass-%                       | 0                                    | 2,5  | 3    |                            | a    |
| 49 | Characteristics                                 |                              |                                      |      |      |                            | a    |
| 50 | Dust Content                                    | mg/Nm³                       | 0                                    | 0,2  | 0,3  |                            | a    |
| 51 | Particle size                                   | µm                           | -                                    | 1    | 2    |                            | a    |
| 52 | Particle Structure                              |                              | -                                    | -    | -    |                            | a    |
| 53 | pH Value (min./max.)                            |                              | -                                    | -    | -    |                            | a    |
| 54 | Density                                         | kg/m³                        | 0,92                                 | 1,01 | 1,18 |                            | b    |
| 55 | Humidity                                        | g/kg                         | 0                                    | 47,3 | 60,4 | (water, butanol)           | a    |
| 56 | Cooling media                                   |                              | min                                  | norm | max  | design                     |      |
| 57 | Heat transfer medium                            |                              | solution of CaCl2                    |      |      | 35% of CaCl2, 0,512 W/m2/K | a    |
| 58 | Fluid code                                      |                              | UR                                   |      |      |                            | a    |
| 59 | Mass flow                                       | kg/h                         | (*)                                  | (*)  | (*)  | estimated 130.000 kg/h     | a    |
| 60 | Temperature Inlet                               | °C                           | -1                                   | 2    | 4    |                            | a    |
| 61 | Temperature Outlet                              | °C                           | (*)                                  | (*)  | (*)  |                            | a    |
| 62 | Operating Pressure                              | bar(g)                       | 3,5                                  | 4    | 5    | pressure drop: 1-1,5 bar   | a    |
| 63 | Density                                         | kg/m³                        | 1150                                 | 1250 | 1300 |                            | a    |
| 64 | Gylcol Content                                  | %                            |                                      | 35   |      |                            | a    |
| 65 | Fouling Factor                                  | m²*K/W                       | -                                    | 5000 | -    |                            | a    |
| 66 | Cleaning/Sanitisation/Sterilisation             |                              |                                      |      |      |                            |      |
| 67 | Cleaning Media Product Side                     |                              | manual wet cleaning                  |      |      |                            | a    |
| 68 | Cleaning Temperatur Product Side                | °C                           | (n.a.)                               |      |      |                            | a    |
| 69 | Sanitisation/Sterilisation Medium               |                              | (n.a.)                               |      |      |                            | a    |
| 70 | Sanitisation Temperature                        |                              | (n.a.)                               |      |      |                            | a    |
| 71 | Cleaning outside                                |                              | manual wet cleaning and dry cleaning |      |      |                            | a    |

specification heat exchanger E-337, E-347

| No  | Name                                                     | heat exchanger / condensator |                          | Remarks                                                          | Iss. |
|-----|----------------------------------------------------------|------------------------------|--------------------------|------------------------------------------------------------------|------|
|     | TAG                                                      | E-337/E-347                  |                          |                                                                  |      |
| 72  | Design, Dimensions and Weights                           |                              |                          |                                                                  |      |
| 73  | Total Length                                             | mm                           | (*)                      |                                                                  | a    |
| 74  | Total Width                                              | mm                           | (*)                      |                                                                  | a    |
| 75  | Total Height                                             | mm                           | (*)                      |                                                                  | a    |
| 76  | Empty weight                                             | kg                           | (*)                      |                                                                  | a    |
| 77  | Emergency weight                                         | kg                           | (*)                      |                                                                  | a    |
| 78  | Insulation Type                                          | Y/N                          | Y                        |                                                                  | a    |
| 79  | Insulation Thickness                                     | mm                           | (*)                      |                                                                  | a    |
| 80  | Materials and Surface Treatments, Coatings, Certificates |                              |                          |                                                                  |      |
| 81  | Metal Parts with Product Contact                         |                              | 1.4571                   |                                                                  | a    |
| 82  | Surface Treatment                                        |                              | (*)                      |                                                                  | a    |
| 83  | External Surface                                         |                              | (*)                      |                                                                  | a    |
| 84  | Weld. Seams with Product Contact                         |                              | (*)                      |                                                                  | a    |
| 85  | External Welding Seams                                   |                              | (*)                      |                                                                  | a    |
| 86  | Seals/Gaskets with Product Contact                       |                              | PTFE                     |                                                                  | a    |
| 87  | Metal Parts without Product Contact                      |                              | AISI 304 or higher grade |                                                                  | a    |
| 88  | Coating System of non SS Parts                           |                              | (*)                      |                                                                  | a    |
| 89  | Material of Supports                                     |                              | (*)                      |                                                                  | a    |
| 90  | Material of Insulation                                   |                              | (*)                      |                                                                  | a    |
| 91  | Material steel frame                                     |                              | (*)                      | alternatively: CS galvanized                                     | a    |
| 92  | Material Cooler                                          |                              | 1.4571                   |                                                                  | a    |
| 93  | Explosion Protection                                     |                              |                          |                                                                  |      |
| 94  | Ex Zone inside                                           |                              | 22 / 2                   |                                                                  | a    |
| 95  | Ex Zone outside                                          |                              | 22 / 1                   | zone 1 only in 2 m radius of openings                            | a    |
| 96  | Protection System                                        |                              | N2- Inertisierung        |                                                                  | a    |
| 97  | General Accessories                                      |                              |                          |                                                                  |      |
| 98  | Name Plate                                               | Y/N                          | Y                        |                                                                  | a    |
| 99  | frame for housing                                        | Y/N                          | Y                        | with support collums of app 500 mm space between frame and floor | a    |
| 100 | Lifting Lugs                                             | Y/N                          | Y                        |                                                                  | a    |
| 101 | filter                                                   | Y/N                          | N                        |                                                                  | a    |
| 102 | droplet Separator                                        | Y/N                          | Y                        |                                                                  | a    |
| 103 | Earthing Lug                                             | Y/N                          | Y                        |                                                                  | a    |
| 104 | Inspection opening                                       | Y/N                          | Y                        |                                                                  | a    |
| 105 | Drain                                                    | Y/N                          | Y                        |                                                                  | a    |
| 106 | Local pressure differential gauge                        | Y/N                          | N                        |                                                                  | a    |
| 107 | Pressure Differential Transmitter                        | Y/N                          | N                        |                                                                  | a    |
| 108 | Socket for instrumentation                               | Y/N                          | Y                        | connection for one pressure sensor                               | a    |
| 109 | Bypass flap                                              | Y/N                          | N                        |                                                                  | a    |
| 110 | Silencer                                                 | Y/N                          | N                        |                                                                  | a    |
| 111 | Insulation                                               | Y/N                          | N                        | preparation for insulation                                       | a    |
| 112 | Electrical Accessories                                   |                              |                          |                                                                  |      |
| 113 | Measuring Devices                                        | Y/N                          | N                        |                                                                  | a    |
| 114 | Explosion Protection                                     | Y/N                          | N                        |                                                                  | a    |

specification heat exchanger E-337, E-347

| No  | Name                                                                                           |                                                   | heat exchanger / condensator |                                       |                      |                                 | Remarks             | Iss. |   |
|-----|------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|---------------------------------------|----------------------|---------------------------------|---------------------|------|---|
|     | TAG                                                                                            |                                                   | E-337/E-347                  |                                       |                      |                                 |                     |      |   |
| 115 | Nozzles List                                                                                   |                                                   |                              |                                       |                      |                                 |                     |      |   |
| 116 | Pos.                                                                                           | DN (")                                            | PN                           | Standard                              | Nozzle Type          | Sealing Face                    | Description         |      |   |
| 117 | N1                                                                                             | 2136x2930                                         |                              | welding connection with E-336 / E-346 | Nozzle for welding   |                                 | process gas in      | a    |   |
| 118 | N2                                                                                             | 1220                                              |                              |                                       | Nozzle for welding   |                                 | process gas out     | a    |   |
| 119 | N3-6                                                                                           | 150                                               | 16                           |                                       | DIN EN 1092-1 Typ 11 | B1                              | cooling water in    | a    |   |
| 120 | N7-10                                                                                          | 150                                               | 16                           |                                       | DIN EN 1092-1 Typ 11 | B1                              | cooling water out   | a    |   |
| 121 | N11-15                                                                                         | 50                                                | 16                           |                                       | DIN EN 1092-1 Typ 11 | B1                              | condensate drain    | a    |   |
| 122 | Signals                                                                                        |                                                   |                              |                                       |                      |                                 |                     |      |   |
| 123 | Pos.                                                                                           | Tag                                               | Type                         | Kind of Signal                        | Range                | Description                     |                     |      |   |
| 124 | S01                                                                                            |                                                   | (*)                          |                                       |                      | if further required, please add |                     | a    |   |
| 125 | S02                                                                                            |                                                   | (*)                          |                                       |                      |                                 |                     | a    |   |
| 126 | S03                                                                                            |                                                   | (*)                          |                                       |                      |                                 |                     | a    |   |
| 127 | S04                                                                                            |                                                   | (*)                          |                                       |                      |                                 |                     | a    |   |
| 128 | Sketch, PID-Section                                                                            |                                                   |                              |                                       |                      |                                 |                     |      |   |
| 129 | <div></div> |                                                   |                              |                                       |                      |                                 |                     |      | a |
| 130 | Additional documents                                                                           |                                                   |                              |                                       |                      |                                 | Doc.-no.            |      |   |
| 131 | 1x                                                                                             | General design conditions                         |                              |                                       |                      |                                 | 2115_GDCB001        | a    |   |
| 132 | 1x                                                                                             | Electrical, Instrumentation, Control Requirements |                              |                                       |                      |                                 | 2115_IEQS001        | a    |   |
| 133 | 1x                                                                                             | Safety characteristics                            |                              |                                       |                      |                                 | 2115_SSDS001        | a    |   |
| 134 | 2x                                                                                             | Inquiry drawing Heat exchanger E-337/347          |                              |                                       |                      |                                 | 2115_MEMW 0337/0347 | a    |   |
| 135 |                                                                                                |                                                   |                              |                                       |                      |                                 |                     | a    |   |
| 136 |                                                                                                |                                                   |                              |                                       |                      |                                 |                     | a    |   |
| 137 | Remarks for Originator                                                                         |                                                   |                              |                                       |                      |                                 |                     |      |   |
| 138 | (n.a.)                                                                                         | not applicable                                    |                              |                                       |                      |                                 |                     | a    |   |
| 139 | (*)                                                                                            | to be specified by the vendor                     |                              |                                       |                      |                                 |                     | a    |   |

## MEQS 002

### specification heat exchanger E-336, E-346

|              |             |                   |                |                 |                |
|--------------|-------------|-------------------|----------------|-----------------|----------------|
|              |             |                   |                |                 |                |
|              |             |                   |                |                 |                |
| b            | 04.11.2022  | ys                | schz           | schz            | FDL version h  |
| a            | 02.06.2022  | ys                | kp             | schz            | first issue    |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b> |

specification heat exchanger E-336, E-346

|    | Name                                          | filter and heat exchanger condensator stage 1          |                                                                       | Remarks                                                       | Iss. |
|----|-----------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------|------|
| No | TAG                                           | E-336/E-346 (inklusive filter S-335/S-345)             |                                                                       |                                                               |      |
| 1  | General Data                                  |                                                        |                                                                       |                                                               |      |
| 2  | Application                                   | filtration and cooling of process gas after granulator |                                                                       |                                                               | a    |
| 3  |                                               |                                                        |                                                                       |                                                               |      |
| 4  | Quantity                                      | Operation                                              | units                                                                 | 2 (1 x S-335 + 1x E-336 / 1x S-345 + 1 x E-346)               | a    |
| 5  |                                               | Stand-By                                               | units                                                                 | 0                                                             | a    |
| 6  | Operation Mode                                |                                                        | 60 min/h (continiuos)                                                 |                                                               | a    |
| 7  | Operation Time                                |                                                        | 24 h day / 7 days a week / 8000 h/year                                |                                                               | a    |
| 8  | Applicable Standards and Guidelines           |                                                        |                                                                       |                                                               |      |
| 9  | EC Machinery Directive                        |                                                        | 2006/42/EG                                                            |                                                               | a    |
| 10 | ATEX Directive                                |                                                        | 2014/34/EG                                                            |                                                               | a    |
| 11 |                                               |                                                        |                                                                       |                                                               | a    |
| 12 | other certificates                            |                                                        | CE certification, material certification according DIN EN 10204 - 2.2 |                                                               | a    |
| 13 | Pressure Equipment Data                       |                                                        |                                                                       |                                                               |      |
| 14 | Guideline                                     |                                                        | (n.a.)                                                                |                                                               | a    |
| 15 | Fluid Category                                |                                                        | (n.a.)                                                                |                                                               | a    |
| 16 | Aggregat State                                |                                                        | (n.a.)                                                                |                                                               | a    |
| 17 | Categorization                                |                                                        | (n.a.)                                                                |                                                               | a    |
| 18 | Module                                        |                                                        | (n.a.)                                                                |                                                               | a    |
| 19 | Mechanical Design Data                        |                                                        |                                                                       |                                                               |      |
| 20 | Max. Allowed Pressure (PS)                    | bar(g)                                                 | +/- 0,23 // 6                                                         | process gas // water                                          | a    |
| 21 | Min./Max. allowed Temperature (TS)            | °C                                                     | 5 / 150 // 5 / 100                                                    | process gas // water                                          | a    |
| 22 | Test Pressure                                 | bar(g)                                                 | -                                                                     |                                                               | a    |
| 23 | Installation Conditions                       |                                                        |                                                                       |                                                               |      |
| 24 | Installation Location                         |                                                        | Inside the production building                                        |                                                               | a    |
| 25 | Ambient Temperature                           | °C                                                     | 5 ... 40                                                              |                                                               | a    |
| 26 | Heigt above sea level                         | m                                                      | 80 m above sea level                                                  |                                                               | a    |
| 27 | Hygienic Zone/Room Classification             |                                                        | (n.a.)                                                                |                                                               | a    |
| 28 | Seismic Zone                                  |                                                        | (n.a.)                                                                |                                                               | a    |
| 29 | Earthquake Accelaration in the centre of mass |                                                        | m/s²                                                                  | to be considered (substitute acceleration in center of masst) | a    |
| 30 | Max. Sound Pressure Level                     | dB (A)                                                 | 85                                                                    | 1m Distance                                                   | a    |

specification heat exchanger E-336, E-346

|    | Name                                            | filter and heat exchanger condensator stage 1 |                                             |       |       | Remarks | Iss.                                        |   |
|----|-------------------------------------------------|-----------------------------------------------|---------------------------------------------|-------|-------|---------|---------------------------------------------|---|
| No | TAG                                             | E-336/E-346 (inklusive filter S-335/S-345)    |                                             |       |       |         |                                             |   |
| 31 | Process Data                                    |                                               | min                                         | norm  | max   | design  | Remarks                                     |   |
| 32 | Medium                                          |                                               | process gas N2 with additives               |       |       |         |                                             | a |
| 33 | Filtertype Stage #1                             |                                               | F7                                          |       |       |         |                                             | a |
| 34 | Filtertype Stage #2                             |                                               | (n.a.)                                      |       |       |         |                                             | a |
| 35 | Filtertype Stage #3                             |                                               | (n.a.)                                      |       |       |         |                                             | a |
| 36 | Mass flow Inlet                                 | kg/h                                          | 28000                                       | 51334 | 54000 | 55500   | heat reduction app. 550 kW                  | b |
| 37 | Volume flow Inlet                               | m³/h                                          | 22000                                       | 51030 | 58696 |         |                                             | b |
| 38 | Temperature Inlet                               | °C                                            | 5                                           | 65    | 70    | 70      |                                             | a |
| 39 | Temperature Outlet                              | °C                                            | 10                                          | 28    | 35    | 35      |                                             | a |
| 40 | condensate water flow                           | kg/h                                          |                                             | (*)   |       |         | for winter time at 13°C cooling water inlet | a |
| 41 | condensate buthanol flow                        | kg/h                                          |                                             | (*)   |       |         | for winter time at 13°C cooling water inlet | a |
| 42 | Pressure Inlet                                  | mbar(g)                                       | -170                                        | 11    | 170   |         |                                             | a |
| 43 | Pressure Outlet                                 | mbar(g)                                       | (*)                                         | (*)   | (*)   |         |                                             | a |
| 44 | Max. Pressure drop                              | mbar                                          |                                             | 12    | 20    |         |                                             | a |
| 45 | Mass flow condensat                             | kg/h                                          | 910,5                                       | 1821  | 2150  |         | total amount for 1 condensator St.1+2       | a |
| 46 | Volume flow condensat                           | m³/h                                          | 0,92                                        | 2     | 2,7   |         | total amount for 1 condensator St.1+2       | a |
| 47 | Chemical and Physical Properties of process gas |                                               |                                             |       |       |         | Remarks                                     |   |
| 48 | Description medium                              |                                               | Prozessgas Stickstoff N2 mit Zusatzanteilen |       |       |         |                                             | a |
| 49 | Composition                                     |                                               | min                                         | norm  | max   |         |                                             | a |
| 50 | Oxygen O2                                       | Mass-%                                        | 0                                           | 2     | 3,5   |         |                                             | a |
| 51 | n-Butanol, C4H10O                               | Mass-%                                        | 0                                           | 2,02  | 2,7   |         |                                             | a |
| 52 | Carbon disulphide, CS2                          | Mass-%                                        | 0                                           | 0,7   | 1     |         |                                             | a |
| 53 | water, H2O                                      | Mass-%                                        | 0                                           | 2,5   | 3     |         |                                             | a |
| 54 | Characteristics dust                            |                                               | water soluble, hygroscopic, toxic           |       |       |         |                                             | a |
| 55 | Dust Content                                    | mg/Nm³                                        | -                                           | 1     | 2     |         |                                             | a |
| 56 | Particle size                                   | µm                                            | -                                           | 2     | 5     |         |                                             | a |
| 57 | Particle Structure                              |                                               | -                                           | -     | -     |         |                                             | a |
| 58 | pH Value (min./max.)                            |                                               | -                                           | -     | -     |         |                                             | a |
| 59 | Density (inlet)                                 | kg/m³                                         | 0,92                                        | 1,01  | 1,18  |         |                                             | a |
| 60 | Humidity                                        | g/kg                                          | 0                                           | 47,3  | 60,4  |         |                                             | a |
| 61 | Cooling media                                   |                                               | min                                         | norm  | max   | design  |                                             |   |
| 62 | Heat transfer medium                            |                                               | cold water                                  |       |       |         | pH = 6,5...8,5, Härte = 4,,,7 °dH           | a |
| 63 | Fluid code                                      |                                               | UW                                          |       |       |         |                                             | a |
| 64 | Mass flow                                       | kg/h                                          | (*)                                         | (*)   | (*)   |         | app. 150.000 kg/h for one heat exchanger    | a |
| 65 | Temperature Inlet                               | °C                                            | 13                                          | 20    | 27    | 27      |                                             | a |
| 66 | Temperature Outlet                              | °C                                            | (*)                                         | (*)   | (*)   | 30      | 2 - 4 K temperature difference              | a |
| 67 | Operating Pressure                              | bar(g)                                        | 2,3                                         | 3     | 3,2   |         | 1,0-1,5 bar pressure loss                   | a |
| 68 | Density                                         | kg/m³                                         | 990                                         | 1000  | 1010  |         |                                             | a |
| 69 | Gylcol Content                                  | %                                             |                                             |       |       |         |                                             | a |
| 70 | Fouling Factor                                  | m²*K/W                                        | -                                           | 5000  | -     |         |                                             | a |

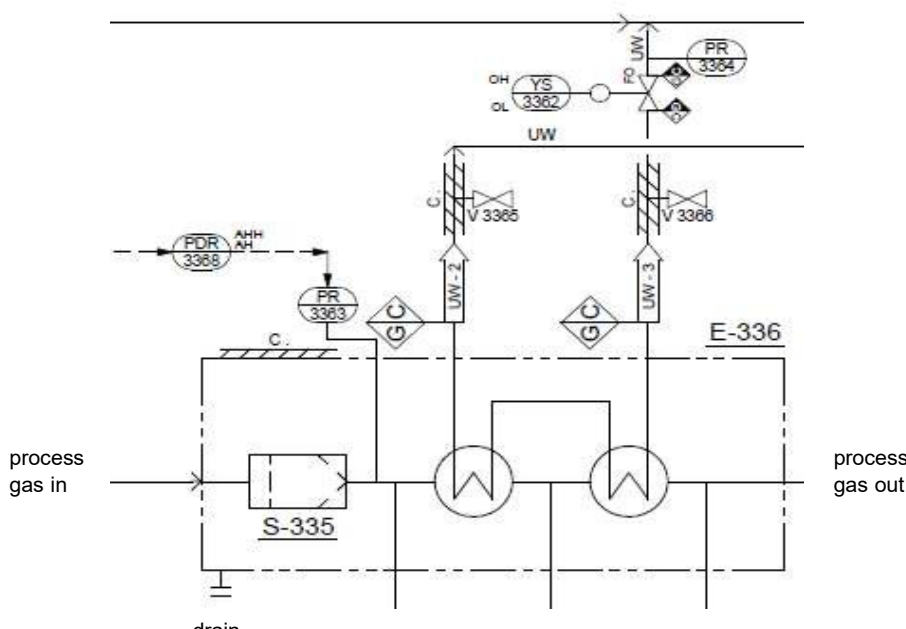
specification heat exchanger E-336, E-346

| No  | Name                                                     | filter and heat exchanger condensator stage 1 | Remarks                               | Iss. |
|-----|----------------------------------------------------------|-----------------------------------------------|---------------------------------------|------|
|     | TAG                                                      | E-336/E-346 (ir klusive filter S-335/S-345)   |                                       |      |
| 71  | Cleaning/Sanitisation/Sterilisation                      |                                               |                                       |      |
| 72  | Cleaning Media Product Side                              | manual wet cleaning                           |                                       | a    |
| 73  | Cleaning Temperatur Product Side °C                      | (n.a.)                                        |                                       | a    |
| 74  | Sanitisation/Sterilisation Medium                        | (n.a.)                                        |                                       | a    |
| 75  | Sanitisation Temperature °C                              | (n.a.)                                        |                                       | a    |
| 76  | Cleaning outside                                         | dry or manual wet cleaning                    |                                       | a    |
| 77  | Design, Dimensions and Weights                           |                                               |                                       |      |
| 78  | Total Length mm                                          | (*)                                           |                                       | a    |
| 79  | Total Width mm                                           | (*)                                           |                                       | a    |
| 80  | Total Height mm                                          | (*)                                           |                                       | a    |
| 81  | Empty weight kg                                          | (*)                                           |                                       | a    |
| 82  | Emergency weight kg                                      | (*)                                           |                                       | a    |
| 83  | Insulation Type Y/N                                      | Y                                             |                                       | a    |
| 84  | Insulation Thickness mm                                  | (*)                                           |                                       | a    |
| 85  | Materials and Surface Treatments, Coatings, Certificates |                                               |                                       |      |
| 86  | Metal Parts with Product Contact                         | 1.4571                                        |                                       | a    |
| 87  | Surface Treatment                                        | (*)                                           |                                       | a    |
| 88  | External Surface                                         | (*)                                           |                                       | a    |
| 89  | Weld. Seams with Product Contact                         | (*)                                           |                                       | a    |
| 90  | External Welding Seams                                   | (*)                                           |                                       | a    |
| 91  | Seals/Gaskets with Product Contact                       | PTFE                                          |                                       | a    |
| 92  | Metal Parts without Product Contact                      | AISI 304 or higher grade                      |                                       | a    |
| 93  | Coating System of non SS Parts                           | (*)                                           |                                       | a    |
| 94  | Material of Supports                                     | (*)                                           |                                       | a    |
| 95  | Material of Insulation                                   | (*)                                           |                                       | a    |
| 96  | Material steel frame                                     | (*)                                           |                                       | a    |
| 97  | pipe material                                            | 1.4571                                        |                                       | a    |
| 98  | Material Cooler                                          | 1.4571                                        |                                       | a    |
| 99  | Explosion Protection                                     |                                               |                                       |      |
| 100 | Ex Zone inside                                           | 22 / 2                                        |                                       | a    |
| 101 | Ex Zone outside                                          | 22 / 1                                        | zone 1 only in 2 m radius of openings | a    |
| 102 | Protection System                                        | N2- inertisation                              |                                       | a    |

specification heat exchanger E-336, E-346

| No  | Name                              | filter and heat exchanger condensator stage 1 |    |                                       |                      |                                                                     | Remarks                 | Iss. |
|-----|-----------------------------------|-----------------------------------------------|----|---------------------------------------|----------------------|---------------------------------------------------------------------|-------------------------|------|
|     | TAG                               | E-336/E-346 (inklusive filter S-335/S-345)    |    |                                       |                      |                                                                     |                         |      |
| 103 | General Accessories               |                                               |    |                                       |                      |                                                                     |                         |      |
| 104 | Name Plate                        | Y/N                                           |    |                                       | Y                    |                                                                     |                         | a    |
| 105 | frame for housing                 | Y/N                                           |    |                                       | Y                    | with support collums of 500 mm heights                              |                         | a    |
| 106 | Lifting Lugs                      | Y/N                                           |    |                                       | Y                    |                                                                     |                         | a    |
| 107 | filter                            | Y/N                                           |    |                                       | Y                    | static filter before heat exchanger, ISO ePM1 95% / F7              |                         | a    |
| 108 | droplet Separator                 | Y/N                                           |    |                                       | N                    |                                                                     |                         | a    |
| 109 | Earthing Lug                      | Y/N                                           |    |                                       | Y                    |                                                                     |                         | a    |
| 110 | Inspection opening                | Y/N                                           |    |                                       | Y                    |                                                                     |                         | a    |
| 111 | Drain                             | Y/N                                           |    |                                       | Y                    | with cover                                                          |                         | a    |
| 112 | Local pressure differential gauge | Y/N                                           |    |                                       | Y                    | at filter                                                           |                         | a    |
| 113 | Pressure Transmitter              | Y/N                                           |    |                                       | Y                    |                                                                     |                         | a    |
| 114 | Socket for instrumentation        | Y/N                                           |    |                                       | Y                    | connection flanges for pressure (2) and temperature (1) measurement |                         | a    |
| 115 | Bypass flap                       | Y/N                                           |    |                                       | N                    |                                                                     |                         | a    |
| 116 | Silencer                          | Y/N                                           |    |                                       | N                    |                                                                     |                         | a    |
| 117 | Insulation                        | Y/N                                           |    |                                       | N                    | preparation for insulation                                          |                         | a    |
| 118 | Electrical Accessories            |                                               |    |                                       |                      |                                                                     |                         |      |
| 119 | Measuring Devices                 | Y/N                                           |    |                                       | N                    | If YES specify manufacturer and type                                |                         | a    |
| 120 | Explosion Protection              | Y/N                                           |    |                                       | N                    | If YES specify type and Ex-Certification                            |                         | a    |
| 121 | Nozzles List                      |                                               |    |                                       |                      |                                                                     |                         |      |
| 122 | Pos.                              | DN (")                                        | PN | Standard                              | Nozzle Type          | Sealing Face                                                        | Description             |      |
| 123 | N1                                | 1220                                          |    |                                       | Nozzle for welding   |                                                                     | process gas in          | a    |
| 124 | N2                                | 2136x2930                                     |    | welding connection with E-337 / E-347 | Nozzle for welding   |                                                                     | process gas out         | a    |
| 125 | N3, N4                            | 150                                           | 16 |                                       | DIN EN 1092-1 Typ 11 | B1                                                                  | cooling water in        | a    |
| 126 | N5, N6                            | 150                                           | 16 |                                       | DIN EN 1092-1 Typ 11 | B1                                                                  | cooling water out       | a    |
| 127 | N7,N8,N9                          | 50                                            | 16 |                                       | DIN EN 1092-1 Typ 11 | B1                                                                  | drain                   | a    |
| 128 | Signals                           |                                               |    |                                       |                      |                                                                     |                         |      |
| 129 | Pos.                              | Tag                                           |    | Type                                  | Kind of Signal       | Range                                                               | Description             |      |
| 130 | S01                               |                                               |    | (')                                   |                      |                                                                     | dP filter               | a    |
| 131 | S02                               |                                               |    | (')                                   |                      |                                                                     | local pressure          | a    |
| 132 | S03                               |                                               |    | (')                                   |                      |                                                                     | pressure transmitter    | a    |
| 133 | S04                               |                                               |    | (')                                   |                      |                                                                     | temperature transmitter | a    |

specification heat exchanger E-336, E-346

| No  | Name                                                                                | Remarks             | Iss.            |
|-----|-------------------------------------------------------------------------------------|---------------------|-----------------|
|     | TAG                                                                                 |                     |                 |
|     | filter and heat exchanger condensator stage 1                                       |                     |                 |
|     | E-336/E-346 (inklusive filter S-335/S-345)                                          |                     |                 |
| 134 | <b>Sketch, PID-Section</b>                                                          |                     |                 |
| 135 |  |                     | a               |
| 136 | <b>Additional documents</b>                                                         |                     | <b>Doc.-no.</b> |
| 137 | 1x General design conditions                                                        | 2115_GDCB001        | a               |
| 138 | 1x Electrical, Instrumentation, Control Requirements                                | 2115_IEQS001        | a               |
| 139 | 1x Safety characteristics                                                           | 2115_SSDS001        | a               |
| 140 | 2x Inquiry drawing Heat exchanger E-336/346                                         | 2115_MEMW 0336/0346 | a               |
| 141 |                                                                                     |                     |                 |
| 142 |                                                                                     |                     |                 |
| 143 | <b>Remarks for Originator</b>                                                       |                     |                 |
| 144 | (n.a.) not applicable                                                               |                     | a               |
| 145 | (*) to be specified by the vendor                                                   |                     | a               |

## MEQS 007

### specification heat exchanger E-331, E-341

|              |             |                   |                |                 |                                   |
|--------------|-------------|-------------------|----------------|-----------------|-----------------------------------|
|              |             |                   |                |                 |                                   |
| c            | 10.11.2022  | ys                |                |                 | revised data heat transfer medium |
| b            | 04.11.2022  | ys                | schz           | schz            | FDL version g                     |
| a            | 03.06.2022  | ys                | kp             | schz            | first issue                       |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b>                    |

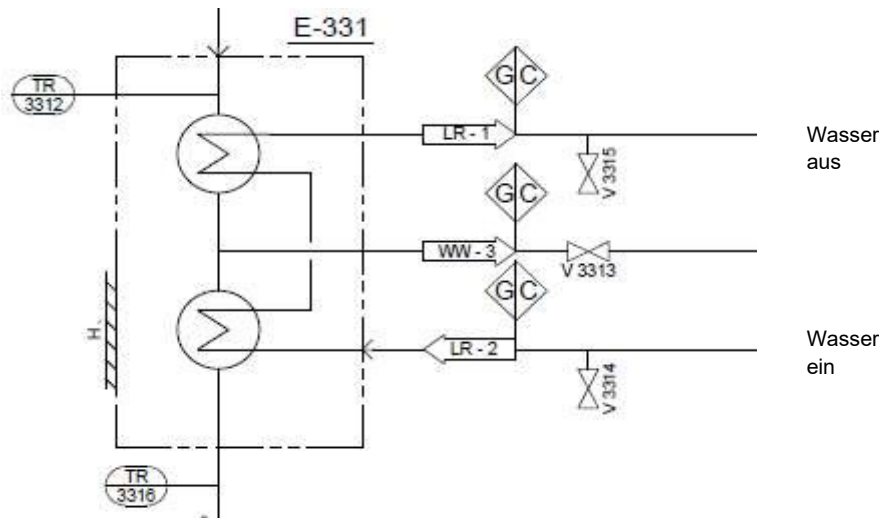
specification heat exchanger E-331, E-341

|    | Name                                          | heat exchanger compressor heat                                   |                                                                       |                           |                                                                     | Iss.   |                    |   |
|----|-----------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------|--------|--------------------|---|
| No | TAG                                           | E-331/E-341                                                      |                                                                       |                           |                                                                     |        | Remarks            |   |
| 1  | General Data                                  |                                                                  |                                                                       |                           |                                                                     |        |                    |   |
| 2  | Application                                   | heat exchanger for heat recovery and cooling of compressor water |                                                                       |                           |                                                                     | a      |                    |   |
| 3  |                                               |                                                                  |                                                                       |                           |                                                                     | a      |                    |   |
| 4  | Quantity                                      | Operation                                                        | units                                                                 | 2 (1 x E-331 / 1 x E-341) |                                                                     | a      |                    |   |
| 5  |                                               | Stand-By                                                         | units                                                                 | 0                         |                                                                     | a      |                    |   |
| 6  | Operation Mode                                |                                                                  | 60 min/h (continuous)                                                 |                           |                                                                     | a      |                    |   |
| 7  | Operation Time                                |                                                                  | 24 h day / 7 days a week/ 8000 h/year                                 |                           |                                                                     | a      |                    |   |
| 8  | Applicable Standards and Guidelines           |                                                                  |                                                                       |                           |                                                                     |        |                    |   |
| 9  | EC Machinery Directive                        |                                                                  | 2006/42/EG                                                            |                           |                                                                     | a      |                    |   |
| 10 | ATEX Directive                                |                                                                  | 2014/34/EG                                                            |                           |                                                                     | a      |                    |   |
| 11 | other certificates                            |                                                                  | CE certification, material zertification according DIN EN 10204 - 2.2 |                           |                                                                     | a      |                    |   |
| 12 | Pressure Equipment Data                       |                                                                  |                                                                       |                           |                                                                     |        |                    |   |
| 13 | Guideline                                     |                                                                  | (n.a.)                                                                |                           |                                                                     | a      |                    |   |
| 14 | Fluid Category                                |                                                                  | (n.a.)                                                                |                           |                                                                     | a      |                    |   |
| 15 | Aggregat State                                |                                                                  | (n.a.)                                                                |                           |                                                                     | a      |                    |   |
| 16 | Categorization                                |                                                                  | (n.a.)                                                                |                           |                                                                     | a      |                    |   |
| 17 | Module                                        |                                                                  | (n.a.)                                                                |                           |                                                                     | a      |                    |   |
| 18 | Mechanical Design Data                        |                                                                  |                                                                       |                           |                                                                     |        |                    |   |
| 19 | Max. Allowed Pressure (PS)                    | bar(g)                                                           | +/- 0,23 // 6                                                         |                           | process gas // water                                                |        | a                  |   |
| 20 | Min./Max. allowed Temperature (TS)            | °C                                                               | 5 / 150 // 5 / 100                                                    |                           | process gas // water                                                |        | a                  |   |
| 21 | Test Pressure                                 | bar(g)                                                           | -                                                                     |                           |                                                                     |        | a                  |   |
| 22 | Installation Conditions                       |                                                                  |                                                                       |                           |                                                                     |        |                    |   |
| 23 | Installation Location                         |                                                                  | Inside the production building                                        |                           |                                                                     |        | a                  |   |
| 24 | Ambient Temperature                           | °C                                                               | 5 ... 40                                                              |                           |                                                                     |        | a                  |   |
| 25 | Heigt above sea level                         | m                                                                | 80 m above sea level                                                  |                           |                                                                     |        | a                  |   |
| 26 | Hygienic Zone/Room Classification             |                                                                  | (n.a.)                                                                |                           |                                                                     |        | a                  |   |
| 27 | Seismic Zone                                  |                                                                  | (n.a.)                                                                |                           |                                                                     |        | a                  |   |
| 28 | Earthquake Accelaration in the centre of mass | m/s²                                                             |                                                                       |                           | to be considered<br>(substitute acceleration in the center of mass) |        | a                  |   |
| 29 | Max. Sound Pressure Level                     | dB (A)                                                           | (n.a.)                                                                |                           | 1m Distance                                                         |        | a                  |   |
| 30 | Process Data                                  |                                                                  | min                                                                   | norm                      | max                                                                 | design | Remarks            |   |
| 31 | Medium                                        |                                                                  | process gas N2 with additives                                         |                           |                                                                     |        |                    | a |
| 32 | Filtertype Stage #1                           |                                                                  | (n.a.)                                                                |                           |                                                                     |        |                    | a |
| 33 | Filtertype Stage #2                           |                                                                  | (n.a.)                                                                |                           |                                                                     |        |                    | a |
| 34 | Filtertype Stage #3                           |                                                                  | (n.a.)                                                                |                           |                                                                     |        |                    | a |
| 35 | Mass flow Inlet                               | kg/h                                                             | 25000                                                                 | 43950                     | 51000                                                               | 51000  | per heat exchanger | b |
| 36 | Volume flow Inlet                             | m³/h                                                             | 22000                                                                 | 38560                     | 51000                                                               |        | per heat exchanger | a |
| 37 | Mass flow Chamber 5                           |                                                                  | kg/h                                                                  |                           |                                                                     |        |                    | a |
| 38 | Temperature Inlet                             | °C                                                               | 5                                                                     | 22                        | 30                                                                  | 30     | app. 200 kW        | c |
| 39 | Temperature Outlet                            | °C                                                               | 5                                                                     | 27                        | 55                                                                  | (*)    | app. 200 kW        | c |
| 40 | Pressure Inlet                                | mbar(g)                                                          | -5                                                                    | 100                       | 170                                                                 |        |                    | a |
| 41 | Pressure Outlet                               | mbar(g)                                                          | (*)                                                                   | (*)                       | (*)                                                                 |        |                    | a |
| 42 | Max. Pressure drop                            | mbar                                                             |                                                                       | 10                        |                                                                     |        |                    | b |

specification heat exchanger E-331, E-341

| No | Name                                            | heat exchanger compressor heat |                                   |        |       | Remarks                       | Iss. |
|----|-------------------------------------------------|--------------------------------|-----------------------------------|--------|-------|-------------------------------|------|
| No | TAG                                             | E-331/E-341                    |                                   |        |       |                               |      |
| 43 | Chemical and Physical Properties of process gas |                                |                                   |        |       | Remarks                       |      |
| 44 | Description medium                              |                                | process gas N2 with additives     |        |       |                               | a    |
| 45 | Composition                                     |                                | min                               | norm   | max   |                               | a    |
| 46 | Oxygen O2                                       | Mass-%                         | 0                                 | 2      | 3,5   |                               | a    |
| 47 | n-Butanol, C4H10O                               | Mass-%                         | 0                                 | 0,45   | 2,7   |                               | b    |
| 48 | Carbon disulphide, CS2                          | Mass-%                         | 0                                 | 0,0014 | 1     |                               | b    |
| 49 | water, H2O                                      | Mass-%                         | 0                                 | 0,34   | 2,7   |                               | b    |
| 50 | Characteristics dust                            |                                | water soluble, hygroscopic, toxic |        |       |                               | a    |
| 51 | Dust Content                                    | mg/Nm³                         | -                                 | -      | -     | < 0,1 mg/Nm³                  | a    |
| 52 | Particle size                                   | µm                             | -                                 | 1      | 2     |                               | a    |
| 53 | Particle Structure                              |                                | -                                 | -      | -     |                               | a    |
| 54 | pH Value (min./max.)                            |                                | -                                 | -      | -     |                               | a    |
| 55 | Density                                         | kg/m³                          | 1                                 | 1,11   | 1,18  |                               | b    |
| 56 | Humidity                                        | g/kg                           | 0                                 | 8,0    | 57,1  | water + n-Butanol             | b    |
| 57 | Energy Recovery                                 |                                | min                               | norm   | max   | design                        |      |
| 58 | Heat transfer medium                            |                                | compressor - cooling liquid       |        |       | water with <1% (Butanol, CS2) | a    |
| 59 | Fluid code                                      |                                | LR                                |        |       |                               | a    |
| 60 | Mass flow                                       | kg/h                           | 0                                 | 22000  | 24000 |                               | c    |
| 61 | Temperature Inlet                               | °C                             | 45                                | 52     | 55    |                               | c    |
| 62 | Temperature Outlet                              | °C                             | 40                                | 45     | 48    |                               | a    |
| 63 | Power                                           | kW                             |                                   | 179    | 195   |                               | c    |
| 64 | Operating Pressure                              | bar(g)                         | 2                                 | 2,5    | 3,5   |                               | c    |
| 65 | Density                                         | kg/m³                          | 950                               | 1000   | 1000  |                               | a    |
| 66 | Gylcol Content                                  | %                              | -                                 | -      | -     |                               | a    |
| 67 | Fouling Factor                                  | m²*K/W                         |                                   |        |       |                               | a    |
| 68 | Cleaning/Sanitisation/Sterilisation             |                                |                                   |        |       |                               |      |
| 69 | Cleaning Media Product Side                     |                                | manual wet cleaning               |        |       |                               | a    |
| 70 | Cleaning Temperatur Product Side                | °C                             | (n.a.)                            |        |       |                               | a    |
| 71 | Sanitisation/Sterilisation Medium               |                                | (n.a.)                            |        |       |                               | a    |
| 72 | Sanitisation Temperature                        | °C                             | (n.a.)                            |        |       |                               | a    |
| 73 | Cleaning outside                                |                                | manual wet cleaning               |        |       |                               | a    |

|     | Name                                                     | heat exchanger compressor heat |                          | Remarks                                                     | Iss. |
|-----|----------------------------------------------------------|--------------------------------|--------------------------|-------------------------------------------------------------|------|
| No  | TAG                                                      | E-331/E-341                    |                          |                                                             |      |
| 74  | Design, Dimensions and Weights                           |                                |                          |                                                             |      |
| 75  | Total Length                                             | mm                             | (*)                      |                                                             | a    |
| 76  | Total Width                                              | mm                             | (*)                      |                                                             | a    |
| 77  | Total Height                                             | mm                             | (*)                      |                                                             | a    |
| 78  | Empty weight                                             | kg                             | (*)                      |                                                             | a    |
| 79  | Emergency weight                                         | kg                             | (*)                      |                                                             | a    |
| 80  | Insulation Type                                          | Y/N                            | Y                        |                                                             | a    |
| 81  | Insulation Thickness                                     | mm                             | (*)                      |                                                             | a    |
| 82  | Materials and Surface Treatments, Coatings, Certificates |                                |                          |                                                             |      |
| 83  | Metal Parts with Product Contact                         |                                | 1.4571                   |                                                             | a    |
| 84  | Surface Treatment                                        |                                | (*)                      |                                                             | a    |
| 85  | External Surface                                         |                                | (*)                      |                                                             | a    |
| 86  | Weld. Seams with Product Contact                         |                                | (*)                      |                                                             | a    |
| 87  | External Welding Seams                                   |                                | (*)                      |                                                             | a    |
| 88  | Seals/Gaskets with Product Contact                       |                                | PTFE                     |                                                             | a    |
| 89  | Metal Parts without Product Contact                      |                                | AISI 304 or higher grade |                                                             | a    |
| 90  | Coating System of non SS Parts                           |                                | (*)                      |                                                             | a    |
| 91  | Material of Supports                                     |                                | (*)                      |                                                             | a    |
| 92  | Material of Insulation                                   |                                | (*)                      | if necessary                                                | a    |
| 93  | Material steel frame                                     |                                | (*)                      | alternatively: CS galvanized                                | a    |
| 94  | Material Cooler                                          |                                | 1.4571                   |                                                             | a    |
| 95  | Explosion Protection                                     |                                |                          |                                                             |      |
| 96  | Ex Zone inside                                           |                                | 22 / 2                   |                                                             | a    |
| 97  | Ex Zone outside                                          |                                | -                        |                                                             | a    |
| 98  | Protection System                                        |                                | N2- interisation         |                                                             | a    |
| 99  | General Accessories                                      |                                |                          |                                                             |      |
| 100 | Name Plate                                               | Y/N                            | Y                        | with support cullums of min. 500 mm between floor and frame | a    |
| 101 | frame for housing                                        | Y/N                            | Y                        |                                                             | a    |
| 102 | Lifting Lugs                                             | Y/N                            | Y                        |                                                             | a    |
| 103 | filter                                                   | Y/N                            | N                        |                                                             | a    |
| 104 | droplet Separator                                        | Y/N                            | N                        |                                                             | a    |
| 105 | Earthing Lug                                             | Y/N                            | Y                        |                                                             | a    |
| 106 | Inspection opening                                       | Y/N                            | Y                        |                                                             | a    |
| 107 | Drain                                                    | Y/N                            | Y                        | closed with a cover                                         | a    |
| 108 | Local temperature sensor                                 | Y/N                            | Y                        | only connection pipe/socket                                 | a    |
| 109 | Pressure Differential Transmitter                        | Y/N                            | Y                        | only connection pipe/socket                                 | a    |
| 110 | Bypass flap                                              | Y/N                            | N                        |                                                             | a    |
| 111 | Silencer                                                 | Y/N                            | N                        |                                                             | a    |
| 112 | Insulation                                               | Y/N                            | N                        | preparation for insulation                                  | a    |
| 113 | Electrical Accessories                                   |                                |                          |                                                             |      |
| 114 | Measuring Devices                                        | Y/N                            | N                        | If YES specify manufacturer and type                        | a    |
| 115 | Explosion Protection                                     | Y/N                            | N                        | If YES specify type and Ex-Certification                    | a    |

| No  | Name                                                                                           |                                                   | heat exchanger compressor heat |                                       |                      |              |                                            | Iss.             |          |
|-----|------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------|---------------------------------------|----------------------|--------------|--------------------------------------------|------------------|----------|
| No  | TAG                                                                                            |                                                   | E-331/E-341                    |                                       |                      |              |                                            |                  | Remarks  |
| 116 | Nozzles List                                                                                   |                                                   |                                |                                       |                      |              |                                            |                  |          |
| 117 | Pos.                                                                                           | DN (")                                            | PN                             | Standard                              | Nozzle Type          | Sealing Face | Description                                |                  |          |
| 118 | N1                                                                                             | 1220                                              |                                |                                       | Nozzle for welding   |              | process gas in                             | a                |          |
| 119 | N2                                                                                             | 2136x2930                                         |                                | welding connection with E-332 / E-342 | Nozzle for welding   |              | process gas out                            | a                |          |
| 120 | N3, N4                                                                                         | 50                                                | 16                             |                                       | DIN EN 1092-1 Typ 11 | B1           | water in                                   | a                |          |
| 121 | N5, N6                                                                                         | 50                                                | 16                             |                                       | DIN EN 1092-1 Typ 11 | B1           | water out                                  | a                |          |
| 122 | N7, N8                                                                                         | 50                                                | 16                             |                                       | DIN EN 1092-1 Typ 11 | B1           | drain                                      | a                |          |
| 123 | Signals                                                                                        |                                                   |                                |                                       |                      |              |                                            |                  |          |
| 124 | Pos.                                                                                           | Tag                                               |                                | Type                                  | Kind of Signal       | Range        | Description                                |                  |          |
| 125 | S01                                                                                            | (*)                                               |                                |                                       |                      |              | if further signals are required, pleas add | a                |          |
| 126 | S02                                                                                            | (*)                                               |                                |                                       |                      |              |                                            | a                |          |
| 127 | Sketch, PID-Section                                                                            |                                                   |                                |                                       |                      |              |                                            |                  |          |
| 128 | <div></div> |                                                   |                                |                                       |                      |              |                                            |                  | a        |
| 129 | Additional documents                                                                           |                                                   |                                |                                       |                      |              |                                            |                  | Doc.-no. |
| 130 | 1x                                                                                             | General design conditions                         |                                |                                       |                      |              |                                            | 2115_GDCB001     | a        |
| 131 | 1x                                                                                             | Electrical, Instrumentation, Control Requirements |                                |                                       |                      |              |                                            | 2115_IEQS001     | a        |
| 132 | 1x                                                                                             | Safety characteristics                            |                                |                                       |                      |              |                                            | 2115_SSDS001     | a        |
| 133 | 2x                                                                                             | Inquiry drawing Heat exchanger E-331/341          |                                |                                       |                      |              |                                            | 2115_MEMW331/341 | b        |
| 134 |                                                                                                |                                                   |                                |                                       |                      |              |                                            |                  |          |
| 135 |                                                                                                |                                                   |                                |                                       |                      |              |                                            |                  |          |
| 136 | Remarks for Originator                                                                         |                                                   |                                |                                       |                      |              |                                            |                  |          |
| 137 | (n.a.)                                                                                         | not applicable                                    |                                |                                       |                      |              |                                            |                  | a        |
| 138 | (*)                                                                                            | to be specified by the vendor                     |                                |                                       |                      |              |                                            |                  | a        |

## MEQS 021

### specification heat exchanger filter cleaning E-339

|              |             |                   |                |                 |                     |
|--------------|-------------|-------------------|----------------|-----------------|---------------------|
|              |             |                   |                |                 |                     |
| b            | 02.03.2023  | ys                |                |                 | revised nozzle list |
| a            | 07.06.2022  | ys                | jk             | schz            | first issue         |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b>      |

## specification heat exchanger filter cleaning E-339

| No | Name                                          | heat exchanger filter cleaning                         |                                                                     |      |      |        |                                                              | Remarks | Iss. |
|----|-----------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------|------|------|--------|--------------------------------------------------------------|---------|------|
|    | TAG                                           | E-339                                                  |                                                                     |      |      |        |                                                              |         |      |
| 1  | <b>General Data</b>                           |                                                        |                                                                     |      |      |        |                                                              |         |      |
| 2  | Application                                   | Heat exchanger for the process gas for filter cleaning |                                                                     |      |      |        |                                                              | a       |      |
| 3  |                                               |                                                        |                                                                     |      |      |        |                                                              | a       |      |
| 4  | Quantity                                      | Operation                                              | units                                                               | 1    |      |        |                                                              | a       |      |
| 5  |                                               | Stand-By                                               | units                                                               | 0    |      |        |                                                              | a       |      |
| 6  | Operation Mode                                |                                                        | intermittent operation                                              |      |      |        |                                                              | a       |      |
| 7  | Operation Time                                |                                                        | 24 h Tag / 7 Tage je Woche / 8000 Bh/Jahr                           |      |      |        |                                                              | a       |      |
| 8  | <b>Applicable Standards and Guidelines</b>    |                                                        |                                                                     |      |      |        |                                                              |         |      |
| 9  | EC Machinery Directive                        |                                                        | 2006/42/EG                                                          |      |      |        |                                                              | a       |      |
| 10 | ATEX Directive                                |                                                        | 2014/34/EG                                                          |      |      |        |                                                              | a       |      |
| 11 |                                               |                                                        |                                                                     |      |      |        |                                                              | a       |      |
| 12 | other certificates                            |                                                        | CE certification, material certificate according DIN EN 10204 - 2.2 |      |      |        |                                                              | a       |      |
| 13 | <b>Pressure Equipment Data</b>                |                                                        |                                                                     |      |      |        |                                                              |         |      |
| 14 | Guideline                                     |                                                        | (n.a.)                                                              |      |      |        |                                                              | a       |      |
| 15 | Fluid Category                                |                                                        | (n.a.)                                                              |      |      |        |                                                              | a       |      |
| 16 | Aggregat State                                |                                                        | (n.a.)                                                              |      |      |        |                                                              | a       |      |
| 17 | Categorization                                |                                                        | (n.a.)                                                              |      |      |        |                                                              | a       |      |
| 18 | Module                                        |                                                        | (n.a.)                                                              |      |      |        |                                                              | a       |      |
| 19 | <b>Mechanical Design Data</b>                 |                                                        |                                                                     |      |      |        |                                                              |         |      |
| 20 | Min./max. allowed Pressure                    | PS                                                     | bar(g)                                                              |      | 7    |        | a                                                            |         |      |
| 21 | Min./max. allowed temperature                 | TS <sub>min/max</sub>                                  | °C                                                                  | 0    | 50   |        | a                                                            |         |      |
| 22 | Test Pressure                                 |                                                        | bar(g)                                                              | (*)  |      |        | a                                                            |         |      |
| 23 | <b>Installation Conditions</b>                |                                                        |                                                                     |      |      |        |                                                              |         |      |
| 24 | Installation Location                         |                                                        | Inside the production building                                      |      |      |        | a                                                            |         |      |
| 25 | Ambient Temperature                           | °C                                                     | 5 ... 40                                                            |      |      |        | a                                                            |         |      |
| 26 | Height above sea level                        | m                                                      | 80 m above sea level                                                |      |      |        | a                                                            |         |      |
| 27 | Hygienic Zone/Room Classification             |                                                        | (n.a.)                                                              |      |      |        | a                                                            |         |      |
| 28 | Seismic Zone                                  |                                                        | (n.a.)                                                              |      |      |        | a                                                            |         |      |
| 29 | Earthquake Acceleration in the centre of mass | m/s <sup>2</sup>                                       |                                                                     |      |      |        | to be considered (substitute acceleration in centre of mass) | a       |      |
| 30 | Max. Sound Pressure Level                     | dB (A)                                                 | (n.a.)                                                              |      |      |        | 1m Distance                                                  | a       |      |
| 31 | <b>Process Data</b>                           |                                                        | min                                                                 | norm | max  | design | Remarks                                                      |         |      |
| 32 | Medium                                        |                                                        | Nitrogen N2                                                         |      |      |        | a                                                            |         |      |
| 33 | Filtertype Stage #1                           |                                                        | (n.a.)                                                              |      |      |        | a                                                            |         |      |
| 34 | Filtertype Stage #2                           |                                                        | (n.a.)                                                              |      |      |        | a                                                            |         |      |
| 35 | Filtertype Stage #3                           |                                                        | (n.a.)                                                              |      |      |        | a                                                            |         |      |
| 36 | Mass flow Inlet                               | kg/h                                                   | 0                                                                   | 535  | 669  | 670    | a                                                            |         |      |
| 37 | Volume flow Inlet                             | m <sup>3</sup> /h                                      | 0                                                                   | 66,8 | 81   | 81     | a                                                            |         |      |
| 38 | Mass flow Chamber 5                           | kg/h                                                   | -                                                                   | -    | -    |        | a                                                            |         |      |
| 39 | Temperature Inlet                             | °C                                                     | 10                                                                  | 20   | 25   | 10     | a                                                            |         |      |
| 40 | Temperature Outlet                            | °C                                                     | 55                                                                  | 65   | 70   | 70     | a                                                            |         |      |
| 41 | Temperature Outlet Chamber 5                  | °C                                                     | -                                                                   | -    | -    |        | a                                                            |         |      |
| 42 | Pressure Inlet                                | mbar(g)                                                | 5500                                                                | 6000 | 6000 |        | a                                                            |         |      |
| 43 | Pressure Outlet                               | mbar(g)                                                | (*)                                                                 | (*)  | (*)  |        | a                                                            |         |      |

specification heat exchanger filter cleaning E-339

| No | Name               | heat exchanger filter cleaning |     |     |     |  |  | Remarks | Iss. |
|----|--------------------|--------------------------------|-----|-----|-----|--|--|---------|------|
|    | TAG                | E-339                          |     |     |     |  |  |         |      |
| 44 | Max. Pressure drop | mbar                           | (*) | (*) | (*) |  |  | a       |      |

specification heat exchanger filter cleaning E-339

|    | Name                                            | heat exchanger filter cleaning |             |      |      |        | Iss.                                                     |   |
|----|-------------------------------------------------|--------------------------------|-------------|------|------|--------|----------------------------------------------------------|---|
| No | TAG                                             | E-339                          |             |      |      |        |                                                          |   |
|    |                                                 | Remarks                        |             |      |      |        |                                                          |   |
| 45 | Chemical and Physical Properties of process gas |                                |             |      |      |        | Remarks                                                  |   |
| 46 | Description medium                              |                                | nitrogen N2 |      |      |        |                                                          | a |
| 47 | Composition                                     |                                | min         | norm | max  |        |                                                          | a |
| 48 | Oxygen O2                                       | Mass-%                         | 0           | 0    | 21,1 |        | during start-up and shut-down, N2 can be replaced by air | a |
| 49 | water, H2O                                      | Mass-%                         | 0           | 0    | 0,3  |        |                                                          | a |
| 50 | Characteristics dust                            |                                |             |      |      |        |                                                          | a |
| 51 | Dust Content                                    | mg/Nm³                         | -           | -    | -    |        |                                                          | a |
| 52 | Particle size                                   | µm                             | -           | -    | -    |        |                                                          | a |
| 53 | Particle Structure                              |                                | -           | -    | -    |        |                                                          | a |
| 54 | pH Value (min./max.)                            |                                | -           | -    | -    |        |                                                          | a |
| 55 | Density                                         | kg/m³                          | 7,88        | 8,02 | 8,3  |        |                                                          | a |
| 56 | Humidity                                        | g/kg                           | -           | -    | -    |        |                                                          | a |
| 57 | Heat media                                      |                                | min         | norm | max  | design | Remarks                                                  |   |
| 58 | Heat transfer medium                            |                                | steam       |      |      |        |                                                          | a |
| 59 | Fluid code                                      |                                | US          |      |      |        |                                                          | a |
| 60 | Mass flow                                       | kg/h                           | (*)         | (*)  | (*)  |        |                                                          | a |
| 61 | Temperature Inlet                               | °C                             |             | 148  | 150  | 185    |                                                          | a |
| 62 | Operating pressure                              | bar(g)                         | 3,45        | 3,5  | 3,55 | 6      |                                                          | a |
| 63 | Max. allowable pressure drop                    | mbar                           | (*)         | (*)  | (*)  |        |                                                          | a |
| 64 | Density                                         | kg/m³                          | 2,35        | 2,4  | 2,45 |        |                                                          | a |
| 65 | Thermal Resistance Parameter                    | W/m²/K                         |             |      |      |        |                                                          | a |
| 66 | Fouling Factor                                  | m²*K/W                         |             |      |      |        |                                                          | a |
| 67 | Energy Recovery                                 |                                | min         | norm | max  | design |                                                          |   |
| 68 | Heat transfer medium                            |                                | n. a.       |      |      |        |                                                          | a |
| 69 | Fluid code                                      |                                |             |      |      |        |                                                          | a |
| 70 | Mass flow                                       | kg/h                           |             |      |      |        |                                                          | a |
| 71 | Temperature Inlet                               | °C                             |             |      |      |        |                                                          | a |
| 72 | Temperature Outlet                              | °C                             |             |      |      |        |                                                          | a |
| 73 | Power                                           | kW                             |             |      |      |        |                                                          | a |
| 74 | Operating Pressure                              | bar(g)                         |             |      |      |        |                                                          | a |
| 75 | Density                                         | kg/m³                          |             |      |      |        |                                                          | a |
| 76 | Gylcol Content                                  | %                              |             |      |      |        |                                                          | a |
| 77 | Fouling Factor                                  | m²*K/W                         |             |      |      |        |                                                          | a |
| 78 | Cooling media                                   |                                | min         | norm | max  | design |                                                          |   |
| 79 | Heat transfer medium                            |                                | n. a.       |      |      |        |                                                          | a |
| 80 | Fluid code                                      |                                |             |      |      |        |                                                          | a |
| 81 | Mass flow                                       | kg/h                           |             |      |      |        |                                                          | a |
| 82 | Temperature Inlet                               | °C                             |             |      |      |        |                                                          | a |
| 83 | Temperature Outlet                              | °C                             |             |      |      |        |                                                          | a |
| 84 | Operating Pressure                              | bar(g)                         |             |      |      |        |                                                          | a |
| 85 | Density                                         | kg/m³                          |             |      |      |        |                                                          | a |
| 86 | Gylcol Content                                  | %                              |             |      |      |        |                                                          | a |
| 87 | Fouling Factor                                  | m²*K/W                         |             |      |      |        |                                                          | a |

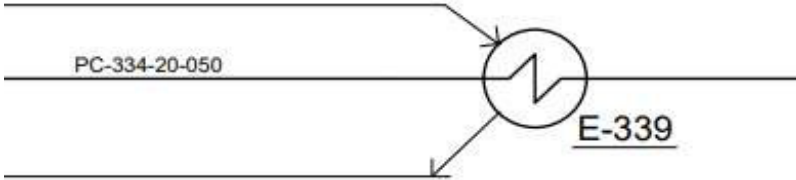
specification heat exchanger filter cleaning E-339

| No  | Name                                                     | heat exchanger filter cleaning |                          | Remarks               | Iss. |
|-----|----------------------------------------------------------|--------------------------------|--------------------------|-----------------------|------|
|     | TAG                                                      | E-339                          |                          |                       |      |
| 88  | Cleaning/Sanitisation/Sterilisation                      |                                |                          |                       |      |
| 89  | Cleaning Media Product Side                              |                                | dry cleaning             |                       | a    |
| 90  | Cleaning Temperatur Product Side                         | °C                             | (n.a.)                   |                       | a    |
| 91  | Sanitisation/Sterilisation Medium                        |                                | (n.a.)                   |                       | a    |
| 92  | Sanitisation Temperature                                 | °C                             | (n.a.)                   |                       | a    |
| 93  | Cleaning outside                                         |                                | dry cleaning             |                       | a    |
| 94  | Design, Dimensions and Weights                           |                                |                          |                       |      |
| 95  | Total Length                                             | mm                             | (*)                      |                       | a    |
| 96  | Total Width                                              | mm                             | (*)                      |                       | a    |
| 97  | Total Height                                             | mm                             | (*)                      |                       | a    |
| 98  | Empty weight                                             | kg                             | (*)                      |                       | a    |
| 99  | Emergency weight                                         | kg                             | (*)                      |                       | a    |
| 100 | Insulation Type                                          | Y/N                            | Y                        |                       | a    |
| 101 | Insulation Thickness                                     | mm                             | (*)                      |                       | a    |
| 102 | Materials and Surface Treatments, Coatings, Certificates |                                |                          |                       |      |
| 103 | Metal Parts with Product Contact                         |                                | AISI 304 or higher grade | Tube bundle and shell | a    |
| 104 | Surface Treatment                                        |                                | (*)                      |                       | a    |
| 105 | External Surface                                         |                                | (*)                      |                       | a    |
| 106 | Weld. Seams with Product Contact                         |                                | (*)                      |                       | a    |
| 107 | External Welding Seams                                   |                                | (*)                      |                       | a    |
| 108 | Seals/Gaskets with Product Contact                       |                                | (*)                      |                       | a    |
| 109 | Metal Parts without Product Contact                      |                                | (*)                      |                       | a    |
| 110 | Coating System of non SS Parts                           |                                | (*)                      |                       | a    |
| 111 | Material of Supports                                     |                                | (*)                      |                       | a    |
| 112 | Material of Insulation                                   |                                | (*)                      | if necessary          | a    |
| 113 | Material steel frame                                     |                                | (*)                      |                       | a    |
| 114 | Material Heater Energy Recovery                          |                                | (*)                      |                       | a    |
| 115 | Material Cooler                                          |                                | (*)                      |                       | a    |
| 116 | Explosion Protection                                     |                                |                          |                       |      |
| 117 | Ex Zone inside                                           |                                | 2                        | for process gas       | a    |
| 118 | Ex Zone outside                                          |                                | 22 / 2                   |                       | a    |
| 119 | Protection System                                        |                                | N2-inerting              |                       | a    |

specification heat exchanger filter cleaning E-339

| No  | Name                              |        | heat exchanger filter cleaning |          |                |                                                             | Remarks         | Iss. |  |
|-----|-----------------------------------|--------|--------------------------------|----------|----------------|-------------------------------------------------------------|-----------------|------|--|
|     | TAG                               |        | E-339                          |          |                |                                                             |                 |      |  |
| 120 | General Accessories               |        |                                |          |                |                                                             |                 |      |  |
| 121 | Name Plate                        |        | Y/N                            | Y        |                |                                                             |                 | a    |  |
| 122 | frame for housing                 |        | Y/N                            | N        |                |                                                             |                 | a    |  |
| 123 | Lifting Lugs                      |        | Y/N                            | Y        |                | if necessary                                                |                 | a    |  |
| 124 | filter                            |        | Y/N                            | N        |                |                                                             |                 | a    |  |
| 125 | droplet Separator                 |        | Y/N                            | N        |                |                                                             |                 | a    |  |
| 126 | Earthing Lug                      |        | Y/N                            | Y        |                |                                                             |                 | a    |  |
| 127 | Inspection opening                |        | Y/N                            | Y        |                |                                                             |                 | a    |  |
| 128 | Drain                             |        | Y/N                            | Y        |                | if necessary, closed                                        |                 | a    |  |
| 129 | Local pressure differential gauge |        | Y/N                            | N        |                |                                                             |                 | a    |  |
| 130 | Pressure Differential Transmitter |        | Y/N                            | N        |                |                                                             |                 | a    |  |
| 131 | Socket for instrumentation        |        | Y/N                            | Y        |                | Connections for pressure and temperature measurement closed |                 | a    |  |
| 132 | Bypass flap                       |        | Y/N                            | N        |                |                                                             |                 | a    |  |
| 133 | Silencer                          |        | Y/N                            | N        |                |                                                             |                 | a    |  |
| 134 | Insulation                        |        | Y/N                            | N        |                | prepared for insulation                                     |                 | a    |  |
| 135 | safety valve                      |        | Y/N                            | Y        |                | Steam side                                                  |                 | a    |  |
| 136 | Electrical Accessories            |        |                                |          |                |                                                             |                 |      |  |
| 137 | Measuring Devices                 |        | Y/N                            | N        |                | If YES specify manufacturer and type                        |                 | a    |  |
| 138 | Explosion Protection              |        | Y/N                            | N        |                | If YES specify type and Ex-Certification                    |                 | a    |  |
| 139 | Nozzles List                      |        |                                |          |                |                                                             |                 |      |  |
| 140 | Pos.                              | DN (") | PN                             | Standard | Nozzle Type    | Sealing Face                                                | Description     |      |  |
| 141 | N01                               | (*)    | 50                             |          | flange         |                                                             | nitrogen inlet  | b    |  |
| 142 | N02                               | (*)    | 50                             |          | flange         |                                                             | nitrogen outlet | b    |  |
| 143 | N03                               |        |                                |          |                |                                                             |                 |      |  |
| 144 | N04                               |        |                                |          |                |                                                             |                 |      |  |
| 145 | N05                               |        |                                |          |                |                                                             |                 |      |  |
| 146 | Signals                           |        |                                |          |                |                                                             |                 |      |  |
| 147 | Pos.                              | Tag    |                                | Type     | Kind of Signal | Range                                                       | Description     |      |  |
| 148 | S01                               |        |                                | (*)      |                |                                                             |                 |      |  |
| 149 | S02                               |        |                                | (*)      |                |                                                             |                 |      |  |
| 150 | S03                               |        |                                |          |                |                                                             |                 |      |  |
| 151 | S04                               |        |                                |          |                |                                                             |                 |      |  |

specification heat exchanger filter cleaning E-339

| No  | Name                                                                               | heat exchanger filter cleaning                                                                             | Remarks         | Iss. |
|-----|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------|------|
| No  | TAG                                                                                | E-339                                                                                                      | Remarks         | Iss. |
| 152 | <b>Sketch, PID-Section</b>                                                         |                                                                                                            |                 |      |
| 153 |  |                                                                                                            |                 | b    |
| 154 | <b>Zugehörige Dokumente</b>                                                        |                                                                                                            | <b>Doc.-no.</b> |      |
| 155 | Attachments:                                                                       |                                                                                                            |                 |      |
| 156 | 1x                                                                                 | General design conditions                                                                                  | 2115_GDCB001    | a    |
| 157 | 1x                                                                                 | Electrical, Instrumentation, Control Requirements                                                          | 2115_IEQS001    | a    |
| 158 | 1x                                                                                 | Safety characteristics                                                                                     | 2115_SSDS001    | a    |
| 159 |                                                                                    |                                                                                                            |                 |      |
| 160 |                                                                                    |                                                                                                            |                 |      |
| 161 | <b>Editing instructions</b>                                                        |                                                                                                            |                 |      |
| 162 | SIGNAL IN                                                                          | Signal goes to                                                                                             |                 | a    |
| 163 | SIGNAL OUT                                                                         | Signal comes from                                                                                          |                 | a    |
| 164 | -                                                                                  | not applicable                                                                                             |                 | a    |
| 165 | (n.e.)                                                                             | not required                                                                                               |                 | a    |
| 166 | (n.b.)                                                                             | not known                                                                                                  |                 | a    |
| 167 | (*)                                                                                | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the |                 | a    |
| 168 |                                                                                    |                                                                                                            |                 |      |
| 169 |                                                                                    |                                                                                                            |                 |      |

## MEQS 018

### specification heat exchanger atomizing gas E-313

|              |             |                   |                |                 |                     |
|--------------|-------------|-------------------|----------------|-----------------|---------------------|
|              |             |                   |                |                 |                     |
| b            | 02.03.2023  | ys                |                |                 | revised nozzle list |
| a            | 09.06.2022  | ys                | jk             | schz            | first issue         |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b>      |

specification heat exchanger atomizing gas E-313

|    | Name                                          | heat exchanger atomizing gas                      |                                                                     | Remarks                                                         | Iss. |
|----|-----------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------|------|
| No | TAG                                           | E-313                                             |                                                                     |                                                                 |      |
| 1  | General Data                                  |                                                   |                                                                     |                                                                 |      |
| 2  | Application                                   | Heat exchanger of atomizing gas after compression |                                                                     |                                                                 | a    |
| 3  |                                               |                                                   |                                                                     |                                                                 |      |
| 4  | Quantity                                      | Operation                                         | units                                                               | 1                                                               | a    |
| 5  |                                               | Stand-By                                          | units                                                               | 0                                                               | a    |
| 6  | Operation Mode                                |                                                   | continuous operation                                                |                                                                 | a    |
| 7  | Operation Time                                |                                                   | 24 h day / 7 days per week / 8000 Bh/year                           |                                                                 | a    |
| 8  | Applicable Standards and Guidelines           |                                                   |                                                                     |                                                                 |      |
| 9  | EC Machinery Directive                        |                                                   | 2006/42/EG                                                          |                                                                 | a    |
| 10 | ATEX Directive                                |                                                   | 2014/34/EG                                                          |                                                                 | a    |
| 11 |                                               |                                                   |                                                                     |                                                                 | a    |
| 12 | other certificates                            |                                                   | CE certification, material certificate according DIN EN 10204 - 2.2 |                                                                 | a    |
| 13 | Pressure Equipment Data                       |                                                   |                                                                     |                                                                 |      |
| 14 | Guideline                                     |                                                   | (n.a.)                                                              |                                                                 | a    |
| 15 | Fluid Category                                |                                                   | (n.a.)                                                              |                                                                 | a    |
| 16 | Aggregat State                                |                                                   | (n.a.)                                                              |                                                                 | a    |
| 17 | Categorization                                |                                                   | (n.a.)                                                              |                                                                 | a    |
| 18 | Module                                        |                                                   | (n.a.)                                                              |                                                                 | a    |
| 19 | Mechanical Design Data                        |                                                   |                                                                     |                                                                 |      |
| 20 | Min./Max. Allowed Pressure (PS)               | bar(g)                                            | -1 / 10 // 10                                                       | process gas // steam                                            | a    |
| 21 | Min./Max. allowed Temperature (TS)            | °C                                                | -10 / 180 // 0 / 185                                                | process gas // steam                                            | a    |
| 22 | Test Pressure                                 | bar(g)                                            | (*)                                                                 |                                                                 | a    |
| 23 | Installation Conditions                       |                                                   |                                                                     |                                                                 |      |
| 24 | Installation Location                         |                                                   | Inside the production building                                      |                                                                 | a    |
| 25 | Ambient Temperature                           | °C                                                | 5 ... 40                                                            |                                                                 | a    |
| 26 | Heigt above sea level                         | m                                                 | 80 m above sea level                                                |                                                                 | a    |
| 27 | Hygienic Zone/Room Classification             |                                                   | (n.a.)                                                              |                                                                 | a    |
| 28 | Seismic Zone                                  |                                                   | (n.a.)                                                              |                                                                 | a    |
| 29 | Earthquake Accelaration in the centre of mass | m/s²                                              |                                                                     | to be considered<br>(substitute accelaration in centre of mass) | a    |
| 30 | Max. Sound Pressure Level                     | dB (A)                                            | (n.a.)                                                              | 1m Distance                                                     | a    |

specification heat exchanger atomizing gas E-313

| No | Name                                                   | heat exchanger atomizing gas |                                   |      |      |        | Remarks | Iss. |
|----|--------------------------------------------------------|------------------------------|-----------------------------------|------|------|--------|---------|------|
| No | TAG                                                    | E-313                        |                                   |      |      |        | Remarks | Iss. |
| 31 | <b>Process Data</b>                                    |                              | min                               | norm | max  | design | Remarks |      |
| 32 | Medium                                                 |                              | process gas N2 with additives     |      |      |        |         | a    |
| 33 | Filtertype Stage #1                                    |                              | (n.a.)                            |      |      |        |         | a    |
| 34 | Filtertype Stage #2                                    |                              | (n.a.)                            |      |      |        |         | a    |
| 35 | Filtertype Stage #3                                    |                              | (n.a.)                            |      |      |        |         | a    |
| 36 | Mass flow Inlet                                        | kg/h                         | 2813                              | 3875 | 4500 | 4500   |         | a    |
| 37 | Volume flow Inlet                                      | m³/h                         | 730                               | 1070 | 1170 | 1420   |         | a    |
| 38 | Mass flow Chamber 5                                    | kg/h                         |                                   |      |      |        |         | a    |
| 39 | Temperature Inlet                                      | °C                           | 30                                | 50   | 60   | 60     |         | a    |
| 40 | Temperature Outlet                                     | °C                           | 50                                | 70   | 85   | 120    |         | a    |
| 41 | Temperature Outlet Chamber 5                           | °C                           |                                   |      |      |        |         | a    |
| 42 | Pressure Inlet                                         | mbar(g)                      | 800                               | 2500 | 3200 | 3500   |         | a    |
| 43 | Pressure Outlet                                        | mbar(g)                      | (*)                               | (*)  | (*)  |        |         | a    |
| 44 | Max. Pressure drop                                     | mbar                         | (*)                               | (*)  | (*)  |        |         | a    |
| 45 | <b>Chemical and Physical Properties of process gas</b> |                              |                                   |      |      |        | Remarks |      |
| 46 | Description medium                                     |                              | process gas N2 with additives     |      |      |        |         | a    |
| 47 | Composition                                            |                              | min                               | norm | max  |        |         | a    |
| 48 | Oxygen O2                                              | Mass-%                       | 0                                 | 2    | 3,5  |        |         | a    |
| 49 | n-Butanol, C4H10O                                      | Mass-%                       | 0                                 | 0,52 | 2,7  |        |         | a    |
| 50 | Carbon disulphide, CS2                                 | Mass-%                       | 0                                 | 0,7  | 1    |        |         | a    |
| 51 | water, H2O                                             | Mass-%                       | 0                                 | 4    | 5    |        |         | a    |
| 52 | Characteristics dust                                   |                              | water soluble, hygroscopic, toxic |      |      |        |         | a    |
| 53 | Dust Content                                           | mg/Nm³                       | -                                 | -    | -    |        |         | a    |
| 54 | Particle size                                          | µm                           | -                                 | -    | -    |        |         | a    |
| 55 | Particle Structure                                     |                              | -                                 | -    | -    |        |         | a    |
| 56 | pH Value (min./max.)                                   |                              | -                                 | -    | -    |        |         | a    |
| 57 | Density                                                | kg/m³                        | 3,53                              | 3,64 | 3,88 |        |         | a    |
| 58 | Humidity                                               | g/kg                         | 0                                 | 47   | 83   |        |         | a    |
| 59 | <b>Heat media</b>                                      |                              | min                               | norm | max  | design | Remarks |      |
| 60 | Heat transfer medium                                   |                              | steam                             |      |      |        |         | a    |
| 61 | Fluid code                                             |                              | US                                |      |      |        |         | a    |
| 62 | Mass flow                                              | kg/h                         | (*)                               | (*)  | (*)  |        |         | a    |
| 63 | Temperature Inlet                                      | °C                           |                                   | 148  | 150  | 185    |         | a    |
| 64 | Operating pressure                                     | bar(g)                       | 3,45                              | 3,5  | 3,55 | 6      |         | a    |
| 65 | Max. allowable pressure drop                           | mbar                         | (*)                               | (*)  | (*)  |        |         | a    |
| 66 | Density                                                | kg/m³                        | 2,35                              | 2,4  | 2,45 |        |         | a    |
| 67 | Thermal Resistance Parameter                           | W/m²/K                       | (*)                               | (*)  | (*)  |        |         | a    |
| 68 | Fouling Factor                                         | m²K/W                        |                                   |      |      |        |         | a    |

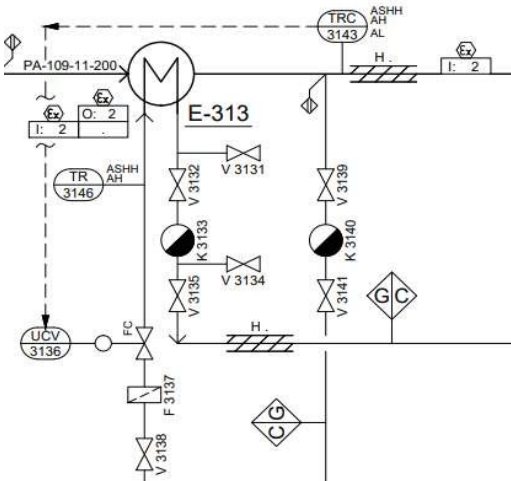
specification heat exchanger atomizing gas E-313

| No  | Name                                       | heat exchanger atomizing gas |              |      |     |        | Remarks | Iss. |
|-----|--------------------------------------------|------------------------------|--------------|------|-----|--------|---------|------|
| No  | TAG                                        | E-313                        |              |      |     |        | Remarks | Iss. |
| 69  | <b>Energy Recovery</b>                     |                              | min          | norm | max | design |         |      |
| 70  | Heat transfer medium                       |                              | (n.a.)       |      |     |        |         |      |
| 71  | Fluid code                                 |                              |              |      |     |        |         |      |
| 72  | Mass flow                                  | kg/h                         | -            | -    | -   |        |         |      |
| 73  | Temperature Inlet                          | °C                           | -            | -    | -   |        |         |      |
| 74  | Temperature Outlet                         | °C                           | -            | -    | -   |        |         |      |
| 75  | Power                                      | kW                           | -            | -    | -   |        |         |      |
| 76  | Operating Pressure                         | bar(g)                       | -            | -    | -   |        |         |      |
| 77  | Density                                    | kg/m³                        | -            | -    | -   |        |         |      |
| 78  | Glycol Content                             | %                            | -            | -    | -   |        |         |      |
| 79  | Fouling Factor                             | m²K/W                        | -            | -    | -   |        |         |      |
| 80  | <b>Cooling media</b>                       |                              | min          | norm | max | design |         |      |
| 81  | Heat transfer medium                       |                              | (n.a.)       |      |     |        |         |      |
| 82  | Fluid code                                 |                              |              |      |     |        |         |      |
| 83  | Mass flow                                  | kg/h                         | -            | -    | -   |        |         |      |
| 84  | Temperature Inlet                          | °C                           | -            | -    | -   |        |         |      |
| 85  | Temperature Outlet                         | °C                           | -            | -    | -   |        |         |      |
| 86  | Operating Pressure                         | bar(g)                       | -            | -    | -   |        |         |      |
| 87  | Density                                    | kg/m³                        | -            | -    | -   |        |         |      |
| 88  | Glycol Content                             | %                            | -            | -    | -   |        |         |      |
| 89  | Fouling Factor                             | m²K/W                        | -            | -    | -   |        |         |      |
| 90  | <b>Cleaning/Sanitisation/Sterilisation</b> |                              |              |      |     |        |         |      |
| 91  | Cleaning Media Product Side                |                              | dry cleaning |      |     |        |         | a    |
| 92  | Cleaning Temperatur Product Side           | °C                           | (n.a.)       |      |     |        |         | a    |
| 93  | Sanitisation/Sterilisation Medium          |                              | (n.a.)       |      |     |        |         | a    |
| 94  | Sanitisation Temperature                   | °C                           | (n.a.)       |      |     |        |         | a    |
| 95  | Cleaning outside                           |                              | dry cleaning |      |     |        |         | a    |
| 96  | <b>Design, Dimensions and Weights</b>      |                              |              |      |     |        |         |      |
| 97  | Total Length                               | mm                           | (*)          |      |     |        |         | a    |
| 98  | Total Width                                | mm                           | (*)          |      |     |        |         | a    |
| 99  | Total Height                               | mm                           | (*)          |      |     |        |         | a    |
| 100 | Empty weight                               | kg                           | (*)          |      |     |        |         | a    |
| 101 | Emergency weight                           | kg                           | (*)          |      |     |        |         | a    |
| 102 | Insulation Type                            | Y/N                          | Y            |      |     |        |         | a    |
| 103 | Insulation Thickness                       | mm                           | (*)          |      |     |        |         | a    |

specification heat exchanger atomizing gas E-313

| No  | Name                                                     |     | Remarks                   | Iss.                                                        |   |
|-----|----------------------------------------------------------|-----|---------------------------|-------------------------------------------------------------|---|
|     | TAG                                                      |     |                           |                                                             |   |
|     | heat exchanger atomizing gas                             |     |                           |                                                             |   |
|     | E-313                                                    |     |                           |                                                             |   |
| 104 | Materials and Surface Treatments, Coatings, Certificates |     |                           |                                                             |   |
| 105 | Metal Parts with Product Contact                         |     | AISI 316L or higher grade | Tube bundle and shell                                       | a |
| 106 | Surface Treatment                                        |     | (*)                       |                                                             | a |
| 107 | External Surface                                         |     | (*)                       |                                                             | a |
| 108 | Weld. Seams with Product Contact                         |     | (*)                       |                                                             | a |
| 109 | External Welding Seams                                   |     | (*)                       |                                                             | a |
| 110 | Seals/Gaskets with Product Contact                       |     | (*)                       |                                                             | a |
| 111 | Metal Parts without Product Contact                      |     | (*)                       |                                                             | a |
| 112 | Coating System of non SS Parts                           |     | (*)                       |                                                             | a |
| 113 | Material of Supports                                     |     | (*)                       |                                                             | a |
| 114 | Material of Insulation                                   |     | (*)                       | if necessary                                                | a |
| 115 | Material steel frame                                     |     | (*)                       |                                                             | a |
| 116 | Material Heater Energy Recovery                          |     | (*)                       |                                                             | a |
| 117 | Material Cooler                                          |     | (*)                       |                                                             | a |
| 118 | Explosion Protection                                     |     |                           |                                                             |   |
| 119 | Ex Zone inside                                           |     | 2                         | for process gas                                             | a |
| 120 | Ex Zone outside                                          |     | 22 / 2                    |                                                             | a |
| 121 | Protection System                                        |     | N2- Inerting              |                                                             | a |
| 122 | General Accessories                                      |     |                           |                                                             |   |
| 123 | Name Plate                                               | Y/N | Y                         |                                                             | a |
| 124 | frame for housing                                        | Y/N | N                         |                                                             | a |
| 125 | Lifting Lugs                                             | Y/N | Y                         | if necessary                                                | a |
| 126 | filter                                                   | Y/N | N                         |                                                             | a |
| 127 | droplet Separator                                        | Y/N | N                         |                                                             | a |
| 128 | Earthing Lug                                             | Y/N | Y                         |                                                             | a |
| 129 | Inspection opening                                       | Y/N | Y                         |                                                             | a |
| 130 | Drain                                                    | Y/N | Y                         | closed                                                      | a |
| 131 | Local pressure differential gauge                        | Y/N | N                         |                                                             | a |
| 132 | Pressure Differential Transmitter                        | Y/N | N                         |                                                             | a |
| 133 | Socket for instrumentation                               | Y/N | Y                         | Connections for pressure and temperature measurement closed | a |
| 134 | Bypass flap                                              | Y/N | N                         |                                                             | a |
| 135 | Silencer                                                 | Y/N | N                         |                                                             | a |
| 136 | Insulation                                               | Y/N | N                         | prepared for insulation                                     | a |
| 137 | safety valve                                             | Y/N | Y                         | Steam side                                                  | a |
| 138 | Electrical Accessories                                   |     |                           |                                                             |   |
| 139 | Measuring Devices                                        | Y/N | N                         | If YES specify manufacturer and type                        | a |
| 140 | Explosion Protection                                     | Y/N | N                         | If YES specify type and Ex-Certification                    | a |

specification heat exchanger atomizing gas E-313

|     |                                                                                    |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
|-----|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------|-------------|--------------|--------------|------|---|
|     | Name                                                                               |                                                                                                                                                                                                                               | heat exchanger atomizing gas |                |             |              | Remarks      | Iss. |   |
| No  | TAG                                                                                |                                                                                                                                                                                                                               | E-313                        |                |             |              |              |      |   |
| 141 | Nozzles List                                                                       |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 142 | Pos.                                                                               | DN (")                                                                                                                                                                                                                        | PN                           | Standard       | Nozzle Type | Sealing Face | Description  |      |   |
| 143 | N01                                                                                | 200                                                                                                                                                                                                                           | 16                           | flange         | (*)         | (*)          | gas inlet    | b    |   |
| 144 | N02                                                                                | 200                                                                                                                                                                                                                           | 16                           | flange         | (*)         | (*)          | gas outlet   | b    |   |
| 145 | N03                                                                                |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 146 | N04                                                                                |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 147 | N05                                                                                |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 148 | Signals                                                                            |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 149 | Pos.                                                                               | Tag                                                                                                                                                                                                                           | Type                         | Kind of Signal | Range       | Description  |              |      |   |
| 150 | S01                                                                                |                                                                                                                                                                                                                               | (*)                          |                |             | if necessary |              |      |   |
| 151 | S02                                                                                |                                                                                                                                                                                                                               | (*)                          |                |             | if necessary |              |      |   |
| 152 | S03                                                                                |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 153 | S04                                                                                |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 154 | Sketch, PID-Section                                                                |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 155 |  |                                                                                                                                                                                                                               |                              |                |             |              |              |      | b |
| 155 | Additional Requirements                                                            |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 156 | Attachments:                                                                       |                                                                                                                                                                                                                               |                              |                |             |              |              |      | a |
| 157 | 1x                                                                                 | General design conditions                                                                                                                                                                                                     |                              |                |             |              | 2115_GDCB001 | a    |   |
| 158 | 1x                                                                                 | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |                              |                |             |              | 2115_IEQS001 | a    |   |
| 159 | 1x                                                                                 | Safety characteristics                                                                                                                                                                                                        |                              |                |             |              | 2115_SSDS001 | a    |   |
| 160 |                                                                                    |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 161 |                                                                                    |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 162 | Editing instructions                                                               |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 163 | SIGNAL IN                                                                          | Signal goes to                                                                                                                                                                                                                |                              |                |             |              |              | a    |   |
| 164 | SIGNAL OUT                                                                         | Signal comes from                                                                                                                                                                                                             |                              |                |             |              |              | a    |   |
| 165 | (n.a.)                                                                             | not applicable                                                                                                                                                                                                                |                              |                |             |              |              | a    |   |
| 166 | (n.e.)                                                                             | not required                                                                                                                                                                                                                  |                              |                |             |              |              | a    |   |
| 167 | (n.b.)                                                                             | not known                                                                                                                                                                                                                     |                              |                |             |              |              | a    |   |
| 168 | (*)                                                                                | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |                              |                |             |              |              | a    |   |
| 169 |                                                                                    |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |
| 170 |                                                                                    |                                                                                                                                                                                                                               |                              |                |             |              |              |      |   |

## MEQS 017

### specification cyclone vessel S-354

|              |             |                   |                |                 |                           |
|--------------|-------------|-------------------|----------------|-----------------|---------------------------|
|              |             |                   |                |                 |                           |
| d            | 13.01.2023  | ys                | kp             |                 | gas inlet DN125           |
| c            | 23.11.2022  | ys                |                |                 | revised connection nozzle |
| b            | 20.10.2022  | ys                |                |                 | revised design pressure   |
| a            | 08.06.2022  | ys                | jk             | schz            | first issue               |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b>            |

## specification cyclone vessel S-354

| #  | Name                                      |                                                                                                | cyclone vessel        |                                           |          |       | Remarks                                       | Iss. |
|----|-------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------|----------|-------|-----------------------------------------------|------|
|    | TAG                                       | S-354                                                                                          |                       |                                           |          |       |                                               |      |
| 1  | General Data                              |                                                                                                |                       |                                           |          |       |                                               |      |
| 2  | Application                               | cyclone vessel for separation of granulated product from pneumatic conveying gas (process gas) |                       |                                           |          |       |                                               | a    |
| 3  | Quantity                                  | Operation                                                                                      | units                 | 1                                         |          |       |                                               | a    |
| 4  |                                           | Stand-By                                                                                       | units                 | 0                                         |          |       |                                               | a    |
| 5  | Operation Mode                            |                                                                                                |                       | continuous operation                      |          |       |                                               | a    |
| 6  | Operation Time                            |                                                                                                |                       | 24 h Tag / 7 Tage je Woche / 8000 Bh/Jahr |          |       |                                               | a    |
| 7  | Standards und guidlines to be used        |                                                                                                |                       |                                           |          |       | Remarks                                       |      |
| 8  | General sets of rules                     |                                                                                                | see                   | general design conditions                 |          |       | Dok.: 2115_GDCB001                            | a    |
| 9  | Special standards and guideline           |                                                                                                | -                     | DIN EN 13445, AD 2000                     |          |       |                                               | a    |
| 10 | Mechanical Design Data                    |                                                                                                |                       |                                           |          |       |                                               |      |
| 11 | Min./max. allowed Pressure                |                                                                                                | PS                    | bar(g)                                    | -0,1     | +0,7  |                                               | b    |
| 12 | Min./max. allowed temperature             |                                                                                                | TS <sub>min/max</sub> | °C                                        | -10      | +160  |                                               | b    |
| 13 | Test Pressure                             |                                                                                                | bar(g)                |                                           | (*)      |       |                                               | a    |
| 14 | Installation Conditions                   |                                                                                                |                       |                                           |          |       |                                               |      |
| 15 | Installation Location                     |                                                                                                |                       | Inside the production building            |          |       |                                               | a    |
| 16 | Ambient Temperature                       |                                                                                                | °C                    |                                           | 5 ... 40 |       |                                               | a    |
| 17 | Hygienic Zone/Room Classification         |                                                                                                |                       | n.a.                                      |          |       |                                               | a    |
| 18 | Heigt above sea level                     |                                                                                                |                       | 80 m above sea level                      |          |       |                                               | a    |
| 19 | Ex Zone inside                            |                                                                                                |                       | 21/1                                      |          |       |                                               | a    |
| 20 | Ex Zone outside                           |                                                                                                |                       | 22/2                                      |          |       |                                               | a    |
| 21 | Seismic Zone                              |                                                                                                |                       | n.a.                                      |          |       | Dok.: 2115_GDCB001                            | a    |
| 22 | Max. Sound Pressure Level                 |                                                                                                |                       | < 85                                      |          |       | 1m Distance                                   | a    |
| 23 | Process Design Data                       |                                                                                                |                       | min                                       | norm     | max   | design                                        |      |
| 24 | Fluid                                     |                                                                                                |                       | particle-gas-mixture                      |          |       |                                               | a    |
| 25 | Fluid code                                |                                                                                                |                       | SP                                        |          |       |                                               | a    |
| 26 | Medium I                                  |                                                                                                |                       | Butyl KaliumXanthogenat - solid           |          |       |                                               | a    |
| 27 | Mass flow                                 |                                                                                                | kg/h                  | 589                                       | 3535     | 6000  | 6700                                          | a    |
| 28 | Volume flow                               |                                                                                                | m³/h                  | 0,78                                      | 5,44     | 10,91 | 11                                            | a    |
| 29 | Inlet Temperature                         |                                                                                                | °C                    | 35                                        | 65       | 80    |                                               | a    |
| 30 | particle size                             |                                                                                                | mm                    |                                           | 0-5      | <20   | individual lumps < 20 mm edge length possible | a    |
| 31 | Medium II - process gas                   |                                                                                                |                       | transport gas                             |          |       |                                               | a    |
| 32 | Fluid code                                |                                                                                                |                       | PT                                        |          |       |                                               | a    |
| 33 | Mass flow                                 |                                                                                                | kg/h                  | 1050                                      | 1275     | 1340  |                                               | a    |
| 34 | Volume flow                               |                                                                                                | m³/h                  | 770                                       | 1026     | 1120  |                                               | a    |
| 35 | Inlet Temperature                         |                                                                                                | °C                    | 35                                        | 65       | 80    |                                               | a    |
| 36 | Pressure Inlet                            |                                                                                                | mbar(g)               | 100                                       | 300      | 500   |                                               | a    |
| 37 | Pressure outlet                           |                                                                                                | mbar(g)               | (*)                                       | (*)      | (*)   |                                               | a    |
| 38 | Chemical and Physical Properties of fluid |                                                                                                |                       |                                           |          |       |                                               |      |
| 39 | Description solid particles               |                                                                                                |                       | water soluble, hygroscopic, toxic         |          |       |                                               | a    |
| 40 | Bulk density                              |                                                                                                | kg/m³                 | 550                                       | 650      | 760   |                                               | a    |
| 41 | specific volume resistance                |                                                                                                | Ohm*m                 | >10 <sup>6</sup>                          |          |       | acc. EN 61241-2-2                             | a    |
| 42 | Composition particles                     |                                                                                                |                       | min                                       | norm     | max   |                                               | a    |
| 43 | Oxygen O2                                 |                                                                                                | Mass-%                | 0                                         | 0        | 0     |                                               | a    |
| 44 | n-Butanol, C4H10O                         |                                                                                                | Mass-%                | 0,3                                       | 0,6      | 2,1   |                                               | a    |
| 45 | Carbon disulphide, CS2                    |                                                                                                | Mass-%                | 0                                         | 0,005    | 0,008 |                                               | a    |
| 46 | water, H2O                                |                                                                                                | Mass-%                | 0,2                                       | 0,5      | 1,9   |                                               | a    |

## specification cyclone vessel S-354

| #  | Name                                                     | cyclone vessel         |                               |      |      |  | Remarks                                 | E | Iss. |
|----|----------------------------------------------------------|------------------------|-------------------------------|------|------|--|-----------------------------------------|---|------|
|    | TAG                                                      | S-354                  |                               |      |      |  |                                         |   |      |
| 47 | Solubility of Solids                                     |                        | Soluble in water              |      |      |  |                                         |   | a    |
| 48 | Description gas                                          |                        | process gas N2 with additives |      |      |  |                                         |   | a    |
| 49 | density                                                  | kg/m³                  | 1,2                           | 1,29 | 1,42 |  |                                         |   | a    |
| 50 | Composition gas                                          |                        | min                           | norm | max  |  |                                         |   | a    |
| 51 | Oxygen O2                                                | Mass-%                 | 0                             | 2    | 3,5  |  |                                         |   | a    |
| 52 | n-Butanol, C4H10O                                        | Mass-%                 | 0                             | 0,52 | 2,7  |  |                                         |   | a    |
| 53 | Carbon disulphide, CS2                                   | Mass-%                 | 0                             | 0,7  | 1    |  |                                         |   | a    |
| 54 | water, H2O                                               | Mass-%                 | 0                             | 1    | 2,7  |  |                                         |   | a    |
| 55 | Design, Dimensions and Weights                           |                        |                               |      |      |  |                                         |   |      |
| 56 | Type                                                     |                        | cyclone                       |      |      |  |                                         |   | a    |
| 57 | Total Volume                                             | V m³                   | (*)                           |      |      |  |                                         |   | a    |
| 58 | Filling volume                                           | V <sub>FI max</sub> m³ | (*)                           |      |      |  |                                         |   | a    |
| 59 | Inside Diameter                                          | mm                     | (*)                           |      | (*)  |  |                                         |   | a    |
| 60 | Wall thickness (head/bottom/cylinder)                    | mm                     | (*)                           |      |      |  |                                         |   | a    |
| 61 | Total Height with Bottom and Top Head                    | mm                     | (*)                           |      |      |  | without sockets and feet                |   | a    |
| 62 | Type of Supports                                         | -                      | (*)                           |      |      |  | Anschlagzarge für bauseitigen Klemmring |   | a    |
| 63 | Operating empty~/ filling~/max.opera. weight             | kg                     | (*)                           | (*)  | (*)  |  |                                         |   | a    |
| 64 | Cleaning/Sanitisation/Sterilisation                      |                        |                               |      |      |  |                                         |   |      |
| 65 | Cleaning Media Product Side                              |                        | Dry cleaning                  |      |      |  |                                         |   | a    |
| 66 | Cleaning Temperatur Product Side                         | °C                     | (n.a)                         |      |      |  |                                         |   | a    |
| 67 | Sanitisation/Sterilisation Medium                        |                        | (n.a)                         |      |      |  |                                         |   | a    |
| 68 | Sanitisation Temperature                                 | °C                     | (n.a)                         |      |      |  |                                         |   | a    |
| 69 | Cleaning External Surface                                |                        | Dry Cleaning                  |      |      |  |                                         |   | a    |
| 70 | Materials and Surface Treatments, Coatings, Certificates |                        |                               |      |      |  |                                         |   |      |
| 71 | Metal Parts with Product Contact                         |                        | AISI 304 or higher grade      |      |      |  |                                         |   | a    |
| 72 | other Metal Parts                                        |                        | (*)                           |      |      |  |                                         |   | a    |
| 73 | Surface with Product Contact                             |                        | (*)                           |      |      |  |                                         |   | a    |
| 74 | Welding Seams with Product Contact                       |                        | ground Ra</= 1,6µm            |      |      |  |                                         |   | a    |
| 75 | External Welding Seams                                   |                        | (*)                           |      |      |  |                                         |   | a    |
| 76 | Seals/Gaskets with Product Contact                       |                        | (*)                           |      |      |  |                                         |   | a    |
| 77 | Metal Parts without Product Contact                      |                        | (*)                           |      |      |  |                                         |   | a    |
| 78 | Coating System of non SS Parts                           |                        | (*)                           |      |      |  |                                         |   | a    |
| 79 | Material of Supports                                     |                        | (*)                           |      |      |  |                                         |   | a    |
| 80 | Material of Insulation                                   |                        | -                             |      |      |  |                                         |   | a    |

## specification cyclone vessel S-354

|     | Name                                                                      |             | cyclone vessel |                    |               |                                       | Remarks                                    | Iss.                                                         |   |
|-----|---------------------------------------------------------------------------|-------------|----------------|--------------------|---------------|---------------------------------------|--------------------------------------------|--------------------------------------------------------------|---|
| #   | TAG                                                                       |             | S-354          |                    |               |                                       |                                            |                                                              |   |
| 81  | Accessories                                                               |             |                |                    |               |                                       |                                            |                                                              |   |
| 82  | Name Plate                                                                |             | Y/N            | Y                  |               |                                       |                                            | a                                                            |   |
| 83  | Sight Glass                                                               |             | Y/N            | Y                  |               |                                       |                                            | a                                                            |   |
| 84  | Light Glass                                                               |             | Y/N            | N                  |               |                                       |                                            | a                                                            |   |
| 85  | Cleaning Spray Nozzle                                                     |             | Y/N            | N                  |               |                                       |                                            | a                                                            |   |
| 86  | Transport Lugs                                                            |             | Y/N            | Y                  |               | if necessary                          |                                            | a                                                            |   |
| 87  | Lifting Lugs                                                              |             | Y/N            | Y                  |               | if necessary                          |                                            | a                                                            |   |
| 88  | Anchor Bolts                                                              |             | Y/N            | N                  |               |                                       |                                            | a                                                            |   |
| 89  | Vortex Breaker                                                            |             | Y/N            | N                  |               |                                       |                                            | a                                                            |   |
| 90  | Insulation                                                                |             | Y/N            | N                  |               |                                       |                                            | a                                                            |   |
| 91  | Insulation Preparation                                                    |             | Y/N            | N                  |               |                                       |                                            | a                                                            |   |
| 92  | Earthing Lug                                                              |             | Y/N            | Y                  |               |                                       |                                            | a                                                            |   |
| 93  | buffer tank                                                               |             | Y/N            | Y                  |               | austragseitig                         |                                            | a                                                            |   |
| 94  | Explosion Protection according to DIN EN 60079/80079                      |             |                |                    |               | Remarks                               |                                            |                                                              |   |
| 95  | Ex-protection version for the following Ex-zone -                         |             |                | inside:            | 21/1          | outside:                              | 22/2                                       | a                                                            |   |
| 96  | Medium conditioning the Ex zone <div>Medien-code</div>                    |             |                | -                  |               | -                                     |                                            | 2115_SS001                                                   | a |
| 97  | Hybrid mixture Y/N                                                        |             |                | -                  |               | -                                     |                                            | a                                                            |   |
| 98  | Permitted surface temperature max. °C                                     |             |                | 150                |               |                                       |                                            | a                                                            |   |
| 99  | Permitted temperature class -                                             |             |                | -                  |               |                                       |                                            | a                                                            |   |
| 100 | Permitted equipment group                                                 |             |                | -                  |               |                                       | For non-electrical and electrical devices! | a                                                            |   |
| 101 | Permitted Equipment protection level (EPL)                                |             |                | -                  |               | -                                     |                                            | For non-electrical and electrical devices!                   | a |
| 102 | Explosionsschutzart (mechanisch)                                          |             |                | inside             |               | outside                               |                                            | Remarks                                                      |   |
| 103 | Type of ignition protection -                                             |             |                | (*)                |               | (*)                                   |                                            | acc. DIN/EN 80079-36/37, DIN EN 60079-0 & DIN EN 13463-1...8 | a |
| 104 | Explosion proof design Y/N                                                |             |                | N                  |               | -                                     |                                            | If YES specify presure                                       | a |
| 105 | Explosion pressure shock resistant design Y/N                             |             |                | N                  |               | -                                     |                                            | If YES specify presure                                       | a |
| 106 | Required dession pressure bar(Ü)                                          |             |                | -                  |               | -                                     |                                            | For the explosion-proof / pressure-shock-proof version!      | a |
| 107 | Explosionsschutzart (elektrisch)                                          |             |                |                    |               | Remarks                               |                                            |                                                              |   |
| 108 | Type of ignition protection other electrical parts                        |             |                | (*)                |               |                                       | acc. DIN EN 60079-0...31                   | a                                                            |   |
| 109 | Electrical Accessories                                                    |             |                |                    |               |                                       |                                            |                                                              |   |
| 110 | Trace Heating Y/N                                                         |             |                | N                  |               | If YES specify type, voltage, current |                                            | a                                                            |   |
| 111 | Sight glass luminaire Y/N                                                 |             |                | N                  |               | If YES specify type, voltage, current |                                            | a                                                            |   |
| 112 | Measuring Devices Y/N                                                     |             |                | N                  |               | If YES specify manufacturer and type  |                                            | a                                                            |   |
| 113 | Listing of measuring devices (electrical accessories) and signal exchange |             |                |                    |               |                                       |                                            |                                                              |   |
| 114 | Pos.                                                                      | Designation | Type           | TAG ()             |               | Signal type                           | Remarks                                    |                                                              |   |
| 115 | -                                                                         | -           | (*)            | -                  |               | -                                     | -                                          | a                                                            |   |
| 116 | -                                                                         | -           | (*)            | -                  |               | -                                     | -                                          | a                                                            |   |
| 117 | -                                                                         | -           | (*)            | -                  |               | -                                     | -                                          | a                                                            |   |
| 118 | Nozzles List                                                              |             |                |                    |               |                                       |                                            |                                                              |   |
| 119 | Pos.                                                                      | NPS         | PN             | Type of connection | Norm          | Sealing Face                          | Service                                    |                                                              |   |
| 120 | N1                                                                        | DN125       | 16             | flange             | DIN EN 1092-1 | (*)                                   | gas inlet                                  | d                                                            |   |
| 121 | N2                                                                        | DN200       | 16             | flange             | DIN EN 1092-1 | (*)                                   | gas outlet                                 | c                                                            |   |
| 122 | N3                                                                        | DN200       | 16             | flange             | DIN EN 1092-1 | (*)                                   | material discharge 1                       | c                                                            |   |
| 123 | N4                                                                        | DN200       | 16             | flange             | DIN EN 1092-1 | (*)                                   | material discharge 2                       | c                                                            |   |
| 124 | N5-N7                                                                     | (*)         | (*)            | (*)                | (*)           |                                       | level measurement                          | d                                                            |   |
| 125 | M1                                                                        | (*)         | (*)            | (*)                | (*)           |                                       | maintenance opening                        | d                                                            |   |
| 126 |                                                                           |             |                |                    |               |                                       |                                            |                                                              |   |

| #   |                                                     | Name                                                                                                                                                                                                                          | cyclone vessel | Remarks               | Iss. |
|-----|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------|------|
| TAG |                                                     | S-354                                                                                                                                                                                                                         |                |                       |      |
| 127 | Sketch, PID-Section                                 |                                                                                                                                                                                                                               |                |                       |      |
| 128 | <div></div>                                         |                                                                                                                                                                                                                               |                |                       | a    |
| 129 | Further requirements / Required further information |                                                                                                                                                                                                                               |                | Remarks               |      |
| 130 | Design acc.to Technical Instruction Air             | Y/N                                                                                                                                                                                                                           | N              | German rule 'TA-Luft' | a    |
| 131 |                                                     |                                                                                                                                                                                                                               |                |                       |      |
| 132 |                                                     |                                                                                                                                                                                                                               |                |                       |      |
| 133 |                                                     |                                                                                                                                                                                                                               |                |                       |      |
| 134 |                                                     |                                                                                                                                                                                                                               |                |                       |      |
| 135 |                                                     |                                                                                                                                                                                                                               |                |                       |      |
| 136 | Additional Requirements                             |                                                                                                                                                                                                                               |                | Doc.-no.              |      |
| 137 | 1x                                                  | General design conditions                                                                                                                                                                                                     |                | 2115_GDCB001          | a    |
| 138 | 1x                                                  | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |                | 2115_IEQS001          | a    |
| 139 | 1x                                                  | Safety characteristics                                                                                                                                                                                                        |                | 2115_SSDS001          | a    |
| 140 |                                                     |                                                                                                                                                                                                                               |                |                       | a    |
| 141 |                                                     |                                                                                                                                                                                                                               |                |                       |      |
| 142 |                                                     |                                                                                                                                                                                                                               |                |                       |      |
| 143 | Remarks for Originator                              |                                                                                                                                                                                                                               |                |                       |      |
| 144 | SIGNAL IN                                           | Signal goes to                                                                                                                                                                                                                |                |                       | a    |
| 145 | SIGNAL OUT                                          | Signal comes from                                                                                                                                                                                                             |                |                       | a    |
| 146 | -                                                   | not applicable                                                                                                                                                                                                                |                |                       | a    |
| 147 | (n.e.)                                              | not required                                                                                                                                                                                                                  |                |                       | a    |
| 148 | (n.b.)                                              | not known                                                                                                                                                                                                                     |                |                       | a    |
| 149 | (*)                                                 | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |                |                       | a    |

## MEQS 014

### specification rotary valve W-358, W-368

|       |            |            |         |          |             |
|-------|------------|------------|---------|----------|-------------|
|       |            |            |         |          |             |
|       |            |            |         |          |             |
|       |            |            |         |          |             |
| a     | 30.05.2022 | ys         | jk      | schz     | first issue |
| Issue | Date       | Originated | Checked | Approved | Remarks     |

specification rotary valve W-358, W-368

| #  | Name                                           |                                                                 | Rotary valve |                                                                                  |      |      | E            | Iss.                                                      |   |
|----|------------------------------------------------|-----------------------------------------------------------------|--------------|----------------------------------------------------------------------------------|------|------|--------------|-----------------------------------------------------------|---|
|    | TAG                                            |                                                                 | W-358, W-368 |                                                                                  |      |      |              |                                                           |   |
| 1  | General Data                                   |                                                                 |              |                                                                                  |      |      | Remarks      |                                                           |   |
| 2  | Application                                    | Product discharge (fraction oversize) from the sieves S357/S367 |              |                                                                                  |      |      |              | a                                                         |   |
| 3  | Quantity                                       | Operation                                                       | units        | 2 (1 x 100% W358, 1 x 100% W368)                                                 |      |      |              | a                                                         |   |
| 4  |                                                | Stand-By                                                        | units        | 0                                                                                |      |      |              | a                                                         |   |
| 5  | Operation Mode                                 |                                                                 |              | continuous operation                                                             |      |      |              | a                                                         |   |
| 6  | Operation Time                                 |                                                                 |              | 24 h day / 7 days per week /8000Bh/year                                          |      |      |              | a                                                         |   |
| 7  | Standards und guidlines to be used             |                                                                 |              |                                                                                  |      |      | Remarks      |                                                           |   |
| 8  | General sets of rules                          |                                                                 | see          | general design conditions                                                        |      |      | 2115_GDCB001 | a                                                         |   |
| 9  | Special standards and guideline                |                                                                 | -            | -                                                                                |      |      |              | a                                                         |   |
| 10 | Mechanical Design Data                         |                                                                 |              |                                                                                  |      |      | Remarks      |                                                           |   |
| 11 | Max Allowed Pressure (PS)                      |                                                                 | bar(g)       | -0,4 / 0,65                                                                      |      |      |              | a                                                         |   |
| 12 | Max./Min. Allowed Temperature (TS)             |                                                                 | °C           | -10 / 150                                                                        |      |      |              | a                                                         |   |
| 13 | Installation Conditions                        |                                                                 |              |                                                                                  |      |      | Remarks      |                                                           |   |
| 14 | Installation Location                          |                                                                 |              | Inside the production building                                                   |      |      |              | a                                                         |   |
| 15 | Ambient Temperature                            |                                                                 | °C           | 5 ... 40                                                                         |      |      |              | a                                                         |   |
| 16 | Hygienic Zone/Room Classification              |                                                                 |              | n.a.                                                                             |      |      |              | a                                                         |   |
| 17 | Max. Sound Pressure Level                      |                                                                 | dB (A)       | 85                                                                               |      |      | 1m Distance  | a                                                         |   |
| 18 | Horizontal/Vertical Orientation                |                                                                 |              | horizontal                                                                       |      |      |              | a                                                         |   |
| 19 | Ex Zone inside                                 |                                                                 |              | 21/1                                                                             |      |      |              | a                                                         |   |
| 20 | Ex Zone outside                                |                                                                 |              | 21/1                                                                             |      |      |              | a                                                         |   |
| 21 | Process Design Data                            |                                                                 |              | min                                                                              | norm | max  | design       | Remarks                                                   |   |
| 22 | Medium                                         |                                                                 |              | potassium xanthate                                                               |      |      |              | a                                                         |   |
| 23 | Fluid code                                     |                                                                 |              | SP                                                                               |      |      |              | a                                                         |   |
| 24 | mass flow rate                                 |                                                                 | kg/h         | 127                                                                              | 450  | 800  | 1200         | value corresponds to 100% for one rotary valve            | a |
| 25 | volume flow rate                               |                                                                 | m³/h         | 0,17                                                                             | 0,70 | 1,46 | 1,54         | Specify min.-max. vol. current according to FI design (*) | a |
| 26 | Operating Temperature                          |                                                                 | °C           | 35                                                                               | 65   | 80   |              |                                                           | a |
| 27 | Pressure inlet side                            |                                                                 | mbar(g)      | -20                                                                              | -5   | 0    |              |                                                           | a |
| 28 | Pressure outlet side                           |                                                                 | mbar(g)      | 100                                                                              | 300  | 500  | 650          |                                                           | a |
| 29 | filling level (acc. to process design)         |                                                                 | %            | 10...60                                                                          |      |      | 45           | inlet from sieving station                                | a |
| 30 | rotor speed @ 50Hz                             |                                                                 | U/min        | approx. 8                                                                        |      |      |              |                                                           | a |
| 31 | Process engineering/plant engineering function |                                                                 |              |                                                                                  |      |      | Remarks      |                                                           |   |
| 32 | Pressure decoupling of process chambers        |                                                                 | Y/N          | Y                                                                                |      |      |              | a                                                         |   |
| 33 | Explosion decoupling                           |                                                                 | Y/N          | N                                                                                |      |      |              | a                                                         |   |
| 34 | Fire protection decoupling                     |                                                                 | Y/N          | Y                                                                                |      |      |              | a                                                         |   |
| 35 | Discharge or metering function                 |                                                                 | Y/N          | N                                                                                |      |      |              | a                                                         |   |
| 36 | Chemical and Physical Properties of fluid      |                                                                 |              |                                                                                  |      |      | Remarks      |                                                           |   |
| 37 | Description medium                             |                                                                 |              | potassium xanthate                                                               |      |      |              | a                                                         |   |
| 38 | Characteristics                                |                                                                 |              | water soluble, hygroscopic, toxic                                                |      |      |              | a                                                         |   |
| 39 | Particle Size                                  |                                                                 | µm           | mittlerer Korndurchmesser 0 - 5 mm, einzelne Klumpen < 20 mm Kantenlänge möglich |      |      |              | a                                                         |   |
| 40 | Particle Structure                             |                                                                 |              | n.b                                                                              |      |      |              | a                                                         |   |
| 41 | Bulk density                                   |                                                                 | kg/m³        | 550 .... 760                                                                     |      |      |              | a                                                         |   |

specification rotary valve W-358, W-368

| #  | Name                                                     |       |           | Rotary valve |                          |     |     | E                                                                      | Iss. |   |
|----|----------------------------------------------------------|-------|-----------|--------------|--------------------------|-----|-----|------------------------------------------------------------------------|------|---|
|    | TAG                                                      |       |           | W-358, W-368 |                          |     |     |                                                                        |      |   |
| 42 | Construction details rotary valve                        |       |           |              |                          |     |     | Remarks                                                                |      |   |
| 43 | Type denomination rotary valve                           |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 44 | Standardized rotary valve size                           |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 45 | Blow through air lock type                               |       |           | Y/N          | N                        |     |     |                                                                        | a    |   |
| 46 | Cell wheel design                                        |       |           | -            | (*)                      |     |     | Cellular wheel open (without side walls) / closed (with side walls)    | a    |   |
| 47 | Construction details cell wheels                         |       |           | -            | (*)                      |     |     | straight / beveled cells, cellular wheel with knife, ...(more details) | a    |   |
| 48 | Diameter cell wheel                                      |       |           | mm           | (*)                      |     |     |                                                                        | a    |   |
| 49 | Chamber number                                           |       |           | Stück        | (*)                      |     |     |                                                                        | a    |   |
| 50 | Chamber volume                                           |       |           | Liter        | (*)                      |     |     |                                                                        | a    |   |
| 51 | filling level (acc. to process engineering design)       |       |           | %            | (*)                      |     |     |                                                                        | a    |   |
| 52 | Rotational speed cell wheel (min./norm./max.)            |       |           | 1/min        | (*)                      |     |     |                                                                        | a    |   |
| 53 | Additional leakage gas nozzle                            |       |           | Y/N          | (*)                      |     |     |                                                                        | a    |   |
| 54 | drive system (direct with coupling or chain/belt drive)  |       |           |              | Chain drive              |     |     | (specify gear ratio for chain/belt drive)                              | a    |   |
| 55 | Gearbox type                                             |       |           |              | (*)                      |     |     | Oil-lubricated gear units are to be supplied with oil filling          | a    |   |
| 56 | Gearbox design                                           |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 57 | Gear ratio                                               |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 58 | Hygienic design according to hygienic zone               |       |           | Y/N          | N                        |     |     |                                                                        | a    |   |
| 59 | Puller for rotary feeder wheel                           |       |           | Y/N          | N                        |     |     | for cleaning purpose                                                   | a    |   |
| 60 | Easy removable for cleaning                              |       |           | Y/N          | Y                        |     |     |                                                                        | a    |   |
| 61 | Pump Housing Heating / Cooling                           |       |           | Y/N          | N                        |     |     |                                                                        | a    |   |
| 62 | pulsating chamber discharge                              |       |           | Y/N          | Y                        |     |     |                                                                        | a    |   |
| 63 | Earthing-connection                                      |       |           | Y/N          | Y                        |     |     |                                                                        | a    |   |
| 64 | Cleaning/Sanitisation/Sterilisation                      |       |           |              |                          |     |     | Remarks                                                                |      |   |
| 65 | Cleaning Media Product Side                              |       |           |              | Water cleaning           |     |     |                                                                        | a    |   |
| 66 | Cleaning Temperatur Product Side                         |       |           | °C           | <100°C                   |     |     |                                                                        | a    |   |
| 67 | Sanitisation/Sterilisation Medium                        |       |           |              | n.a.                     |     |     |                                                                        | a    |   |
| 68 | Sanitisation Temperature                                 |       |           | °C           | -                        |     |     |                                                                        | a    |   |
| 69 | Cleaning outside                                         |       |           |              | Dry cleaning             |     |     | In exceptional cases, manual wet cleaning                              | a    |   |
| 70 | Weights and Dimensions                                   |       |           |              |                          |     |     | Remarks                                                                |      |   |
| 71 | Total Length                                             |       |           | mm           | (*)                      |     |     |                                                                        | a    |   |
| 72 | Total Width                                              |       |           | mm           | (*)                      |     |     |                                                                        | a    |   |
| 73 | Total Height                                             |       |           | mm           | (*)                      |     |     |                                                                        | a    |   |
| 74 | Total Weight                                             | Empty | Operating | Catastro.    | kg                       | (*) | (*) | (*)                                                                    | -    | a |
| 75 | Materials and Surface Treatments, Coatings, Certificates |       |           |              |                          |     |     | Remarks                                                                |      |   |
| 76 | Surface with Product Contact                             |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 77 | Material casing                                          |       |           |              | AISI 304 or higher grade |     |     |                                                                        | a    |   |
| 78 | Material cell wheel                                      |       |           |              | AISI 304 or higher grade |     |     |                                                                        | a    |   |
| 79 | External Surface                                         |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 80 | Welding Seams with Product Contact                       |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 81 | External Welding Seams                                   |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 82 | Seals/Gaskets with Product Contact                       |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 83 | Metal Parts without Product Contact                      |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 84 | Coating System of non SS Parts                           |       |           |              | (*)                      |     |     |                                                                        | a    |   |
| 85 | Material of Supports                                     |       |           |              | (*)                      |     |     |                                                                        | a    |   |

specification rotary valve W-358, W-368

| #   | Name                                                                      |                 | Rotary valve |                |              |                                            | E                                                                                        | Iss. |
|-----|---------------------------------------------------------------------------|-----------------|--------------|----------------|--------------|--------------------------------------------|------------------------------------------------------------------------------------------|------|
|     | TAG                                                                       |                 | W-358, W-368 |                |              |                                            |                                                                                          |      |
| 86  | Shaft Sealing System                                                      |                 |              |                |              |                                            | Remarks                                                                                  |      |
| 87  | Type                                                                      |                 |              | (*)            |              |                                            |                                                                                          | a    |
| 88  | Shaft Sealing System                                                      |                 |              | Y (*)          |              |                                            | Purging of the shaft seal,<br>Manual valve with pressure reducing<br>valve and manometer | a    |
| 89  | Sealing Media                                                             |                 |              | instrument air |              |                                            | Compressed air in the following quality<br>available: ISO 8573-1(2010) [2:2:2]           | a    |
| 90  | Flow Rate                                                                 | Nm³/h           |              | (*)            |              |                                            |                                                                                          | a    |
| 91  | Sealing Pressure                                                          | bar(g)          |              | (*)            |              |                                            |                                                                                          | a    |
| 92  | General Accessories                                                       |                 |              |                |              |                                            | Remarks                                                                                  |      |
| 93  | Pressure/flow controller for barrier system                               | Y/N             |              | N              |              |                                            | inkl. Verrohrung                                                                         | a    |
| 94  | Insulation                                                                | Y/N             |              | N              |              |                                            |                                                                                          | a    |
| 95  | Motor Hood                                                                | Y/N             |              | (*)            |              |                                            | Required when motor is vertical to the<br>top                                            | a    |
| 96  | Feeding shoe pneumatic conveying line                                     | Y/N             |              | N              |              |                                            |                                                                                          | a    |
| 97  | Leackage gas ejector                                                      | Y/N             |              | N              |              |                                            |                                                                                          | a    |
| 98  | Other accessories                                                         | Y/N             |              | (*)            |              |                                            |                                                                                          | a    |
| 99  | Explosion Protection according to DIN EN 60079/80079                      |                 |              |                |              |                                            | Remarks                                                                                  |      |
| 100 | Ex-protection version for the following Ex-zone                           | -               | inside:      | 21/1           | outside:     | 21/1                                       |                                                                                          | a    |
| 101 | Medium conditioning the Ex zone                                           | Medien-<br>code | SP           |                | SP           |                                            | 2115_SS001                                                                               | a    |
| 102 | Hybrid mixture                                                            | Y/N             | N            |                | N            |                                            |                                                                                          | a    |
| 103 | Permitted surface temperature                                             | °C              | max. 150     |                |              | for dust Ex areas!                         | a                                                                                        |      |
| 104 | Permitted temperature class                                               | -               | -            |                |              | for gas Ex areas!                          | a                                                                                        |      |
| 105 | Permitted equipment group                                                 |                 | IIIB         |                |              | For non-electrical and electrical devices! | a                                                                                        |      |
| 106 | Permitted Equipment protection level                                      | (EPL)           | Db o. Da     |                | Dc, Db o. Da |                                            | For non-electrical and electrical devices!                                               | a    |
| 107 | Explosion protection type (mechanical)                                    |                 | inside       |                | outside      |                                            | Remarks                                                                                  |      |
| 108 | Type of ignition protection                                               | -               | (*)          |                | (*)          |                                            | acc. DIN/EN 80079-36/37, DIN EN 60079-<br>0 & DIN EN 13463-1...8                         | a    |
| 109 | Explosion proof design                                                    | Y/N             | N            |                | -            |                                            | If YES specify presure                                                                   | a    |
| 110 | Explosion pressure shock resistant design                                 | Y/N             | N            |                | -            |                                            | If YES specify presure                                                                   | a    |
| 111 | Required dessign pressure                                                 | bar(Ü)          | -            |                | -            |                                            | For the explosion-proof / pressure-shock-<br>proof design!                               | a    |
| 112 | Explosion protection type (electrical)                                    |                 |              |                |              |                                            | Remarks                                                                                  |      |
| 113 | Type of ignition protection electric motor                                | -               | (*)          |                |              | acc. DIN EN 60079-0...31                   | a                                                                                        |      |
| 114 | Type of ignition protection other electrical parts                        | -               | (*)          |                |              | acc. DIN EN 60079-0...31                   | a                                                                                        |      |
| 115 | Special requirements Motor                                                |                 |              |                |              |                                            | Remarks                                                                                  |      |
| 116 | Frequency Controlled operation                                            | Y/N             | Y            |                |              | FC is provided by                          | a                                                                                        |      |
| 117 | Allowed frequency range / speed                                           | min/max         | (*)          |                | (*)          |                                            |                                                                                          | a    |
| 118 | Electric motor with forced ventilation                                    | Y/N             | (*)          |                |              |                                            | a                                                                                        |      |
| 119 | Electrical Accessories                                                    |                 |              |                |              |                                            | Remarks                                                                                  |      |
| 120 | Frequency Converter                                                       | Y/N             | N            |                |              | If YES specify manufacturer and type       | a                                                                                        |      |
| 121 | Trace Heating                                                             | Y/N             | N            |                |              | If YES specify type, voltage, current      | a                                                                                        |      |
| 122 | Measuring Devices                                                         | Y/N             | N            |                |              | If YES specify manufacturer and type       | a                                                                                        |      |
| 123 | Listing of measuring devices (electrical accessories) and signal exchange |                 |              |                |              |                                            |                                                                                          |      |
| 124 | Pos.                                                                      | Designation     | Type         | TAG ()         |              | Signal type                                | Remarks                                                                                  |      |
| 125 |                                                                           | (*)             |              |                |              |                                            |                                                                                          | a    |
| 126 |                                                                           | (*)             |              |                |              |                                            |                                                                                          | a    |
| 127 |                                                                           | (*)             |              |                |              |                                            |                                                                                          | a    |

specification rotary valve W-358, W-368

|     |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
|-----|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|---------------|--------------|--------------------------------------------------------|------|
| #   | Name                                                       | Rotary valve                                                                                                                                                                                                                  |    |                    |               |              |                                                        | E    |
| #   | TAG                                                        | W-358, W-368                                                                                                                                                                                                                  |    |                    |               |              |                                                        | Iss. |
| 128 | <b>Nozzles List</b>                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 129 | Pos.                                                       | NPS                                                                                                                                                                                                                           | PN | Type of connection | Norm          | Sealing Face | Service                                                |      |
| 130 | N-01                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-1 | (*)          | product inlet                                          | a    |
| 131 | N-02                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-2 | (*)          | product outlet                                         | a    |
| 132 | N-03                                                       | (*)                                                                                                                                                                                                                           |    |                    |               |              | bearing flushing                                       | a    |
| 133 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 134 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 135 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 136 | <b>Sketch, PID-Section</b>                                 |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 137 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 138 | <b>Further requirements / Required further information</b> |                                                                                                                                                                                                                               |    |                    |               |              | <b>Remarks</b>                                         |      |
| 139 | Design acc.to Technical Instruction Air                    |                                                                                                                                                                                                                               |    | Y/N                | N             |              | German rule 'TA-Luft'                                  | a    |
| 140 | Sound power level                                          |                                                                                                                                                                                                                               |    | dB(A)              | (*)           |              |                                                        | a    |
| 141 | Leakage air volume flow at max. outlet pressure            |                                                                                                                                                                                                                               |    | m³/h               | (*)           |              | for max. conveying pressure pneumatic conveying system | a    |
| 142 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 143 | <b>Additional documents</b>                                |                                                                                                                                                                                                                               |    |                    |               |              | <b>Dok.-Nr.</b>                                        |      |
| 144 | 1x                                                         | General design conditions                                                                                                                                                                                                     |    |                    |               |              | 2115_GDCB001                                           | a    |
| 145 | 1x                                                         | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |    |                    |               |              | 2115_IEQS001                                           | a    |
| 146 | 1x                                                         | Safety characteristics                                                                                                                                                                                                        |    |                    |               |              | 2115_SSDS001                                           | a    |
| 147 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 148 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 149 | <b>Editing instructions</b>                                |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 150 | SIGNAL IN                                                  | Signal goes to                                                                                                                                                                                                                |    |                    |               |              |                                                        | a    |
| 151 | SIGNAL OUT                                                 | Signal comes from                                                                                                                                                                                                             |    |                    |               |              |                                                        | a    |
| 152 | -                                                          | not applicable                                                                                                                                                                                                                |    |                    |               |              |                                                        | a    |
| 153 | (n.e.)                                                     | not required                                                                                                                                                                                                                  |    |                    |               |              |                                                        | a    |
| 154 | (n.b.)                                                     | not known                                                                                                                                                                                                                     |    |                    |               |              |                                                        | a    |
| 155 | (*)                                                        | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |    |                    |               |              |                                                        | a    |
| 156 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 157 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |

## MEQS 015

### specification rotary valve W-376

|              |             |                   |                |                 |                |
|--------------|-------------|-------------------|----------------|-----------------|----------------|
|              |             |                   |                |                 |                |
| b            | 19.07.2022  | ys                |                |                 | new TAG number |
| a            | 30.05.2022  | ys                | jk             | schz            | first issue    |
| <b>Issue</b> | <b>Date</b> | <b>Originated</b> | <b>Checked</b> | <b>Approved</b> | <b>Remarks</b> |

specification rotary valve W-376

|    | Name                                           |                                                                    | Rotary valve |                                                                       |      |      | E            | Iss.                                                        |   |
|----|------------------------------------------------|--------------------------------------------------------------------|--------------|-----------------------------------------------------------------------|------|------|--------------|-------------------------------------------------------------|---|
| #  | TAG                                            |                                                                    | W-376        |                                                                       |      |      |              |                                                             |   |
| 1  | General Data                                   |                                                                    |              |                                                                       |      |      | Remarks      |                                                             |   |
| 2  | Application                                    | Product discharge (fraction undersize) from the sieves S357 / S367 |              |                                                                       |      |      |              | a                                                           |   |
| 3  | Quantity                                       | Operation                                                          | units        | 1                                                                     |      |      |              | a                                                           |   |
| 4  |                                                | Stand-By                                                           | units        | 0                                                                     |      |      |              | a                                                           |   |
| 5  | Operation Mode                                 |                                                                    |              | continuous operation                                                  |      |      |              | a                                                           |   |
| 6  | Operation Time                                 |                                                                    |              | 24 h day / 7 days per week /8000Bh/year                               |      |      |              | a                                                           |   |
| 7  | Standards und guidlines to be used             |                                                                    |              |                                                                       |      |      | Remarks      |                                                             |   |
| 8  | General sets of rules                          |                                                                    | see          | general design conditions                                             |      |      | 2115_GDCB001 | a                                                           |   |
| 9  | Special standards and guideline                |                                                                    | -            | -                                                                     |      |      |              | a                                                           |   |
| 10 | Mechanical Design Data                         |                                                                    |              |                                                                       |      |      | Remarks      |                                                             |   |
| 11 | Max Allowed Pressure (PS)                      |                                                                    | bar(g)       | -0,4 / 0,65                                                           |      |      |              | a                                                           |   |
| 12 | Max./Min. Allowed Temperature (TS)             |                                                                    | °C           | -10 / 150                                                             |      |      |              | a                                                           |   |
| 13 | Installation Conditions                        |                                                                    |              |                                                                       |      |      | Remarks      |                                                             |   |
| 14 | Installation Location                          |                                                                    |              | Inside the production building                                        |      |      |              | a                                                           |   |
| 15 | Ambient Temperature                            |                                                                    | °C           | 5 ... 40                                                              |      |      |              | a                                                           |   |
| 16 | Hygienic Zone/Room Classification              |                                                                    |              | n.a.                                                                  |      |      |              | a                                                           |   |
| 17 | Max. Sound Pressure Level                      |                                                                    | dB (A)       | 85                                                                    |      |      | 1m Distance  | a                                                           |   |
| 18 | Horizontal/Vertical Orientation                |                                                                    |              | horizontal                                                            |      |      |              | a                                                           |   |
| 19 | Ex Zone inside                                 |                                                                    |              | 21/1                                                                  |      |      |              | a                                                           |   |
| 20 | Ex Zone outside                                |                                                                    |              | 21/1                                                                  |      |      |              | a                                                           |   |
| 21 | Process Design Data                            |                                                                    |              | min                                                                   | norm | max  | design       | Remarks                                                     |   |
| 22 | Medium                                         |                                                                    |              | potassium xanthate                                                    |      |      |              | a                                                           |   |
| 23 | Fluid code                                     |                                                                    |              | SP                                                                    |      |      |              | a                                                           |   |
| 24 | Flow Rate                                      |                                                                    | kg/h         | 84                                                                    | 130  | 650  | 1200         | Specify min.-max. mass flow rate according to FC design (*) | a |
| 25 | Flow Rate                                      |                                                                    | m³/h         | 0,12                                                                  | 0,20 | 1,19 | 0,90         | Specify min.-max. vol. flow rate according to FC design (*) | a |
| 26 | Operating Temperature                          |                                                                    | °C           | 35                                                                    | 65   | 80   |              |                                                             | a |
| 27 | Pressure inlet side                            |                                                                    | mbar(g)      | -20                                                                   | -5   | 0    |              |                                                             | a |
| 28 | Pressure outlet side                           |                                                                    | mbar(g)      | -170                                                                  | 50   | 170  |              |                                                             | a |
| 29 | filling level (acc. to process design)         |                                                                    | %            | 10...60                                                               |      |      | 45           | inlet from sieving station                                  | a |
| 30 | rotor speed @ 50Hz                             |                                                                    | U/min        | approx. 8                                                             |      |      |              |                                                             | a |
| 31 | Process engineering/plant engineering function |                                                                    |              |                                                                       |      |      |              |                                                             |   |
| 32 | Pressure decoupling of process chambers        |                                                                    | Y/N          | Y                                                                     |      |      |              |                                                             | a |
| 33 | Explosion decoupling                           |                                                                    | Y/N          | N                                                                     |      |      |              |                                                             | a |
| 34 | Fire protection decoupling                     |                                                                    | Y/N          | Y                                                                     |      |      |              |                                                             | a |
| 35 | Discharge or metering function                 |                                                                    | Y/N          | N                                                                     |      |      |              |                                                             | a |
| 36 | Chemical and Physical Properties of fluid      |                                                                    |              |                                                                       |      |      | Remarks      |                                                             |   |
| 37 | Description medium                             |                                                                    |              | potassium xanthate                                                    |      |      |              | a                                                           |   |
| 38 | Characteristics                                |                                                                    |              | water soluble, hygroscopic, toxic                                     |      |      |              | a                                                           |   |
| 39 | Particle Size                                  |                                                                    | µm           | average diameter 0 - 5 mm, single clumps < 20 mm edge length possible |      |      |              | a                                                           |   |
| 40 | Particle Structure                             |                                                                    |              | n.b                                                                   |      |      |              | a                                                           |   |
| 41 | Bulk density                                   |                                                                    | kg/m³        | 550 ..... 760                                                         |      |      |              | a                                                           |   |

specification rotary valve W-376

| #  | Name                                                     |       |           |           | Rotary valve |                          |     |     | E                                                                      | Iss. |
|----|----------------------------------------------------------|-------|-----------|-----------|--------------|--------------------------|-----|-----|------------------------------------------------------------------------|------|
|    | TAG                                                      |       |           |           | W-376        |                          |     |     |                                                                        |      |
| 42 | Construction details rotary valve                        |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 43 | Type denomination rotary valve                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 44 | Standardized rotary valve size                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 45 | Blow through air lock type                               |       |           |           | Y/N          | N                        |     |     |                                                                        | a    |
| 46 | Cell wheel design                                        |       |           |           | -            | (*)                      |     |     | Cellular wheel open (without side walls) / closed (with side walls)    | a    |
| 47 | Construction details cell wheels                         |       |           |           | -            | (*)                      |     |     | straight / beveled cells, cellular wheel with knife, ...(more details) | a    |
| 48 | Diameter cell wheel                                      |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 49 | Chamber number                                           |       |           |           | Stück        | (*)                      |     |     |                                                                        | a    |
| 50 | Chamber volume                                           |       |           |           | Liter        | (*)                      |     |     |                                                                        | a    |
| 51 | filling level (acc. to process engineering design)       |       |           |           | %            | (*)                      |     |     |                                                                        | a    |
| 52 | Rotational speed cell wheel (min./norm./max.)            |       |           |           | 1/min        | (*)                      |     |     |                                                                        | a    |
| 53 | Additional leakage gas nozzle                            |       |           |           | Y/N          | (*)                      |     |     |                                                                        | a    |
| 54 | drive system (direct with coupling or chain/belt drive)  |       |           |           |              | Chain drive              |     |     | (specify gear ratio for chain/belt drive)                              | a    |
| 55 | Gearbox type                                             |       |           |           |              | (*)                      |     |     | Oil-lubricated gear units are to be supplied with oil filling          | a    |
| 56 | Gearbox design                                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 57 | Gear ratio                                               |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 58 | Hygienic design according to hygienic zone               |       |           |           | Y/N          | N                        |     |     |                                                                        | a    |
| 59 | Puller for rotary feeder wheel                           |       |           |           | Y/N          | N                        |     |     | for cleaning purpose                                                   | a    |
| 60 | Easy removable for cleaning                              |       |           |           | Y/N          | Y                        |     |     |                                                                        | a    |
| 61 | Pump Housing Heating / Cooling                           |       |           |           | Y/N          | N                        |     |     |                                                                        | a    |
| 62 | pulsating chamber discharge                              |       |           |           | Y/N          | Y                        |     |     |                                                                        | a    |
| 63 | Earthing-connection                                      |       |           |           | Y/N          | Y                        |     |     |                                                                        | a    |
| 64 | Cleaning/Sanitisation/Sterilisation                      |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 65 | Cleaning Media Product Side                              |       |           |           |              | Water cleaning           |     |     |                                                                        | a    |
| 66 | Cleaning Temperatur Product Side                         |       |           |           | °C           | <100°C                   |     |     |                                                                        | a    |
| 67 | Sanitisation/Sterilisation Medium                        |       |           |           |              | n.a.                     |     |     |                                                                        | a    |
| 68 | Sanitisation Temperature                                 |       |           |           | °C           | -                        |     |     |                                                                        | a    |
| 69 | Cleaning outside                                         |       |           |           |              | Dry cleaning             |     |     | In exceptional cases, manual wet cleaning                              | a    |
| 70 | Weights and Dimensions                                   |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 71 | Total Length                                             |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 72 | Total Width                                              |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 73 | Total Height                                             |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 74 | Total Weight                                             | Empty | Operating | Catastro. | kg           | (*)                      | (*) | (*) | -                                                                      | a    |
| 75 | Materials and Surface Treatments, Coatings, Certificates |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 76 | Surface with Product Contact                             |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 77 | Material casing                                          |       |           |           |              | AISI 304 or higher grade |     |     |                                                                        | a    |
| 78 | Material cell wheel                                      |       |           |           |              | AISI 304 or higher grade |     |     |                                                                        | a    |
| 79 | External Surface                                         |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 80 | Welding Seams with Product Contact                       |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 81 | External Welding Seams                                   |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 82 | Seals/Gaskets with Product Contact                       |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 83 | Metal Parts without Product Contact                      |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 84 | Coating System of non SS Parts                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 85 | Material of Supports                                     |       |           |           |              | (*)                      |     |     |                                                                        | a    |

specification rotary valve W-376

|     | Name                                                                      | Rotary valve    |          |                |              |                                            | E                                                                              | Iss. |
|-----|---------------------------------------------------------------------------|-----------------|----------|----------------|--------------|--------------------------------------------|--------------------------------------------------------------------------------|------|
| #   | TAG                                                                       | W-376           |          |                |              |                                            |                                                                                |      |
| 86  | Shaft Sealing System                                                      |                 |          |                |              |                                            | Remarks                                                                        |      |
| 87  | Type                                                                      |                 |          | (*)            |              |                                            |                                                                                | a    |
| 88  | Shaft Sealing System                                                      |                 |          | Y (*)          |              |                                            | Purging of the shaft seal,<br>Manual valve with pressure reducing              | a    |
| 89  | Sealing Media                                                             |                 |          | instrument air |              |                                            | Compressed air in the following quality<br>available: ISO 8573-1(2010) [2:2:2] | a    |
| 90  | Flow Rate                                                                 | Nm³/h           |          | (*)            |              |                                            |                                                                                | a    |
| 91  | Sealing Pressure                                                          | bar(g)          |          | (*)            |              |                                            |                                                                                | a    |
| 92  | General Accessories                                                       |                 |          |                |              |                                            | Remarks                                                                        |      |
| 93  | Pressure/flow controller for barrier system                               | Y/N             |          | N              |              |                                            | incl. Piping                                                                   | a    |
| 94  | Insulation                                                                | Y/N             |          | N              |              |                                            |                                                                                | a    |
| 95  | Motor Hood                                                                | Y/N             |          | (*)            |              |                                            | Required when motor is vertical to the<br>top                                  | a    |
| 96  | Feeding shoe pneumatic conveying line                                     | Y/N             |          | Y              |              |                                            | Optional                                                                       | a    |
| 97  | Leackage gas ejector                                                      | Y/N             |          | N              |              |                                            |                                                                                | a    |
| 98  | Other accessories                                                         | Y/N             |          | (*)            |              |                                            |                                                                                | a    |
| 99  | Explosion Protection according to DIN EN 60079/80079                      |                 |          |                |              |                                            | Remarks                                                                        |      |
| 100 | Ex-protection version for the following Ex-zone                           | -               | inside:  | 21/1           | outside:     | 21/1                                       |                                                                                | a    |
| 101 | Medium conditioning the Ex zone                                           | Medien-<br>code | SP       |                | SP           |                                            | 2115_SS001                                                                     | a    |
| 102 | Hybrid mixture                                                            | Y/N             | N        |                | N            |                                            |                                                                                | a    |
| 103 | Permitted surface temperature                                             | °C              | max. 150 |                |              | for dust Ex areas!                         | a                                                                              |      |
| 104 | Permitted temperature class                                               | -               | -        |                |              | for gas Ex areas!                          | a                                                                              |      |
| 105 | Permitted equippmnt group                                                 |                 | IIIB     |                |              | For non-electrical and electrical devices! | a                                                                              |      |
| 106 | Permitted Equipment protection level                                      | (EPL)           | Db o. Da |                | Dc, Db o. Da |                                            | For non-electrical and electrical devices!                                     | a    |
| 107 | Explosion protection type (mechanical)                                    |                 | inside   |                | outside      |                                            | Remarks                                                                        |      |
| 108 | Type of ignition protection                                               | -               | (*)      |                | (*)          |                                            | acc. DIN/EN 80079-36/37, DIN EN 60079-<br>0 & DIN EN 13463-1...8               | a    |
| 109 | Explosion proof design                                                    | Y/N             | N        |                | -            |                                            | If YES specify presure                                                         | a    |
| 110 | Explosion pressure shock resistant design                                 | Y/N             | N        |                | -            |                                            | If YES specify presure                                                         | a    |
| 111 | Required dessign pressure                                                 | bar(Ü)          | -        |                | -            |                                            | For the explosion-proof / pressure-shock-<br>proof design!                     | a    |
| 112 | Explosion protection type (electrical)                                    |                 |          |                |              |                                            | Remarks                                                                        |      |
| 113 | Type of ignition protection electric motor                                | -               | (*)      |                |              | acc. DIN EN 60079-0...31                   | a                                                                              |      |
| 114 | Type of ignition protection other electrical parts                        | -               | (*)      |                |              | acc. DIN EN 60079-0...31                   | a                                                                              |      |
| 115 | Special requirements Motor                                                |                 |          |                |              |                                            | Remarks                                                                        |      |
| 116 | Frequency Controlled operation                                            | Y/N             | Y        |                |              | FC is provided by                          | a                                                                              |      |
| 117 | Allowed frequency range / speed                                           | min/max         | (*)      |                | (*)          |                                            |                                                                                | a    |
| 118 | Electric motor with forced ventilation                                    | Y/N             | (*)      |                |              |                                            | a                                                                              |      |
| 119 | Electrical Accessories                                                    |                 |          |                |              |                                            | Remarks                                                                        |      |
| 120 | Frequency Converter                                                       | Y/N             | N        |                |              | If YES specify manufacturer and type       | a                                                                              |      |
| 121 | Trace Heating                                                             | Y/N             | N        |                |              | If YES specify type, voltage, current      | a                                                                              |      |
| 122 | Measuring Devices                                                         | Y/N             | N        |                |              | If YES specify manufacturer and type       | a                                                                              |      |
| 123 | Listing of measuring devices (electrical accessories) and signal exchange |                 |          |                |              |                                            |                                                                                |      |
| 124 | Pos.                                                                      | Designation     | Type     | TAG ()         |              | Signal type                                | Remarks                                                                        |      |
| 125 |                                                                           | (*)             |          |                |              |                                            |                                                                                | a    |
| 126 |                                                                           | (*)             |          |                |              |                                            |                                                                                | a    |
| 127 |                                                                           | (*)             |          |                |              |                                            |                                                                                | a    |

specification rotary valve W-376

|     |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
|-----|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|---------------|--------------|--------------------------------------------------------|------|
| #   | Name                                                       | Rotary valve                                                                                                                                                                                                                  |    |                    |               |              |                                                        | E    |
| #   | TAG                                                        | W-376                                                                                                                                                                                                                         |    |                    |               |              |                                                        | Iss. |
| 128 | <b>Nozzles List</b>                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 129 | Pos.                                                       | NPS                                                                                                                                                                                                                           | PN | Type of connection | Norm          | Sealing Face | Service                                                |      |
| 130 | N-01                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-1 | (*)          | product inlet                                          | a    |
| 131 | N-02                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-2 | (*)          | product outlet                                         | a    |
| 132 | N-03                                                       | (*)                                                                                                                                                                                                                           |    |                    |               |              | bearing flushing                                       | a    |
| 133 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 134 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 135 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 136 | <b>Sketch, PID-Section</b>                                 |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 137 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 138 | <b>Further requirements / Required further information</b> |                                                                                                                                                                                                                               |    |                    |               |              | <b>Remarks</b>                                         |      |
| 139 | Design acc.to Technical Instruction Air                    |                                                                                                                                                                                                                               |    | Y/N                | N             |              | German rule 'TA-Luft'                                  | a    |
| 140 | Sound power level                                          |                                                                                                                                                                                                                               |    | dB(A)              | (*)           |              |                                                        | a    |
| 141 | Leakage air volume flow at max. outlet pressure            |                                                                                                                                                                                                                               |    | m³/h               | (*)           |              | for max. conveying pressure pneumatic conveying system | a    |
| 142 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 143 | <b>Additional documents</b>                                |                                                                                                                                                                                                                               |    |                    |               |              | <b>Doc.-no.</b>                                        |      |
| 144 | 1x                                                         | General design conditions                                                                                                                                                                                                     |    |                    |               |              | 2115_GDCB001                                           | a    |
| 145 | 1x                                                         | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |    |                    |               |              | 2115_IEQS001                                           | a    |
| 146 | 1x                                                         | Safety characteristics                                                                                                                                                                                                        |    |                    |               |              | 2115_SSDS001                                           | a    |
| 147 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 148 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 149 | <b>Editing instructions</b>                                |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 150 | SIGNAL IN                                                  | Signal goes to                                                                                                                                                                                                                |    |                    |               |              |                                                        | a    |
| 151 | SIGNAL OUT                                                 | Signal comes from                                                                                                                                                                                                             |    |                    |               |              |                                                        | a    |
| 152 | -                                                          | not applicable                                                                                                                                                                                                                |    |                    |               |              |                                                        | a    |
| 153 | (n.e.)                                                     | not required                                                                                                                                                                                                                  |    |                    |               |              |                                                        | a    |
| 154 | (n.b.)                                                     | not known                                                                                                                                                                                                                     |    |                    |               |              |                                                        | a    |
| 155 | (*)                                                        | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |    |                    |               |              |                                                        | a    |
| 156 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 157 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |

W-352

## MEQS 009

### specification rotary valve W-352

|       |            |            |         |          |             |
|-------|------------|------------|---------|----------|-------------|
|       |            |            |         |          |             |
|       |            |            |         |          |             |
|       |            |            |         |          |             |
| a     | 09.06.2022 | ys         | jk      | schz     | first issue |
| Issue | Date       | Originated | Checked | Approved | Remarks     |

specification rotary valve W-352

| #  | Name                                           |                                                                            | Rotary valve |                                                              |      |      | E            | Iss.                                                  |   |
|----|------------------------------------------------|----------------------------------------------------------------------------|--------------|--------------------------------------------------------------|------|------|--------------|-------------------------------------------------------|---|
|    | TAG                                            |                                                                            | W-352        |                                                              |      |      |              |                                                       |   |
| 1  | General Data                                   |                                                                            |              |                                                              |      |      | Remarks      |                                                       |   |
| 2  | Application                                    | Product discharge 1 of the fluid bed granulation dryer after clump breaker |              |                                                              |      |      |              | a                                                     |   |
| 3  | Quantity                                       | Operation                                                                  | units        | 1                                                            |      |      |              | a                                                     |   |
| 4  |                                                | Stand-By                                                                   | units        | 0                                                            |      |      |              | a                                                     |   |
| 5  | Operation Mode                                 |                                                                            |              | continuous operation                                         |      |      |              | a                                                     |   |
| 6  | Operation Time                                 |                                                                            |              | 24 h day / 7 days per week /8000Bh/year                      |      |      |              | a                                                     |   |
| 7  | Standards und guidlines to be used             |                                                                            |              |                                                              |      |      | Remarks      |                                                       |   |
| 8  | General sets of rules                          |                                                                            | see          | general design conditions                                    |      |      | 2115_GDCB001 | a                                                     |   |
| 9  | Special standards and guideline                |                                                                            | -            | -                                                            |      |      |              | a                                                     |   |
| 10 | Mechanical Design Data                         |                                                                            |              |                                                              |      |      | Remarks      |                                                       |   |
| 11 | Max Allowed Pressure (PS)                      |                                                                            | bar(g)       | -0,4 / 0,65                                                  |      |      |              | a                                                     |   |
| 12 | Max./Min. Allowed Temperature (TS)             |                                                                            | °C           | -10 / 150                                                    |      |      |              | a                                                     |   |
| 13 | Installation Conditions                        |                                                                            |              |                                                              |      |      | Remarks      |                                                       |   |
| 14 | Installation Location                          |                                                                            |              | Inside the production building                               |      |      |              | a                                                     |   |
| 15 | Ambient Temperature                            |                                                                            | °C           | 5 ... 40                                                     |      |      |              | a                                                     |   |
| 16 | Hygienic Zone/Room Classification              |                                                                            |              | n.a.                                                         |      |      |              | a                                                     |   |
| 17 | Max. Sound Pressure Level                      |                                                                            | dB (A)       | 85                                                           |      |      | 1m Distance  | a                                                     |   |
| 18 | Horizontal/Vertical Orientation                |                                                                            |              | horizontal                                                   |      |      |              | a                                                     |   |
| 19 | Ex Zone inside                                 |                                                                            |              | 21/1                                                         |      |      |              | a                                                     |   |
| 20 | Ex Zone outside                                |                                                                            |              | 21/1                                                         |      |      |              | a                                                     |   |
| 21 | Process Design Data                            |                                                                            |              | min                                                          | norm | max  | design       | Remarks                                               |   |
| 22 | Medium                                         |                                                                            |              | potassium xanthate                                           |      |      |              | a                                                     |   |
| 23 | Fluid code                                     |                                                                            |              | SP                                                           |      |      |              | a                                                     |   |
| 24 | mass flow rate                                 |                                                                            | kg/h         | 589                                                          | 1768 | 2400 | 2700         | Specify min.-max. mass flow rate acc. FC design (*)   | a |
| 25 | volume flow rate                               |                                                                            | m³/h         | 0,78                                                         | 2,72 | 4,37 | 4,50         | Specify min.-max. volume flow rate acc. FC design (*) | a |
| 26 | Operating Temperature                          |                                                                            | °C           | 35                                                           | 65   | 70   |              |                                                       | a |
| 27 | Pressure inlet side                            |                                                                            | mbar(g)      | -170                                                         | 50   | 170  |              |                                                       | a |
| 28 | Pressure outlet side                           |                                                                            | mbar(g)      | 100                                                          | 300  | 500  | 650          |                                                       | a |
| 29 | filling level (acc. to process design)         |                                                                            | %            | 85...100                                                     |      |      | 90           |                                                       | a |
| 30 | rotor speed @ 50Hz                             |                                                                            | U/min        | approx. 8                                                    |      |      |              |                                                       | a |
| 31 | Process engineering/plant engineering function |                                                                            |              |                                                              |      |      |              |                                                       |   |
| 32 | Pressure decoupling of process chambers        |                                                                            | Y/N          | Y                                                            |      |      |              |                                                       | a |
| 33 | Explosion decoupling                           |                                                                            | Y/N          | N                                                            |      |      |              |                                                       | a |
| 34 | Fire protection decoupling                     |                                                                            | Y/N          | Y                                                            |      |      |              |                                                       | a |
| 35 | Discharge or metering function                 |                                                                            | Y/N          | N                                                            |      |      |              |                                                       | a |
| 36 | Chemical and Physical Properties of fluid      |                                                                            |              |                                                              |      |      | Remarks      |                                                       |   |
| 37 | Description medium                             |                                                                            |              | potassium xanthate                                           |      |      |              |                                                       | a |
| 38 | Characteristics                                |                                                                            |              | water soluble, hygroscopic, toxic                            |      |      |              |                                                       | a |
| 39 | Particle Size                                  |                                                                            | µm           | average diameter 0 - 5 mm, single clumps < 20 mm edge length |      |      |              |                                                       | a |
| 40 | Particle Structure                             |                                                                            |              | n.b                                                          |      |      |              |                                                       | a |
| 41 | Bulk density                                   |                                                                            | kg/m³        | 550 .... 760                                                 |      |      |              |                                                       | a |

specification rotary valve W-352

| #  | Name                                                     |       | Rotary valve |           |                          |     |     |     | E                                                                      | Iss. |
|----|----------------------------------------------------------|-------|--------------|-----------|--------------------------|-----|-----|-----|------------------------------------------------------------------------|------|
|    | TAG                                                      |       | W-352        |           |                          |     |     |     |                                                                        |      |
| 42 | Construction details rotary valve                        |       |              |           |                          |     |     |     | Remarks                                                                |      |
| 43 | Type denomination rotary valve                           |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 44 | Standardized rotary valve size                           |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 45 | Blow through air lock type                               |       |              | Y/N       | N                        |     |     |     |                                                                        | a    |
| 46 | Cell wheel design                                        |       |              | -         | (*)                      |     |     |     | Cellular wheel open (without side walls) / closed (with side walls)    | a    |
| 47 | Construction details cell wheels                         |       |              | -         | (*)                      |     |     |     | straight / beveled cells, cellular wheel with knife, ...(more details) | a    |
| 48 | Diameter cell wheel                                      |       |              | mm        | (*)                      |     |     |     |                                                                        | a    |
| 49 | Chamber number                                           |       |              | no.       | (*)                      |     |     |     |                                                                        | a    |
| 50 | Chamber volume                                           |       |              | dm³       | (*)                      |     |     |     |                                                                        | a    |
| 51 | filling level (acc. to process engineering design)       |       |              | %         | (*)                      |     |     |     |                                                                        | a    |
| 52 | Rotational speed cell wheel (min./norm./max.)            |       |              | 1/min     | (*)                      |     |     |     |                                                                        | a    |
| 53 | Additional leakage gas nozzle                            |       |              | Y/N       | (*)                      |     |     |     |                                                                        | a    |
| 54 | drive system (direct with coupling or chain/belt drive)  |       |              |           | Chain drive              |     |     |     | (specify gear ratio for chain/belt drive)                              | a    |
| 55 | Gearbox type                                             |       |              |           | (*)                      |     |     |     | Oil-lubricated gear units are to be supplied with oil filling          | a    |
| 56 | Gearbox design                                           |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 57 | Gear ratio                                               |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 58 | Hygienic design according to hygienic zone               |       |              | Y/N       | N                        |     |     |     |                                                                        | a    |
| 59 | Puller for rotary feeder wheel                           |       |              | Y/N       | N                        |     |     |     | for cleaning purpose                                                   | a    |
| 60 | Easy removable for cleaning                              |       |              | Y/N       | Y                        |     |     |     |                                                                        | a    |
| 61 | Pump Housing Heating / Cooling                           |       |              | Y/N       | N                        |     |     |     |                                                                        | a    |
| 62 | Pulsating chamber emptying                               |       |              | Y/N       | Y                        |     |     |     |                                                                        | a    |
| 63 | Earthing-connection                                      |       |              | Y/N       | Y                        |     |     |     |                                                                        | a    |
| 64 | Cleaning/Sanitisation/Sterilisation                      |       |              |           |                          |     |     |     | Remarks                                                                |      |
| 65 | Cleaning Media Product Side                              |       |              |           | Water cleaning           |     |     |     |                                                                        | a    |
| 66 | Cleaning Temperatur Product Side                         |       |              | °C        | <100°C                   |     |     |     |                                                                        | a    |
| 67 | Sanitisation/Sterilisation Medium                        |       |              |           | n.a.                     |     |     |     |                                                                        | a    |
| 68 | Sanitisation Temperature                                 |       |              | °C        | -                        |     |     |     |                                                                        | a    |
| 69 | Cleaning outside                                         |       |              |           | Dry cleaning             |     |     |     | In exceptional cases, manual wet cleaning                              | a    |
| 70 | Weights and Dimensions                                   |       |              |           |                          |     |     |     | Remarks                                                                |      |
| 71 | Total Length                                             |       |              | mm        | (*)                      |     |     |     |                                                                        | a    |
| 72 | Total Width                                              |       |              | mm        | (*)                      |     |     |     |                                                                        | a    |
| 73 | Total Height                                             |       |              | mm        | (*)                      |     |     |     |                                                                        | a    |
| 74 | Total Weight                                             | Empty | Operating    | Catastro. | kg                       | (*) | (*) | (*) | -                                                                      | a    |
| 75 | Materials and Surface Treatments, Coatings, Certificates |       |              |           |                          |     |     |     | Remarks                                                                |      |
| 76 | Surface with Product Contact                             |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 77 | Material casing                                          |       |              |           | AISI 304 or higher grade |     |     |     |                                                                        | a    |
| 78 | Material cell wheel                                      |       |              |           | AISI 304 or higher grade |     |     |     |                                                                        | a    |
| 79 | External Surface                                         |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 80 | Welding Seams with Product Contact                       |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 81 | External Welding Seams                                   |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 82 | Seals/Gaskets with Product Contact                       |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 83 | Metal Parts without Product Contact                      |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 84 | Coating System of non SS Parts                           |       |              |           | (*)                      |     |     |     |                                                                        | a    |
| 85 | Material of Supports                                     |       |              |           | (*)                      |     |     |     |                                                                        | a    |

specification rotary valve W-352

| #   | Name                                                                      |             | Rotary valve |                |      |              | E                                                                                     | Iss.                                                         |   |
|-----|---------------------------------------------------------------------------|-------------|--------------|----------------|------|--------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------|---|
|     | TAG                                                                       |             | W-352        |                |      |              |                                                                                       |                                                              |   |
| 86  | Shaft Sealing System                                                      |             |              |                |      |              | Remarks                                                                               |                                                              |   |
| 87  | Type                                                                      |             |              | (*)            |      |              |                                                                                       | a                                                            |   |
| 88  | Shaft Sealing System                                                      |             |              | Y (*)          |      |              | Purging of the shaft seal,<br>Manual valve with pressure reducing valve and manometer | a                                                            |   |
| 89  | Sealing Media                                                             |             |              | instrument air |      |              | Compressed air in the following quality available: ISO 8573-1(2010) [2:2:2]           | a                                                            |   |
| 90  | Flow Rate                                                                 |             | Nm³/h        | (*)            |      |              |                                                                                       | a                                                            |   |
| 91  | Sealing Pressure                                                          |             | bar(g)       | (*)            |      |              |                                                                                       | a                                                            |   |
| 92  | General Accessories                                                       |             |              |                |      |              | Remarks                                                                               |                                                              |   |
| 93  | Pressure/flow controller for barrier system                               |             | Y/N          |                | N    |              | incl. Piping                                                                          | a                                                            |   |
| 94  | Insulation                                                                |             | Y/N          |                | N    |              |                                                                                       | a                                                            |   |
| 95  | Motor Hood                                                                |             | Y/N          |                | (*)  |              | Required when motor is vertical to the top                                            | a                                                            |   |
| 96  | Feeding shoe pneumatic conveying line                                     |             | Y/N          |                | Y    |              | offer as Option                                                                       | a                                                            |   |
| 97  | Leackage gas ejector                                                      |             | Y/N          |                | N    |              |                                                                                       | a                                                            |   |
| 98  | Other accessories                                                         |             | Y/N          |                | (*)  |              |                                                                                       | a                                                            |   |
| 99  | Explosion Protection according to DIN EN 60079/80079                      |             |              |                |      |              | Remarks                                                                               |                                                              |   |
| 100 | Ex-protection version for the following Ex-zone                           |             | -            | inside:        | 21/1 | outside:     | 21/1                                                                                  | a                                                            |   |
| 101 | Medium conditioning the Ex zone                                           |             | Medien-code  | SP             |      | SP           |                                                                                       | 2115_SS001                                                   | a |
| 102 | Hybrid mixture                                                            |             | Y/N          | N              |      | N            |                                                                                       |                                                              | a |
| 103 | Permitted surface temperature                                             |             | °C           | max. 150       |      |              | for dust Ex areas!                                                                    | a                                                            |   |
| 104 | Permitted temperature class                                               |             | -            | -              |      |              | for gas Ex areas!                                                                     | a                                                            |   |
| 105 | Permitted equipment group                                                 |             |              | IIB            |      |              | For non-electrical and electrical devices!                                            | a                                                            |   |
| 106 | Permitted Equipment protection level                                      |             | (EPL)        | Db o. Da       |      | Dc, Db o. Da |                                                                                       | For non-electrical and electrical devices!                   | a |
| 107 | Explosion protection type (mechanical)                                    |             |              | inside         |      | outside      |                                                                                       | Remarks                                                      |   |
| 108 | Type of ignition protection                                               |             | -            | (*)            |      | (*)          |                                                                                       | acc. DIN/EN 80079-36/37, DIN EN 60079-0 & DIN EN 13463-1...8 | a |
| 109 | Explosion proof design                                                    |             | Y/N          | N              |      | -            |                                                                                       | If YES specify presure                                       | a |
| 110 | Explosion pressure shock resistant design                                 |             | Y/N          | N              |      | -            |                                                                                       | If YES specify presure                                       | a |
| 111 | Required dessign pressure                                                 |             | bar(Ü)       | -              |      | -            |                                                                                       | For the explosion-proof / pressure-shock-proof design!       | a |
| 112 | Explosion protection type (electrical)                                    |             |              |                |      |              | Remarks                                                                               |                                                              |   |
| 113 | Type of ignition protection electric motor                                |             | -            | (*)            |      |              | acc. DIN EN 60079-0...31                                                              | a                                                            |   |
| 114 | Type of ignition protection other electrical parts                        |             | -            | (*)            |      |              | acc. DIN EN 60079-0...31                                                              | a                                                            |   |
| 115 | Special requirements Motor                                                |             |              |                |      |              | Remarks                                                                               |                                                              |   |
| 116 | Frequency Controlled operation                                            |             | Y/N          | Y              |      |              | FC is provided by                                                                     | a                                                            |   |
| 117 | Allowed frequency range / speed                                           |             | min/max      | (*)            |      | (*)          |                                                                                       |                                                              | a |
| 118 | Electric motor with forced ventilation                                    |             | Y/N          | (*)            |      |              |                                                                                       | a                                                            |   |
| 119 | Electrical Accessories                                                    |             |              |                |      |              | Remarks                                                                               |                                                              |   |
| 120 | Frequency Converter                                                       |             | Y/N          | N              |      |              | If YES specify manufacturer and type                                                  | a                                                            |   |
| 121 | Trace Heating                                                             |             | Y/N          | N              |      |              | If YES specify type, voltage, current                                                 | a                                                            |   |
| 122 | Measuring Devices                                                         |             | Y/N          | N              |      |              | If YES specify manufacturer and type                                                  | a                                                            |   |
| 123 | Listing of measuring devices (electrical accessories) and signal exchange |             |              |                |      |              |                                                                                       |                                                              |   |
| 124 | Pos.                                                                      | Designation | Type         | TAG ()         |      | Signal type  | Remarks                                                                               |                                                              |   |
| 125 |                                                                           | (*)         |              |                |      |              |                                                                                       |                                                              |   |
| 126 |                                                                           | (*)         |              |                |      |              |                                                                                       |                                                              |   |
| 127 |                                                                           | (*)         |              |                |      |              |                                                                                       |                                                              |   |

specification rotary valve W-352

|     |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
|-----|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|---------------|--------------|--------------------------------------------------------|------|
| #   | Name                                                       | Rotary valve                                                                                                                                                                                                                  |    |                    |               |              |                                                        | E    |
| #   | TAG                                                        | W-352                                                                                                                                                                                                                         |    |                    |               |              |                                                        | Iss. |
| 128 | <b>Nozzles List</b>                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 129 | Pos.                                                       | NPS                                                                                                                                                                                                                           | PN | Type of connection | Norm          | Sealing Face | Service                                                |      |
| 130 | N-01                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-1 | (*)          | product inlet                                          | a    |
| 131 | N-02                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-1 | (*)          | product outlet                                         | a    |
| 132 | N-03                                                       | (*)                                                                                                                                                                                                                           |    |                    |               |              | bearing flushing                                       | a    |
| 133 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 134 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |              |                                                        | a    |
| 135 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 136 | <b>Sketch, PID-Section</b>                                 |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 137 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 138 | <b>Further requirements / Required further information</b> |                                                                                                                                                                                                                               |    |                    |               |              | <b>Remarks</b>                                         |      |
| 139 | Design acc.to Technical Instruction Air                    |                                                                                                                                                                                                                               |    |                    | Y/N           | N            | German rule 'TA-Luft'                                  | a    |
| 140 | Sound power level                                          |                                                                                                                                                                                                                               |    |                    | dB(A)         | (*)          |                                                        | a    |
| 141 | Leakage air volume flow at max. outlet pressure            |                                                                                                                                                                                                                               |    |                    | m³/h          | (*)          | for max. conveying pressure pneumatic conveying system | a    |
| 142 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 143 | <b>Additional documents</b>                                |                                                                                                                                                                                                                               |    |                    |               |              | <b>Doc.-no.</b>                                        |      |
| 144 | 1x                                                         | General design conditions                                                                                                                                                                                                     |    |                    |               |              | 2115_GDCB001                                           | a    |
| 145 | 1x                                                         | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |    |                    |               |              | 2115_IEQS001                                           | a    |
| 146 | 1x                                                         | Safety characteristics                                                                                                                                                                                                        |    |                    |               |              | 2115_SSDS001                                           | a    |
| 147 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 148 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 149 | <b>Editing instructions</b>                                |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 150 | SIGNAL IN                                                  | Signal goes to                                                                                                                                                                                                                |    |                    |               |              |                                                        | a    |
| 151 | SIGNAL OUT                                                 | Signal comes from                                                                                                                                                                                                             |    |                    |               |              |                                                        | a    |
| 152 | -                                                          | not applicable                                                                                                                                                                                                                |    |                    |               |              |                                                        | a    |
| 153 | (n.e.)                                                     | not required                                                                                                                                                                                                                  |    |                    |               |              |                                                        | a    |
| 154 | (n.b.)                                                     | not known                                                                                                                                                                                                                     |    |                    |               |              |                                                        | a    |
| 155 | (*)                                                        | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |    |                    |               |              |                                                        | a    |
| 156 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |
| 157 |                                                            |                                                                                                                                                                                                                               |    |                    |               |              |                                                        |      |

## MEQS 012

### specification rotary valve W-355, W-365

|       |            |            |         |          |             |
|-------|------------|------------|---------|----------|-------------|
|       |            |            |         |          |             |
|       |            |            |         |          |             |
|       |            |            |         |          |             |
| a     | 30.05.2022 | ys         | jk      | schz     | first issue |
| Issue | Date       | Originated | Checked | Approved | Remarks     |

|    |                                                       |                                         |                                                                       |                                         |      |              |                                                           |
|----|-------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------|-----------------------------------------|------|--------------|-----------------------------------------------------------|
| #  | Name                                                  | Rotary valve                            |                                                                       |                                         |      |              | E                                                         |
|    | TAG                                                   | W-355, W-365                            |                                                                       |                                         |      |              |                                                           |
| 1  | <b>General Data</b>                                   |                                         |                                                                       |                                         |      |              | Remarks                                                   |
| 2  | Application                                           | Product discharge 1+2 from cyclone S354 |                                                                       |                                         |      |              |                                                           |
| 3  | Quantity                                              | Operation                               | units                                                                 | 2                                       |      |              |                                                           |
| 4  |                                                       | Stand-By                                | units                                                                 | 0                                       |      |              |                                                           |
| 5  | Operation Mode                                        |                                         |                                                                       | continuous operation                    |      |              |                                                           |
| 6  | Operation Time                                        |                                         |                                                                       | 24 h day / 7 days per week /8000Bh/year |      |              |                                                           |
| 7  | <b>Standards und guidelines to be used</b>            |                                         |                                                                       |                                         |      |              | Remarks                                                   |
| 8  | General sets of rules                                 | see                                     | general design conditions                                             |                                         |      | 2115_GDCB001 |                                                           |
| 9  | Special standards and guideline                       | -                                       | -                                                                     |                                         |      |              |                                                           |
| 10 | <b>Mechanical Design Data</b>                         |                                         |                                                                       |                                         |      |              | Remarks                                                   |
| 11 | Max Allowed Pressure (PS)                             | bar(g)                                  | -0,4 / 0,65                                                           |                                         |      |              |                                                           |
| 12 | Max./Min. Allowed Temperature (TS)                    | °C                                      | -10 / 150                                                             |                                         |      |              |                                                           |
| 13 | <b>Installation Conditions</b>                        |                                         |                                                                       |                                         |      |              | Remarks                                                   |
| 14 | Installation Location                                 |                                         | Inside the production building                                        |                                         |      |              |                                                           |
| 15 | Ambient Temperature                                   | °C                                      | 5 ... 40                                                              |                                         |      |              |                                                           |
| 16 | Hygienic Zone/Room Classification                     |                                         | n.a.                                                                  |                                         |      |              |                                                           |
| 17 | Max. Sound Pressure Level                             | dB (A)                                  | 85                                                                    |                                         |      | 1m Distance  |                                                           |
| 18 | Horizontal/Vertical Orientation                       |                                         | horizontal                                                            |                                         |      |              |                                                           |
| 19 | Ex Zone inside                                        |                                         | 21/1                                                                  |                                         |      |              |                                                           |
| 20 | Ex Zone outside                                       |                                         | 21/1                                                                  |                                         |      |              |                                                           |
| 21 | <b>Process Design Data</b>                            |                                         | min                                                                   | norm                                    | max  | design       | Remarks                                                   |
| 22 | Medium                                                |                                         | potassium xanthate                                                    |                                         |      |              |                                                           |
| 23 | Fluid code                                            |                                         | SP                                                                    |                                         |      |              |                                                           |
| 24 | mass flow rate                                        | kg/h                                    | 589                                                                   | 1768                                    | 2400 | 3200         | value corresponds to 100% for one rotary valve            |
| 25 | volume flow rate                                      | m³/h                                    | 0,78                                                                  | 2,72                                    | 4,37 | 5,50         | Specify min.-max. vol. current according to FI design (*) |
| 26 | Operating Temperature                                 | °C                                      | 35                                                                    | 65                                      | 80   |              |                                                           |
| 27 | Pressure inlet side                                   | mbar(g)                                 | 100                                                                   | 300                                     | 500  | 650          |                                                           |
| 28 | Pressure outlet side                                  | mbar(g)                                 | -20                                                                   | -5                                      | 0    | 0            |                                                           |
| 29 | filling level (acc. to process design)                | %                                       | 10...60                                                               |                                         |      | 45           | inlet from cyclone                                        |
| 30 | rotor speed @ 50Hz                                    | U/min                                   | approx. 16                                                            |                                         |      |              |                                                           |
| 31 | <b>Process engineering/plant engineering function</b> |                                         |                                                                       |                                         |      |              |                                                           |
| 32 | Pressure decoupling of process chambers               | Y/N                                     | Y                                                                     |                                         |      |              |                                                           |
| 33 | Explosion decoupling                                  | Y/N                                     | N                                                                     |                                         |      |              |                                                           |
| 34 | Fire protection decoupling                            | Y/N                                     | Y                                                                     |                                         |      |              |                                                           |
| 35 | Discharge or metering function                        | Y/N                                     | N                                                                     |                                         |      |              |                                                           |
| 36 | <b>Chemical and Physical Properties of fluid</b>      |                                         |                                                                       |                                         |      |              | Remarks                                                   |
| 37 | Description medium                                    |                                         | potassium xanthate                                                    |                                         |      |              |                                                           |
| 38 | Characteristics                                       |                                         | water soluble, hygroscopic, toxic                                     |                                         |      |              |                                                           |
| 39 | Particle Size                                         | µm                                      | average diameter 0 - 5 mm, single clumps < 20 mm edge length possible |                                         |      |              |                                                           |
| 40 | Particle Structure                                    |                                         | n.b                                                                   |                                         |      |              |                                                           |
| 41 | Bulk density                                          | kg/m³                                   | 550 .... 760                                                          |                                         |      |              |                                                           |

| #  | Name                                                            | Rotary valve |       |           |           |     |     |                          | E                                                                       |
|----|-----------------------------------------------------------------|--------------|-------|-----------|-----------|-----|-----|--------------------------|-------------------------------------------------------------------------|
| #  | TAG                                                             | W-355, W-365 |       |           |           |     |     |                          |                                                                         |
| 42 | <b>Construction details rotary valve</b>                        |              |       |           |           |     |     |                          | <b>Remarks</b>                                                          |
| 43 | Type denomination rotary valve                                  |              |       |           |           |     |     | (*)                      |                                                                         |
| 44 | Standardized rotary valve size                                  |              |       |           |           |     |     | (*)                      |                                                                         |
| 45 | Blow through air lock type                                      | Y/N          |       |           |           |     |     | N                        |                                                                         |
| 46 | Cell wheel design                                               | -            |       |           |           |     |     | (*)                      | Cellular wheel open (without side walls) / closed (with side walls)     |
| 47 | Construction details cell wheels                                | -            |       |           |           |     |     | (*)                      | straight / beveled cells, cellular wheel with knife, ... (more details) |
| 48 | Diameter cell wheel                                             | mm           |       |           |           |     |     | (*)                      |                                                                         |
| 49 | Chamber number                                                  | Stück        |       |           |           |     |     | (*)                      |                                                                         |
| 50 | Chamber volume                                                  | Liter        |       |           |           |     |     | (*)                      |                                                                         |
| 51 | filling level (acc. to process engineering design)              | %            |       |           |           |     |     | (*)                      |                                                                         |
| 52 | Rotational speed cell wheel (min./norm./max.)                   | 1/min        |       |           |           |     |     | (*)                      |                                                                         |
| 53 | Additional leakage gas nozzle                                   | Y/N          |       |           |           |     |     | (*)                      |                                                                         |
| 54 | drive system (direct with coupling or chain/belt drive)         |              |       |           |           |     |     | Chain drive              | (specify gear ratio for chain/belt drive)                               |
| 55 | Gearbox type                                                    |              |       |           |           |     |     | (*)                      | Oil-lubricated gear units are to be supplied with oil filling           |
| 56 | Gearbox design                                                  |              |       |           |           |     |     | (*)                      |                                                                         |
| 57 | Gear ratio                                                      |              |       |           |           |     |     | (*)                      |                                                                         |
| 58 | Hygienic design according to hygienic zone                      | Y/N          |       |           |           |     |     | N                        |                                                                         |
| 59 | Puller for rotary feeder wheel                                  | Y/N          |       |           |           |     |     | N                        | for cleaning purpose                                                    |
| 60 | Easy removable for cleaning                                     | Y/N          |       |           |           |     |     | Y                        |                                                                         |
| 61 | Pump Housing Heating / Cooling                                  | Y/N          |       |           |           |     |     | N                        |                                                                         |
| 62 | Pulsating chamber emptying                                      | Y/N          |       |           |           |     |     | Y                        |                                                                         |
| 63 | Earthing-connection                                             | Y/N          |       |           |           |     |     | Y                        |                                                                         |
| 64 | <b>Cleaning/Sanitisation/Sterilisation</b>                      |              |       |           |           |     |     |                          | <b>Remarks</b>                                                          |
| 65 | Cleaning Media Product Side                                     | -            |       |           |           |     |     | Water cleaning           |                                                                         |
| 66 | Cleaning Temperatur Product Side                                | °C           |       |           |           |     |     | <100°C                   |                                                                         |
| 67 | Sanitisation/Sterilisation Medium                               | -            |       |           |           |     |     | n.a.                     |                                                                         |
| 68 | Sanitisation Temperature                                        | °C           |       |           |           |     |     | -                        |                                                                         |
| 69 | Cleaning outside                                                | -            |       |           |           |     |     | Dry cleaning             | In exceptional cases, manual wet cleaning                               |
| 70 | <b>Weights and Dimensions</b>                                   |              |       |           |           |     |     |                          | <b>Remarks</b>                                                          |
| 71 | Total Length                                                    | mm           |       |           |           |     |     | (*)                      |                                                                         |
| 72 | Total Width                                                     | mm           |       |           |           |     |     | (*)                      |                                                                         |
| 73 | Total Height                                                    | mm           |       |           |           |     |     | (*)                      |                                                                         |
| 74 | Total Weight                                                    | kg           | Empty | Operating | Catastro. | (*) | (*) | (*)                      | -                                                                       |
| 75 | <b>Materials and Surface Treatments, Coatings, Certificates</b> |              |       |           |           |     |     |                          | <b>Remarks</b>                                                          |
| 76 | Surface with Product Contact                                    |              |       |           |           |     |     | (*)                      |                                                                         |
| 77 | Material casing                                                 |              |       |           |           |     |     | AISI 304 or higher grade |                                                                         |
| 78 | Material cell wheel                                             |              |       |           |           |     |     | AISI 304 or higher grade |                                                                         |
| 79 | External Surface                                                |              |       |           |           |     |     | (*)                      |                                                                         |
| 80 | Welding Seams with Product Contact                              |              |       |           |           |     |     | (*)                      |                                                                         |
| 81 | External Welding Seams                                          |              |       |           |           |     |     | (*)                      |                                                                         |
| 82 | Seals/Gaskets with Product Contact                              |              |       |           |           |     |     | (*)                      |                                                                         |
| 83 | Metal Parts without Product Contact                             |              |       |           |           |     |     | (*)                      |                                                                         |
| 84 | Coating System of non SS Parts                                  |              |       |           |           |     |     | (*)                      |                                                                         |
| 85 | Material of Supports                                            |              |       |           |           |     |     | (*)                      |                                                                         |

| #   | Name                                                                             | Rotary valve |                |         |              | E                                                                                  |                                                              |
|-----|----------------------------------------------------------------------------------|--------------|----------------|---------|--------------|------------------------------------------------------------------------------------|--------------------------------------------------------------|
| #   | TAG                                                                              | W-355, W-365 |                |         |              |                                                                                    |                                                              |
| 86  | <b>Shaft Sealing System</b>                                                      |              |                |         |              | <b>Remarks</b>                                                                     |                                                              |
| 87  | Type                                                                             |              | (*)            |         |              |                                                                                    |                                                              |
| 88  | Shaft Sealing System                                                             |              | Y (*)          |         |              | Purging of the shaft seal, Manual valve with pressure reducing valve and manometer |                                                              |
| 89  | Sealing Media                                                                    |              | instrument air |         |              | Compressed air in the following quality available: ISO 8573-1(2010) [2:2:2]        |                                                              |
| 90  | Flow Rate                                                                        | Nm³/h        | (*)            |         |              |                                                                                    |                                                              |
| 91  | Sealing Pressure                                                                 | bar(g)       | (*)            |         |              |                                                                                    |                                                              |
| 92  | <b>General Accessories</b>                                                       |              |                |         |              | <b>Remarks</b>                                                                     |                                                              |
| 93  | Pressure/flow controller for barrier system                                      | Y/N          | N              |         |              | incl. piping                                                                       |                                                              |
| 94  | Insulation                                                                       | Y/N          | N              |         |              |                                                                                    |                                                              |
| 95  | Motor Hood                                                                       | Y/N          | (*)            |         |              | Required when motor is vertical to the top                                         |                                                              |
| 96  | Feeding shoe pneumatic conveying line                                            | Y/N          | N              |         |              |                                                                                    |                                                              |
| 97  | Leackage gas ejector                                                             | Y/N          | N              |         |              |                                                                                    |                                                              |
| 98  | Other accessories                                                                | Y/N          | (*)            |         |              |                                                                                    |                                                              |
| 99  | <b>Explosion Protection according to DIN EN 60079/80079</b>                      |              |                |         |              | <b>Remarks</b>                                                                     |                                                              |
| 100 | Ex-protection version for the following Ex-zone                                  | -            | inside:        | 21/1    | outside:     | 21/1                                                                               |                                                              |
| 101 | Medium conditioning the Ex zone                                                  | Medien-code  | SP             |         | SP           |                                                                                    | 2115_SSDS001                                                 |
| 102 | Hybrid mixture                                                                   | Y/N          | N              |         | N            |                                                                                    |                                                              |
| 103 | Permitted surface temperature max.                                               | °C           | 150            |         |              | for dust Ex areas!                                                                 |                                                              |
| 104 | Permitted temperature class                                                      | -            | -              |         |              | for gas Ex areas!                                                                  |                                                              |
| 105 | Permitted equipment group                                                        |              | IIIB           |         |              | For non-electrical and electrical devices!                                         |                                                              |
| 106 | Permitted Equipment protection level (EPL)                                       |              | Db o. Da       |         | Dc, Db o. Da |                                                                                    | For non-electrical and electrical devices!                   |
| 107 | <b>Explosion protection type (mechanical)</b>                                    |              | inside         | outside |              | <b>Remarks</b>                                                                     |                                                              |
| 108 | Type of ignition protection                                                      | -            | (*)            |         | (*)          |                                                                                    | acc. DIN/EN 80079-36/37, DIN EN 60079-0 & DIN EN 13463-1...8 |
| 109 | Explosion proof design                                                           | Y/N          | N              |         | -            |                                                                                    | If YES specify presure                                       |
| 110 | Explosion pressure shock resistant design                                        | Y/N          | N              |         | -            |                                                                                    | If YES specify presure                                       |
| 111 | Required dessign pressure                                                        | bar(Ü)       | -              |         | -            |                                                                                    | For the explosion-proof / pressure-shock-proof design!       |
| 112 | <b>Explosion protection type (electrical)</b>                                    |              |                |         |              | <b>Remarks</b>                                                                     |                                                              |
| 113 | Type of ignition protection electric motor                                       | -            | (*)            |         |              | acc. DIN EN 60079-0...31                                                           |                                                              |
| 114 | Type of ignition protection other electrical parts                               |              | (*)            |         |              | acc. DIN EN 60079-0...31                                                           |                                                              |
| 115 | <b>Special requirements Motor</b>                                                |              |                |         |              | <b>Remarks</b>                                                                     |                                                              |
| 116 | Frequency Controlled operation                                                   | Y/N          | Y              |         |              | FC is provided by                                                                  |                                                              |
| 117 | Allowed frequency range / speed                                                  | min/max      | (*)            |         | (*)          |                                                                                    |                                                              |
| 118 | Electric motor with forced ventilation                                           | Y/N          | (*)            |         |              |                                                                                    |                                                              |
| 119 | <b>Electrical Accessories</b>                                                    |              |                |         |              | <b>Remarks</b>                                                                     |                                                              |
| 120 | Frequency Converter                                                              | Y/N          | N              |         |              | If YES specify manufacturer and type                                               |                                                              |
| 121 | Trace Heating                                                                    | Y/N          | N              |         |              | If YES specify type, voltage, current                                              |                                                              |
| 122 | Measuring Devices                                                                | Y/N          | N              |         |              | If YES specify manufacturer and type                                               |                                                              |
| 123 | <b>Listing of measuring devices (electrical accessories) and signal exchange</b> |              |                |         |              |                                                                                    |                                                              |
| 124 | Pos.                                                                             | Designation  | Type           | TAG ()  | Signal type  | Remarks                                                                            |                                                              |
| 125 |                                                                                  | (*)          |                |         |              |                                                                                    |                                                              |
| 126 |                                                                                  | (*)          |                |         |              |                                                                                    |                                                              |
| 127 |                                                                                  | (*)          |                |         |              |                                                                                    |                                                              |

|     |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
|-----|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|---------------|--------------|--------------------------------------------------------|---|
| #   | Name                                                       |                                                                                                                                                                                                                               | Rotary valve |                    |               |              |                                                        | E |
|     | TAG                                                        |                                                                                                                                                                                                                               | W-355, W-365 |                    |               |              |                                                        |   |
| 128 | <b>Nozzles List</b>                                        |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 129 | Pos.                                                       | NPS                                                                                                                                                                                                                           | PN           | Type of connection | Norm          | Sealing Face | Service                                                |   |
| 130 | N-01                                                       | (*)                                                                                                                                                                                                                           | 10           | flange             | DIN EN 1092-1 | (*)          | product inlet                                          |   |
| 131 | N-02                                                       | (*)                                                                                                                                                                                                                           | 10           | flange             | DIN EN 1092-1 | (*)          | product outlet                                         |   |
| 132 | N-03                                                       | (*)                                                                                                                                                                                                                           |              |                    |               |              | bearing flushing                                       |   |
| 133 | (*)                                                        |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 134 | (*)                                                        |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 135 |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 136 | <b>Sketch, PID-Section</b>                                 |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 137 |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 138 | <b>Further requirements / Required further information</b> |                                                                                                                                                                                                                               |              |                    |               |              | <b>Remarks</b>                                         |   |
| 139 | Design acc.to Technical Instruction Air                    |                                                                                                                                                                                                                               |              | Y/N                | N             |              | German rule 'TA-Luft'                                  |   |
| 140 | Sound power level                                          |                                                                                                                                                                                                                               |              | dB(A)              | (*)           |              |                                                        |   |
| 141 | Leakage air volume flow at max. outlet pressure            |                                                                                                                                                                                                                               |              | m³/h               | (*)           |              | for max. conveying pressure pneumatic conveying system |   |
| 142 |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 143 | <b>Additional documents</b>                                |                                                                                                                                                                                                                               |              |                    |               |              | <b>Doc.-no.</b>                                        |   |
| 144 | 1x                                                         | General design conditions                                                                                                                                                                                                     |              |                    |               |              | 2115_GDCB001                                           |   |
| 145 | 1x                                                         | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |              |                    |               |              | 2115_IEQS001                                           |   |
| 146 | 1x                                                         | Safety characteristics                                                                                                                                                                                                        |              |                    |               |              | 2115_SSDS001                                           |   |
| 147 |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 148 |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 149 | <b>Editing instructions</b>                                |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 150 | SIGNAL IN                                                  | Signal goes to                                                                                                                                                                                                                |              |                    |               |              |                                                        |   |
| 151 | SIGNAL OUT                                                 | Signal comes from                                                                                                                                                                                                             |              |                    |               |              |                                                        |   |
| 152 | -                                                          | not applicable                                                                                                                                                                                                                |              |                    |               |              |                                                        |   |
| 153 | (n.e.)                                                     | not required                                                                                                                                                                                                                  |              |                    |               |              |                                                        |   |
| 154 | (n.b.)                                                     | not known                                                                                                                                                                                                                     |              |                    |               |              |                                                        |   |
| 155 | (*)                                                        | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |              |                    |               |              |                                                        |   |
| 156 |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |
| 157 |                                                            |                                                                                                                                                                                                                               |              |                    |               |              |                                                        |   |

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## MEQS 011

### specification rotary valve W-362

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|-------|------------|------------|---------|----------|-------------|
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|       |            |            |         |          |             |
|       |            |            |         |          |             |
| a     | 09.06.2022 | ys         | jk      | schz     | first issue |
| Issue | Date       | Originated | Checked | Approved | Remarks     |

specification rotary valve W-362

|    | Name                                           |                                                        | Rotary valve |                                                              |      |      | E            | Iss.                                                  |   |
|----|------------------------------------------------|--------------------------------------------------------|--------------|--------------------------------------------------------------|------|------|--------------|-------------------------------------------------------|---|
| #  | TAG                                            |                                                        | W-362        |                                                              |      |      |              |                                                       |   |
| 1  | General Data                                   |                                                        |              |                                                              |      |      | Remarks      |                                                       |   |
| 2  | Application                                    | Product discharge 2 of the fluid bed granulation dryer |              |                                                              |      |      |              | a                                                     |   |
| 3  | Quantity                                       | Operation                                              | units        | 1                                                            |      |      | a            |                                                       |   |
| 4  |                                                | Stand-By                                               | units        | 0                                                            |      |      | a            |                                                       |   |
| 5  | Operation Mode                                 |                                                        |              | continuous operation                                         |      |      | a            |                                                       |   |
| 6  | Operation Time                                 |                                                        |              | 24 h day / 7 days per week /8000Bh/year                      |      |      | a            |                                                       |   |
| 7  | Standards und guidlines to be used             |                                                        |              |                                                              |      |      | Remarks      |                                                       |   |
| 8  | General sets of rules                          |                                                        | see          | general design conditions                                    |      |      | 2115_GDCB001 | a                                                     |   |
| 9  | Special standards and guideline                |                                                        | -            | -                                                            |      |      |              | a                                                     |   |
| 10 | Mechanical Design Data                         |                                                        |              |                                                              |      |      | Remarks      |                                                       |   |
| 11 | Max Allowed Pressure (PS)                      |                                                        | bar(g)       | -0,4 / 0,65                                                  |      |      | a            |                                                       |   |
| 12 | Max./Min. Allowed Temperature (TS)             |                                                        | °C           | -10 / 150                                                    |      |      | a            |                                                       |   |
| 13 | Installation Conditions                        |                                                        |              |                                                              |      |      | Remarks      |                                                       |   |
| 14 | Installation Location                          |                                                        |              | Inside the production building                               |      |      | a            |                                                       |   |
| 15 | Ambient Temperature                            |                                                        | °C           | 5 ... 40                                                     |      |      | a            |                                                       |   |
| 16 | Hygienic Zone/Room Classification              |                                                        |              | n.a.                                                         |      |      | a            |                                                       |   |
| 17 | Max. Sound Pressure Level                      |                                                        | dB (A)       | 85                                                           |      |      | 1m Distance  | a                                                     |   |
| 18 | Horizontal/Vertical Orientation                |                                                        |              | horizontal                                                   |      |      | a            |                                                       |   |
| 19 | Ex Zone inside                                 |                                                        |              | 21/1                                                         |      |      | a            |                                                       |   |
| 20 | Ex Zone outside                                |                                                        |              | 21/1                                                         |      |      | a            |                                                       |   |
| 21 | Process Design Data                            |                                                        |              | min                                                          | norm | max  | design       | Remarks                                               |   |
| 22 | Liquid                                         |                                                        |              | potassium xanthate                                           |      |      | a            |                                                       |   |
| 23 | Fluid code                                     |                                                        |              | SP                                                           |      |      | a            |                                                       |   |
| 24 | mass flow rate                                 |                                                        | kg/h         | 589                                                          | 1768 | 3600 | 4000         | Specify min.-max. mass flow rate acc. FC design (*)   | a |
| 25 | volume flow rate                               |                                                        | m³/h         | 0,78                                                         | 2,72 | 6,55 | 7,00         | Specify min.-max. volume flow rate acc. FC design (*) | a |
| 26 | Operating Temperature                          |                                                        | °C           | 35                                                           | 65   | 70   |              | a                                                     |   |
| 27 | Pressure inlet side                            |                                                        | mbar(g)      | -170                                                         | 50   | 170  |              | a                                                     |   |
| 28 | Pressure outlet side                           |                                                        | mbar(g)      | 100                                                          | 300  | 500  | 650          | a                                                     |   |
| 29 | filling level (acc. to process design)         |                                                        | %            | 85...100                                                     |      |      | 95           | a                                                     |   |
| 30 | rotor speed @ 50Hz                             |                                                        | U/min        | approx. 8                                                    |      |      | a            |                                                       |   |
| 31 | Process engineering/plant engineering function |                                                        |              |                                                              |      |      | a            |                                                       |   |
| 32 | Pressure decoupling of process chambers        |                                                        | Y/N          | Y                                                            |      |      | a            |                                                       |   |
| 33 | Explosion decoupling                           |                                                        | Y/N          | N                                                            |      |      | a            |                                                       |   |
| 34 | Fire protection decoupling                     |                                                        | Y/N          | Y                                                            |      |      | a            |                                                       |   |
| 35 | Discharge or metering function                 |                                                        | Y/N          | N                                                            |      |      | a            |                                                       |   |
| 36 | Chemical and Physical Properties of fluid      |                                                        |              |                                                              |      |      | Remarks      |                                                       |   |
| 37 | Description medium                             |                                                        |              | potassium xanthate                                           |      |      | a            |                                                       |   |
| 38 | Characteristics                                |                                                        |              | water soluble, hygroscopic, toxic                            |      |      | a            |                                                       |   |
| 39 | Particle Size                                  |                                                        | µm           | average diameter 0 - 5 mm, single clumps < 20 mm edge length |      |      | a            |                                                       |   |
| 40 | Particle Structure                             |                                                        |              | n.b                                                          |      |      | a            |                                                       |   |
| 41 | Bulk density                                   |                                                        | kg/m³        | 550 .... 760                                                 |      |      | a            |                                                       |   |

specification rotary valve W-362

| #  | Name                                                     |       |           |           | Rotary valve |                          |     |     | E                                                                      | Iss. |
|----|----------------------------------------------------------|-------|-----------|-----------|--------------|--------------------------|-----|-----|------------------------------------------------------------------------|------|
| #  | TAG                                                      |       |           |           | W-362        |                          |     |     |                                                                        |      |
| 42 | Construction details rotary valve                        |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 43 | Type denomination rotary valve                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 44 | Standardized rotary valve size                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 45 | Blow through air lock type                               |       |           |           | Y/N          | N                        |     |     |                                                                        | a    |
| 46 | Cell wheel design                                        |       |           |           | -            | (*)                      |     |     | Cellular wheel open (without side walls) / closed (with side walls)    | a    |
| 47 | Construction details cell wheels                         |       |           |           | -            | (*)                      |     |     | straight / beveled cells, cellular wheel with knife, ...(more details) | a    |
| 48 | Diameter cell wheel                                      |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 49 | Chamber number                                           |       |           |           | no.          | (*)                      |     |     |                                                                        | a    |
| 50 | Chamber volume                                           |       |           |           | dm³          | (*)                      |     |     |                                                                        | a    |
| 51 | filling level (acc. to process engineering design)       |       |           |           | %            | (*)                      |     |     |                                                                        | a    |
| 52 | Rotational speed cell wheel (min./norm./max.)            |       |           |           | 1/min        | (*)                      |     |     |                                                                        | a    |
| 53 | Additional leakage gas nozzle                            |       |           |           | Y/N          | (*)                      |     |     |                                                                        | a    |
| 54 | drive system (direct with coupling or chain/belt drive)  |       |           |           |              | Chain drive              |     |     | (specify gear ratio for chain/belt drive)                              | a    |
| 55 | Gearbox type                                             |       |           |           |              | (*)                      |     |     | Oil-lubricated gear units are to be supplied with oil filling          | a    |
| 56 | Gearbox design                                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 57 | Gear ratio                                               |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 58 | Hygienic design according to hygienic zone               |       |           |           | Y/N          | N                        |     |     |                                                                        | a    |
| 59 | Puller for rotary feeder wheel                           |       |           |           | Y/N          | N                        |     |     | for cleaning purpose                                                   | a    |
| 60 | Easy removable for cleaning                              |       |           |           | Y/N          | Y                        |     |     |                                                                        | a    |
| 61 | Pump Housing Heating / Cooling                           |       |           |           | Y/N          | N                        |     |     |                                                                        | a    |
| 62 | Pulsating chamber emptying                               |       |           |           |              | Y                        |     |     |                                                                        | a    |
| 63 | Earthing-connection                                      |       |           |           | Y/N          | Y                        |     |     |                                                                        | a    |
| 64 | Cleaning/Sanitisation/Sterilisation                      |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 65 | Cleaning Media Product Side                              |       |           |           |              | Water cleaning           |     |     |                                                                        | a    |
| 66 | Cleaning Temperatur Product Side                         |       |           |           | °C           | <100°C                   |     |     |                                                                        | a    |
| 67 | Sanitisation/Sterilisation Medium                        |       |           |           |              | n.a.                     |     |     |                                                                        | a    |
| 68 | Sanitisation Temperature                                 |       |           |           | °C           | -                        |     |     |                                                                        | a    |
| 69 | Cleaning outside                                         |       |           |           |              | Dry cleaning             |     |     | In exceptional cases, manual wet cleaning                              | a    |
| 70 | Weights and Dimensions                                   |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 71 | Total Length                                             |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 72 | Total Width                                              |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 73 | Total Height                                             |       |           |           | mm           | (*)                      |     |     |                                                                        | a    |
| 74 | Total Weight                                             | Empty | Operating | Catastro. | kg           | (*)                      | (*) | (*) | -                                                                      | a    |
| 75 | Materials and Surface Treatments, Coatings, Certificates |       |           |           |              |                          |     |     | Remarks                                                                |      |
| 76 | Surface with Product Contact                             |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 77 | Material casing                                          |       |           |           |              | AISI 304 or higher grade |     |     |                                                                        | a    |
| 78 | Material cell wheel                                      |       |           |           |              | AISI 304 or higher grade |     |     |                                                                        | a    |
| 79 | External Surface                                         |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 80 | Welding Seams with Product Contact                       |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 81 | External Welding Seams                                   |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 82 | Seals/Gaskets with Product Contact                       |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 83 | Metal Parts without Product Contact                      |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 84 | Coating System of non SS Parts                           |       |           |           |              | (*)                      |     |     |                                                                        | a    |
| 85 | Material of Supports                                     |       |           |           |              | (*)                      |     |     |                                                                        | a    |

specification rotary valve W-362

|     | Name                                                                      | Rotary valve    |         |                |          |              | E                                                                                        | Iss. |
|-----|---------------------------------------------------------------------------|-----------------|---------|----------------|----------|--------------|------------------------------------------------------------------------------------------|------|
| #   | TAG                                                                       | W-362           |         |                |          |              |                                                                                          |      |
| 86  | Shaft Sealing System                                                      |                 |         |                |          |              | Remarks                                                                                  |      |
| 87  | Type                                                                      |                 |         | (*)            |          |              |                                                                                          | a    |
| 88  | Shaft Sealing System                                                      |                 |         | Y (*)          |          |              | Purging of the shaft seal,<br>Manual valve with pressure reducing<br>valve and manometer | a    |
| 89  | Sealing Media                                                             |                 |         | instrument air |          |              | Compressed air in the following quality<br>available: ISO 8573-1(2010) [2:2:2]           | a    |
| 90  | Flow Rate                                                                 | Nm³/h           |         | (*)            |          |              |                                                                                          | a    |
| 91  | Sealing Pressure                                                          | bar(g)          |         | (*)            |          |              |                                                                                          | a    |
| 92  | General Accessories                                                       |                 |         |                |          |              | Remarks                                                                                  |      |
| 93  | Pressure/flow controller for barrier system                               | Y/N             |         | N              |          |              | incl. Piping                                                                             | a    |
| 94  | Insulation                                                                | Y/N             |         | N              |          |              |                                                                                          | a    |
| 95  | Motor Hood                                                                | Y/N             |         | (*)            |          |              | Required when motor is vertical to the<br>top                                            | a    |
| 96  | Feeding shoe pneumatic conveying line                                     | Y/N             |         | Y              |          |              | Optional                                                                                 | a    |
| 97  | Leakage gas ejector                                                       | Y/N             |         | N              |          |              |                                                                                          | a    |
| 98  | Other accessories                                                         | Y/N             |         | (*)            |          |              |                                                                                          | a    |
| 99  | Explosion Protection according to DIN EN 60079/80079                      |                 |         |                |          |              | Remarks                                                                                  |      |
| 100 | Ex-protection version for the following Ex-zone                           | -               | inside: | 21/1           | outside: | 21/1         |                                                                                          | a    |
| 101 | Medium conditioning the Ex zone                                           | Medien-<br>code |         | SP             |          | SP           | 2115_SSDS001                                                                             | a    |
| 102 | Hybrid mixture                                                            | Y/N             |         | N              |          | N            |                                                                                          | a    |
| 103 | Permitted surface temperature max.                                        | °C              |         | 150            |          |              | for dust Ex areas!                                                                       | a    |
| 104 | Permitted temperature class                                               | -               |         | -              |          |              | for gas Ex areas!                                                                        | a    |
| 105 | Permitted equipment group                                                 |                 |         | IIIB           |          |              | For non-electrical and electrical devices!                                               | a    |
| 106 | Permitted Equipment protection level (EPL)                                |                 |         | Db o. Da       |          | Dc, Db o. Da | For non-electrical and electrical devices!                                               | a    |
| 107 | Explosion protection type (mechanical)                                    |                 |         | inside         |          | outside      | Remarks                                                                                  |      |
| 108 | Type of ignition protection                                               | -               |         | (*)            |          | (*)          | acc. DIN/EN 80079-36/37, DIN EN 60079-<br>0 & DIN EN 13463-1...8                         | a    |
| 109 | Explosion proof design                                                    | Y/N             |         | N              |          | -            | If YES specify presure                                                                   | a    |
| 110 | Explosion pressure shock resistant design                                 | Y/N             |         | N              |          | -            | If YES specify presure                                                                   | a    |
| 111 | Required dessign pressure                                                 | bar(Ü)          |         | -              |          | -            | For the explosion-proof / pressure-shock-<br>proof design!                               | a    |
| 112 | Explosion protection type (electrical)                                    |                 |         |                |          |              | Remarks                                                                                  |      |
| 113 | Type of ignition protection electric motor                                | -               |         | (*)            |          |              | acc. DIN EN 60079-0...31                                                                 | a    |
| 114 | Type of ignition protection other electrical parts                        |                 |         | (*)            |          |              | acc. DIN EN 60079-0...31                                                                 | a    |
| 115 | Special requirements Motor                                                |                 |         |                |          |              | Remarks                                                                                  |      |
| 116 | Frequency Controlled operation                                            | Y/N             |         | Y              |          |              | FC is provided by                                                                        | a    |
| 117 | Allowed frequency range / speed                                           | min/max         |         | (*)            |          | (*)          |                                                                                          | a    |
| 118 | Electric motor with forced ventilation                                    | Y/N             |         | (*)            |          |              |                                                                                          | a    |
| 119 | Electrical Accessories                                                    |                 |         |                |          |              | Remarks                                                                                  |      |
| 120 | Frequency Converter                                                       | Y/N             | N       |                |          |              | If YES specify manufacturer and type                                                     | a    |
| 121 | Trace Heating                                                             | Y/N             | N       |                |          |              | If YES specify type, voltage, current                                                    | a    |
| 122 | Measuring Devices                                                         | Y/N             | N       |                |          |              | If YES specify manufacturer and type                                                     | a    |
| 123 | Listing of measuring devices (electrical accessories) and signal exchange |                 |         |                |          |              |                                                                                          |      |
| 124 | Pos.                                                                      | Designation     | Type    | TAG ()         |          | Signal type  | Remarks                                                                                  |      |
| 125 |                                                                           |                 |         |                |          |              |                                                                                          | a    |
| 126 |                                                                           |                 |         |                |          |              |                                                                                          | a    |
| 127 |                                                                           |                 |         |                |          |              |                                                                                          | a    |

specification rotary valve W-362

|     |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
|-----|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|---------------|--------------------------------------------------------|------------------|------|
| #   | Name                                                       | Rotary valve                                                                                                                                                                                                                  |    |                    |               |                                                        |                  | E    |
| #   | TAG                                                        | W-362                                                                                                                                                                                                                         |    |                    |               |                                                        |                  | Iss. |
| 128 | <b>Nozzles List</b>                                        |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 129 | Pos.                                                       | NPS                                                                                                                                                                                                                           | PN | Type of connection | Norm          | Sealing Face                                           | Service          |      |
| 130 | N-01                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-1 | (*)                                                    | product inlet    | a    |
| 131 | N-02                                                       | (*)                                                                                                                                                                                                                           | 10 | flange             | DIN EN 1092-2 | (*)                                                    | product outlet   | a    |
| 132 | N-03                                                       | (*)                                                                                                                                                                                                                           |    |                    |               |                                                        | bearing flushing | a    |
| 133 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  | a    |
| 134 | (*)                                                        |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  | a    |
| 135 |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 136 | <b>Sketch, PID-Section</b>                                 |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 137 |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 138 | <b>Further requirements / Required further information</b> |                                                                                                                                                                                                                               |    |                    |               |                                                        | <b>Remarks</b>   |      |
| 139 | Design acc.to Technical Instruction Air                    |                                                                                                                                                                                                                               |    | Y/N                | N             | German rule 'TA-Luft'                                  |                  |      |
| 140 | Sound power level                                          |                                                                                                                                                                                                                               |    | dB(A)              | (*)           |                                                        |                  |      |
| 141 | Leakage air volume flow at max. outlet pressure            |                                                                                                                                                                                                                               |    | m³/h               | (*)           | for max. conveying pressure pneumatic conveying system |                  |      |
| 142 |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 143 | <b>Additional documents</b>                                |                                                                                                                                                                                                                               |    |                    |               |                                                        | <b>Dok.-Nr.</b>  |      |
| 144 | 1x                                                         | General design conditions                                                                                                                                                                                                     |    |                    |               |                                                        | 2115_GDCB001     | a    |
| 145 | 1x                                                         | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |    |                    |               |                                                        | 2115_IEQS001     | a    |
| 146 | 1x                                                         | Safety characteristics                                                                                                                                                                                                        |    |                    |               |                                                        | 2115_SSDS001     | a    |
| 147 |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 148 |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 149 | <b>Editing instructions</b>                                |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 150 | SIGNAL IN                                                  | Signal goes to                                                                                                                                                                                                                |    |                    |               |                                                        |                  | a    |
| 151 | SIGNAL OUT                                                 | Signal comes from                                                                                                                                                                                                             |    |                    |               |                                                        |                  | a    |
| 152 | -                                                          | not applicable                                                                                                                                                                                                                |    |                    |               |                                                        |                  | a    |
| 153 | (n.e.)                                                     | not required                                                                                                                                                                                                                  |    |                    |               |                                                        |                  | a    |
| 154 | (n.b.)                                                     | not known                                                                                                                                                                                                                     |    |                    |               |                                                        |                  | a    |
| 155 | (*)                                                        | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |    |                    |               |                                                        |                  | a    |
| 156 |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |
| 157 |                                                            |                                                                                                                                                                                                                               |    |                    |               |                                                        |                  |      |

## MEQS 016

### specification rotary valve W-375

|                         |                      |                               |                           |                                |                             |
|-------------------------|----------------------|-------------------------------|---------------------------|--------------------------------|-----------------------------|
|                         |                      |                               |                           |                                |                             |
|                         |                      |                               |                           |                                |                             |
|                         |                      |                               |                           |                                |                             |
| a                       | 09.06.2022           | ys                            | jk                        | schz                           | first issue                 |
| <b>Issue</b><br>Ausgabe | <b>Date</b><br>Datum | <b>Originated</b><br>Erstellt | <b>Checked</b><br>Geprüft | <b>Approved</b><br>Freigegeben | <b>Remarks</b><br>Bemerkung |

specification rotary valve W-375

|    | Name                                           |                                  | Rotary valve |                                                                          |      |             | E            | Iss.                                                  |   |
|----|------------------------------------------------|----------------------------------|--------------|--------------------------------------------------------------------------|------|-------------|--------------|-------------------------------------------------------|---|
| #  | TAG                                            |                                  | W-375        |                                                                          |      |             |              |                                                       |   |
| 1  | General Data                                   |                                  |              |                                                                          |      |             | Remarks      |                                                       |   |
| 2  | Application                                    | Product discharge from silo R371 |              |                                                                          |      |             |              | a                                                     |   |
| 3  | Quantity                                       | Operation                        | units        | 1                                                                        |      |             |              | a                                                     |   |
| 4  |                                                | Stand-By                         | units        | 0                                                                        |      |             |              | a                                                     |   |
| 5  | Operation Mode                                 |                                  |              | discontinuous operation 2 x 15 min/h                                     |      |             |              | a                                                     |   |
| 6  | Operation Time                                 |                                  |              | 12 h day / 14 days per month --> app. 2000 Bh/year                       |      |             |              | a                                                     |   |
| 7  | Standards und guidlines to be used             |                                  |              |                                                                          |      |             | Remarks      |                                                       |   |
| 8  | General sets of rules                          |                                  | see          | general design conditions                                                |      |             | 2115_GDCB001 | a                                                     |   |
| 9  | Special standards and guideline                |                                  | -            | -                                                                        |      |             |              | a                                                     |   |
| 10 | Mechanical Design Data                         |                                  |              |                                                                          |      |             | Remarks      |                                                       |   |
| 11 | Max Allowed Pressure (PS)                      |                                  | bar(g)       | -0,4 / 0,65                                                              |      |             |              | a                                                     |   |
| 12 | Max./Min. Allowed Temperature (TS)             |                                  | °C           | -10 / 150                                                                |      |             |              | a                                                     |   |
| 13 | Installation Conditions                        |                                  |              |                                                                          |      |             | Remarks      |                                                       |   |
| 14 | Installation Location                          |                                  |              | Inside the production building                                           |      |             |              | a                                                     |   |
| 15 | Ambient Temperature                            |                                  | °C           | 5 ... 40                                                                 |      |             |              | a                                                     |   |
| 16 | Hygienic Zone/Room Classification              |                                  |              | n.a.                                                                     |      |             |              | a                                                     |   |
| 17 | Max. Sound Pressure Level                      |                                  | dB (A)       | 85 (*)                                                                   |      | 1m Distance |              | a                                                     |   |
| 18 | Horizontal/Vertical Orientation                |                                  |              | horizontal                                                               |      |             |              | a                                                     |   |
| 19 | Ex Zone inside                                 |                                  |              | 21/1                                                                     |      |             |              | a                                                     |   |
| 20 | Ex Zone outside                                |                                  |              | 21/1                                                                     |      |             |              | a                                                     |   |
| 21 | Process Design Data                            |                                  |              | min                                                                      | norm | max         | design       | Remarks                                               |   |
| 22 | Medium                                         |                                  |              | potassium xanthate                                                       |      |             |              | a                                                     |   |
| 23 | Fluid code                                     |                                  |              | SP                                                                       |      |             |              | a                                                     |   |
| 24 | Flow Rate                                      |                                  | kg/h         | 0                                                                        | 0    | 5000        | 5000         | Specify min.-max. mass flow rate acc. FC design (*)   | a |
| 25 | Flow Rate                                      |                                  | m³/h         | 0,0                                                                      | 0,0  | 9,1         |              | Specify min.-max. volume flow rate acc. FC design (*) | a |
| 26 | Operating Temperature                          |                                  | °C           | 35                                                                       | 65   | 80          |              |                                                       | a |
| 27 | Pressure inlet side                            |                                  | mbar(g)      | -20                                                                      | -5   | 0           |              |                                                       | a |
| 28 | Pressure outlet side                           |                                  | mbar(g)      | -170                                                                     | 50   | 170         |              |                                                       | a |
| 29 | filling level (acc. to process design)         |                                  | %            | 85...100                                                                 |      |             | 90           | inlet from silo                                       | a |
| 30 | rotor speed @ 50Hz                             |                                  | U/min        | approx. 16                                                               |      |             |              |                                                       | a |
| 31 | Process engineering/plant engineering function |                                  |              |                                                                          |      |             |              |                                                       |   |
| 32 | Pressure decoupling of process chambers        |                                  | Y/N          | Y                                                                        |      |             |              |                                                       | a |
| 33 | Explosion decoupling                           |                                  | Y/N          | N                                                                        |      |             |              |                                                       | a |
| 34 | Fire protection decoupling                     |                                  | Y/N          | Y                                                                        |      |             |              |                                                       | a |
| 35 | Discharge or metering function                 |                                  | Y/N          | N                                                                        |      |             |              |                                                       | a |
| 36 | Chemical and Physical Properties of fluid      |                                  |              |                                                                          |      |             | Remarks      |                                                       |   |
| 37 | Description medium                             |                                  |              | potassium xanthate                                                       |      |             |              |                                                       | a |
| 38 | Characteristics                                |                                  |              | water soluble, hygroscopic, toxic                                        |      |             |              |                                                       | a |
| 39 | Particle Size                                  |                                  | µm           | average diameter 0 - 5 mm, single clumps<br>< 20 mm edge length possible |      |             |              |                                                       | a |
| 40 | Particle Structure                             |                                  |              | n.b                                                                      |      |             |              |                                                       | a |
| 41 | Bulk density                                   |                                  | kg/m³        | 550 .... 760                                                             |      |             |              |                                                       | a |

specification rotary valve W-375

| #  | Name                                                     |       |           | Rotary valve |                          |     |     |     | E       | Iss.                                                                   |   |
|----|----------------------------------------------------------|-------|-----------|--------------|--------------------------|-----|-----|-----|---------|------------------------------------------------------------------------|---|
|    | TAG                                                      |       |           | W-375        |                          |     |     |     |         |                                                                        |   |
| 42 | Construction details rotary valve                        |       |           |              |                          |     |     |     | Remarks |                                                                        |   |
| 43 | Type denomination rotary valve                           |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 44 | Standardized rotary valve size                           |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 45 | Blow through air lock type                               |       |           | Y/N          | N                        |     |     |     |         |                                                                        | a |
| 46 | Cell wheel design                                        |       |           | -            | (*)                      |     |     |     |         | Cellular wheel open (without side walls) / closed (with side walls)    | a |
| 47 | Construction details cell wheels                         |       |           | -            | (*)                      |     |     |     |         | straight / beveled cells, cellular wheel with knife, ...(more details) | a |
| 48 | Diameter cell wheel                                      |       |           | mm           | (*)                      |     |     |     |         |                                                                        | a |
| 49 | Chamber number                                           |       |           | No.          | (*)                      |     |     |     |         |                                                                        | a |
| 50 | Chamber volume                                           |       |           | dm³          | (*)                      |     |     |     |         |                                                                        | a |
| 51 | filling level (acc. to process engineering design)       |       |           | %            | (*)                      |     |     |     |         |                                                                        | a |
| 52 | Rotational speed cell wheel (min./norm./max.)            |       |           | 1/min        | (*)                      |     |     |     |         |                                                                        | a |
| 53 | Additional leakage gas nozzle                            |       |           | Y/N          | (*)                      |     |     |     |         |                                                                        | a |
| 54 | drive system (direct with coupling or chain/belt drive)  |       |           |              | Chain drive              |     |     |     |         | (specify gear ratio for chain/belt drive)                              | a |
| 55 | Gearbox type                                             |       |           |              | (*)                      |     |     |     |         | Oil-lubricated gear units are to be supplied with oil filling          | a |
| 56 | Gearbox design                                           |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 57 | Gear ratio                                               |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 58 | Hygienic design according to hygienic zone               |       |           | Y/N          | N                        |     |     |     |         |                                                                        | a |
| 59 | Puller for rotary feeder wheel                           |       |           | Y/N          | N                        |     |     |     |         | for cleaning purpose                                                   | a |
| 60 | Easy removable for cleaning                              |       |           | Y/N          | Y                        |     |     |     |         |                                                                        | a |
| 61 | Pump Housing Heating / Cooling                           |       |           | Y/N          | N                        |     |     |     |         |                                                                        | a |
| 62 | pulsating chamber discharge                              |       |           | Y/N          | Y                        |     |     |     |         |                                                                        | a |
| 63 | Earthing-connection                                      |       |           | Y/N          | Y                        |     |     |     |         |                                                                        | a |
| 64 | Cleaning/Sanitisation/Sterilisation                      |       |           |              |                          |     |     |     | Remarks |                                                                        |   |
| 65 | Cleaning Media Product Side                              |       |           |              | Water cleaning           |     |     |     |         |                                                                        | a |
| 66 | Cleaning Temperatur Product Side                         |       |           | °C           | <100°C                   |     |     |     |         |                                                                        | a |
| 67 | Sanitisation/Sterilisation Medium                        |       |           |              | n.a.                     |     |     |     |         |                                                                        | a |
| 68 | Sanitisation Temperature                                 |       |           | °C           | -                        |     |     |     |         |                                                                        | a |
| 69 | Cleaning outside                                         |       |           |              | Dry cleaning             |     |     |     |         | In exceptional cases, manual wet cleaning                              | a |
| 70 | Weights and Dimensions                                   |       |           |              |                          |     |     |     | Remarks |                                                                        |   |
| 71 | Total Length                                             |       |           | mm           | (*)                      |     |     |     |         |                                                                        | a |
| 72 | Total Width                                              |       |           | mm           | (*)                      |     |     |     |         |                                                                        | a |
| 73 | Total Height                                             |       |           | mm           | (*)                      |     |     |     |         |                                                                        | a |
| 74 | Total Weight                                             | Empty | Operating | Catastro.    | kg                       | (*) | (*) | (*) | -       | a                                                                      |   |
| 75 | Materials and Surface Treatments, Coatings, Certificates |       |           |              |                          |     |     |     | Remarks |                                                                        |   |
| 76 | Surface with Product Contact                             |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 77 | Material casing                                          |       |           |              | AISI 304 or higher grade |     |     |     |         |                                                                        | a |
| 78 | Material cell wheel                                      |       |           |              | AISI 304 or higher grade |     |     |     |         |                                                                        | a |
| 79 | External Surface                                         |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 80 | Welding Seams with Product Contact                       |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 81 | External Welding Seams                                   |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 82 | Seals/Gaskets with Product Contact                       |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 83 | Metal Parts without Product Contact                      |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 84 | Coating System of non SS Parts                           |       |           |              | (*)                      |     |     |     |         |                                                                        | a |
| 85 | Material of Supports                                     |       |           |              | (*)                      |     |     |     |         |                                                                        | a |

specification rotary valve W-375

| #   | Name                                                                      |             | Rotary valve    |                |      |              | E                                                                                        | Iss.                                                             |   |
|-----|---------------------------------------------------------------------------|-------------|-----------------|----------------|------|--------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------|---|
|     | TAG                                                                       |             | W-375           |                |      |              |                                                                                          |                                                                  |   |
| 86  | Shaft Sealing System                                                      |             |                 |                |      |              | Remarks                                                                                  |                                                                  |   |
| 87  | Type                                                                      |             |                 | (*)            |      |              |                                                                                          | a                                                                |   |
| 88  | Shaft Sealing System                                                      |             |                 | Y (*)          |      |              | Purging of the shaft seal,<br>Manual valve with pressure reducing<br>valve and manometer | a                                                                |   |
| 89  | Sealing Media                                                             |             |                 | instrument air |      |              | Compressed air in the following quality<br>available: ISO 8573-1(2010) [2:2:2]           | a                                                                |   |
| 90  | Flow Rate                                                                 |             | Nm³/h           | (*)            |      |              |                                                                                          | a                                                                |   |
| 91  | Sealing Pressure                                                          |             | bar(g)          | (*)            |      |              |                                                                                          | a                                                                |   |
| 92  | General Accessories                                                       |             |                 |                |      |              | Remarks                                                                                  |                                                                  |   |
| 93  | Pressure/flow controller for barrier system                               |             | Y/N             | N              |      |              | incl. piping                                                                             | a                                                                |   |
| 94  | Insulation                                                                |             | Y/N             | N              |      |              |                                                                                          | a                                                                |   |
| 95  | Motor Hood                                                                |             | Y/N             | (*)            |      |              | Required when motor is vertical to the<br>top                                            | a                                                                |   |
| 96  | Feeding shoe pneumatic conveying line                                     |             | Y/N             | Y              |      |              | Optional                                                                                 | a                                                                |   |
| 97  | Leakage gas ejector                                                       |             | Y/N             | N              |      |              |                                                                                          | a                                                                |   |
| 98  | Other accessories                                                         |             | Y/N             | (*)            |      |              |                                                                                          | a                                                                |   |
| 99  | Explosion Protection according to DIN EN 60079/80079                      |             |                 |                |      |              | Remarks                                                                                  |                                                                  |   |
| 100 | Ex-protection version for the following Ex-zone                           |             | -               | inside:        | 21/1 | outside:     | 21/1                                                                                     | a                                                                |   |
| 101 | Medium conditioning the Ex zone                                           |             | Medien-<br>code | SP             |      | SP           |                                                                                          | 2115_SS001                                                       | a |
| 102 | Hybrid mixture                                                            |             | Y/N             | N              |      | N            |                                                                                          |                                                                  | a |
| 103 | Permitted surface temperature max.                                        |             | °C              | 150            |      |              | for dust Ex areas!                                                                       | a                                                                |   |
| 104 | Permitted temperature class                                               |             | -               | -              |      |              | for gas Ex areas!                                                                        | a                                                                |   |
| 105 | Permitted equipment group                                                 |             |                 | IIIB           |      |              | For non-electrical and electrical devices!                                               | a                                                                |   |
| 106 | Permitted Equipment protection level (EPL)                                |             |                 | Db o. Da       |      | Dc, Db o. Da |                                                                                          | For non-electrical and electrical devices!                       | a |
| 107 | Explosion protection type (mechanical)                                    |             |                 | inside         |      | outside      |                                                                                          | Remarks                                                          |   |
| 108 | Type of ignition protection                                               |             | -               | (*)            |      | (*)          |                                                                                          | acc. DIN/EN 80079-36/37, DIN EN 60079-<br>0 & DIN EN 13463-1...8 | a |
| 109 | Explosion proof design                                                    |             | Y/N             | N              |      | -            |                                                                                          | If YES specify presure                                           | a |
| 110 | Explosion pressure shock resistant design                                 |             | Y/N             | N              |      | -            |                                                                                          | If YES specify presure                                           | a |
| 111 | Required dession pressure                                                 |             | bar(Ü)          | -              |      | -            |                                                                                          | For the explosion-proof / pressure-shock-<br>proof design!       | a |
| 112 | Explosion protection type (electrical)                                    |             |                 |                |      |              | Remarks                                                                                  |                                                                  |   |
| 113 | Type of ignition protection electric motor                                |             | -               | (*)            |      |              | acc. DIN EN 60079-0...31                                                                 | a                                                                |   |
| 114 | Type of ignition protection other electrical parts                        |             | -               | (*)            |      |              | acc. DIN EN 60079-0...31                                                                 | a                                                                |   |
| 115 | Special requirements Motor                                                |             |                 |                |      |              | Remarks                                                                                  |                                                                  |   |
| 116 | Frequency Controlled operation                                            |             | Y/N             | Y              |      |              | FC is provided by                                                                        | a                                                                |   |
| 117 | Allowed frequency range / speed                                           |             | min/max         | (*)            |      | (*)          |                                                                                          |                                                                  | a |
| 118 | Electric motor with forced ventilation                                    |             | Y/N             | (*)            |      |              |                                                                                          | a                                                                |   |
| 119 | Electrical Accessories                                                    |             |                 |                |      |              | Remarks                                                                                  |                                                                  |   |
| 120 | Frequency Converter                                                       |             | Y/N             | N              |      |              | If YES specify manufacturer and type                                                     | a                                                                |   |
| 121 | Trace Heating                                                             |             | Y/N             | N              |      |              | If YES specify type, voltage, current                                                    | a                                                                |   |
| 122 | Measuring Devices                                                         |             | Y/N             | N              |      |              | If YES specify manufacturer and type                                                     | a                                                                |   |
| 123 | Listing of measuring devices (electrical accessories) and signal exchange |             |                 |                |      |              |                                                                                          |                                                                  |   |
| 124 | Pos.                                                                      | Designation | Type            | TAG ()         |      | Signal type  | Remarks                                                                                  |                                                                  |   |
| 125 |                                                                           | (*)         |                 |                |      |              |                                                                                          | a                                                                |   |
| 126 |                                                                           | (*)         |                 |                |      |              |                                                                                          | a                                                                |   |
| 127 |                                                                           | (*)         |                 |                |      |              |                                                                                          | a                                                                |   |

specification rotary valve W-375

|     |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
|-----|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------------|---------------|--------------------------------------------------------|------------------|------|
| #   | Name                                                       | Rotary valve                                                                                                                                                                                                                  |     |                    |               |                                                        |                  | E    |
| #   | TAG                                                        | W-375                                                                                                                                                                                                                         |     |                    |               |                                                        |                  | Iss. |
| 128 | <b>Nozzles List</b>                                        |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
| 129 | Pos.                                                       | NPS                                                                                                                                                                                                                           | PN  | Type of connection | Norm          | Sealing Face                                           | Service          |      |
| 130 | N-01                                                       | (*)                                                                                                                                                                                                                           | 10  | flange             | DIN EN 1092-1 | (*)                                                    | product inlet    | a    |
| 131 | N-02                                                       | (*)                                                                                                                                                                                                                           | 10  | flange             | DIN EN 1092-1 | (*)                                                    | product outlet   | a    |
| 132 | N-03                                                       | (*)                                                                                                                                                                                                                           |     |                    |               |                                                        | bearing flushing | a    |
| 133 | (*)                                                        |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  | a    |
| 134 | (*)                                                        |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  | a    |
| 135 |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
| 136 | <b>Sketch, PID-Section</b>                                 |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
| 137 |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  | a    |
| 138 | <b>Further requirements / Required further information</b> |                                                                                                                                                                                                                               |     |                    |               |                                                        | <b>Remarks</b>   |      |
| 139 | Design acc.to Technical Instruction Air                    | Y/N                                                                                                                                                                                                                           |     |                    | N             | German rule 'TA-Luft'                                  | a                |      |
| 140 | Sound power level                                          | dB(A)                                                                                                                                                                                                                         | (*) |                    |               |                                                        | a                |      |
| 141 | Leakage air volume flow at max. outlet pressure            | m³/h                                                                                                                                                                                                                          | (*) |                    |               | for max. conveying pressure pneumatic conveying system | a                |      |
| 142 |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        | a                |      |
| 143 | <b>Additional documents</b>                                |                                                                                                                                                                                                                               |     |                    |               |                                                        | <b>Doc.-no.</b>  |      |
| 144 | 1x                                                         | General design conditions                                                                                                                                                                                                     |     |                    |               | 2115_GDCB001                                           | a                |      |
| 145 | 1x                                                         | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |     |                    |               | 2115_IEQS001                                           | a                |      |
| 146 | 1x                                                         | Safety characteristics                                                                                                                                                                                                        |     |                    |               | 2115_SSDS001                                           | a                |      |
| 147 |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
| 148 |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
| 149 | <b>Editing instructions</b>                                |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
| 150 | SIGNAL IN                                                  | Signal goes to                                                                                                                                                                                                                |     |                    |               |                                                        |                  | a    |
| 151 | SIGNAL OUT                                                 | Signal comes from                                                                                                                                                                                                             |     |                    |               |                                                        |                  | a    |
| 152 | -                                                          | not applicable                                                                                                                                                                                                                |     |                    |               |                                                        |                  | a    |
| 153 | (n.e.)                                                     | not required                                                                                                                                                                                                                  |     |                    |               |                                                        |                  | a    |
| 154 | (n.b.)                                                     | not known                                                                                                                                                                                                                     |     |                    |               |                                                        |                  | a    |
| 155 | (*)                                                        | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |     |                    |               |                                                        |                  | a    |
| 156 |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |
| 157 |                                                            |                                                                                                                                                                                                                               |     |                    |               |                                                        |                  |      |

## MEQS 001

## Specification Ventilator C-330, C-340

|                         |                      |                               |                           |                                |                             |
|-------------------------|----------------------|-------------------------------|---------------------------|--------------------------------|-----------------------------|
|                         |                      |                               |                           |                                |                             |
|                         |                      |                               |                           |                                |                             |
| b                       | 13.01.2023           | ys                            | kp                        |                                |                             |
| a                       | 20.04.2022           | ys, ws                        |                           |                                |                             |
| <b>Issue</b><br>Ausgabe | <b>Date</b><br>Datum | <b>Originated</b><br>Erstellt | <b>Checked</b><br>Geprüft | <b>Approved</b><br>Freigegeben | <b>Remarks</b><br>Bemerkung |

# Spezifikation Ventilator C330, C340

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| #  | Name                               |                                                                                                                                                                          | Circulating gas fan |                                         |       |       | E                                                                    | Iss.                                      |   |
|----|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------|-------|-------|----------------------------------------------------------------------|-------------------------------------------|---|
|    | TAG                                |                                                                                                                                                                          | C-330, C-340        |                                         |       |       |                                                                      |                                           |   |
| 1  | General Data                       |                                                                                                                                                                          |                     |                                         |       |       | Remarks                                                              |                                           |   |
| 2  | Application                        | Simultaneously operated, speed-controlled fans for conveying the process air after a bag filter and condenser in the N2 circuit. Granulation of butyl potassium xanthate |                     |                                         |       |       |                                                                      | a                                         |   |
| 3  | Quantity                           | Operation                                                                                                                                                                | units               | 2 (1 x C-330, 1 x C-340)                |       |       |                                                                      | a                                         |   |
| 4  |                                    | Stand-By                                                                                                                                                                 | units               | 0                                       |       |       |                                                                      | a                                         |   |
| 5  | Operation Mode                     |                                                                                                                                                                          |                     | continuous operation                    |       |       |                                                                      |                                           | a |
| 6  | Operation Time                     |                                                                                                                                                                          |                     | 24 h day / 7 days per week /8000Bh/year |       |       |                                                                      |                                           | a |
| 7  | Standards und guidlines to be used |                                                                                                                                                                          |                     |                                         |       |       | Remarks                                                              |                                           |   |
| 8  | General sets of rules              |                                                                                                                                                                          | see                 | general design conditions               |       |       | 2115_GDCB001                                                         | a                                         |   |
| 9  | Special standards and guideline    |                                                                                                                                                                          | -                   | DIN 24166                               |       |       |                                                                      | a                                         |   |
| 10 | Mechanical Design Data             |                                                                                                                                                                          |                     |                                         |       |       | Remarks                                                              |                                           |   |
| 11 | Min./max. allowed Pressure         | PS                                                                                                                                                                       | mbar(g)             | - 0,23                                  |       | 0,23  |                                                                      | a                                         |   |
| 12 | Min./max. allowed temperature      | TS                                                                                                                                                                       | °C                  | 0                                       |       | 100   |                                                                      | a                                         |   |
| 13 | Installation Conditions            |                                                                                                                                                                          |                     |                                         |       |       | Remarks                                                              |                                           |   |
| 14 | Installation Location              |                                                                                                                                                                          |                     | Inside the production building          |       |       | installed on steel construction                                      | a                                         |   |
| 15 | Ambient Temperature                |                                                                                                                                                                          | °C                  | 5 ... 40                                |       |       |                                                                      | a                                         |   |
| 16 | Height above sea level             |                                                                                                                                                                          |                     | 80 m above sea level                    |       |       |                                                                      | a                                         |   |
| 17 | Hygienic Zone/Room Classification  |                                                                                                                                                                          |                     | n.a.                                    |       |       |                                                                      | a                                         |   |
| 18 | Max. Sound Pressure Level          |                                                                                                                                                                          | dB (A)              | 85                                      |       |       | in 1 m distance, with sution and discharge mounted piping            | a                                         |   |
| 19 | Horizontal/Vertical Orientation    |                                                                                                                                                                          |                     | horizontal                              |       |       |                                                                      | a                                         |   |
| 20 | Ex Zone inside                     |                                                                                                                                                                          |                     | 2 / 22                                  |       |       | See further explanations in the section on explosion characteristics | a                                         |   |
| 21 | Ex Zone outside                    |                                                                                                                                                                          |                     | 2                                       |       |       |                                                                      | a                                         |   |
| 22 | Process Design Data                |                                                                                                                                                                          |                     | min                                     | max   | norm. | design                                                               | Remarks                                   |   |
| 23 | Medium                             |                                                                                                                                                                          |                     | process gas N2 with additives           |       |       |                                                                      | a                                         |   |
| 24 | Fluid code                         |                                                                                                                                                                          |                     | PE                                      |       |       |                                                                      | a                                         |   |
| 25 | operation points                   |                                                                                                                                                                          |                     | -                                       | -     | 1     | 2                                                                    | per fan                                   |   |
| 26 | Genauigkeitsklasse nach DIN 24166  |                                                                                                                                                                          | -                   | -                                       | -     | 1     |                                                                      | for the design data given in this section |   |
| 27 | Flow Rate                          | kg/h                                                                                                                                                                     | 33000               | 54000                                   | 50000 | 60000 | per fan                                                              | a                                         |   |
| 28 | temperature (inlet)                | °C                                                                                                                                                                       | 5                   | 15                                      | 10    | 10    |                                                                      | a                                         |   |
| 29 | density (inlet)                    | kg/m³                                                                                                                                                                    | 1,00                | 1,18                                    | 1,15  | 1,18  | In operating condition                                               | a                                         |   |
| 30 | Flow Rate (inlet)                  | Bm³/h                                                                                                                                                                    | 32000               | 56000                                   | 43500 | 51000 | In operating condition                                               | a                                         |   |
| 31 | Flow Rate (inlet) (0°C, 1,013 bar) | Nm³/h                                                                                                                                                                    | -                   | -                                       | 40000 | 47900 | dry                                                                  | a                                         |   |
| 32 | pressure suctionside               | mbar(g)                                                                                                                                                                  | -170                | 170                                     | -30   | -30   |                                                                      | a                                         |   |
| 33 | pressure discharge side            | mbar(g)                                                                                                                                                                  | -5                  | 170                                     | 100   | 140   |                                                                      | a                                         |   |
| 34 | pressure difference                | mbar                                                                                                                                                                     | -                   | -                                       | 130   | 170   | suction side 98% / pressure side 2%                                  | b                                         |   |
| 35 | temperature (discharge)            | mbar(g)                                                                                                                                                                  | -                   | -                                       | (*)   | (*)   |                                                                      | a                                         |   |
| 36 | density (discharge)                | kg/m³                                                                                                                                                                    | (*)                 | (*)                                     | (*)   | (*)   |                                                                      | a                                         |   |
| 37 | rotational speed                   | 1/min                                                                                                                                                                    | (*)                 | (*)                                     | (*)   | (*)   |                                                                      | a                                         |   |
| 38 | power consumption                  | kW                                                                                                                                                                       | (*)                 | (*)                                     | (*)   | (*)   |                                                                      | a                                         |   |
| 39 | efficiency                         | %                                                                                                                                                                        | (*)                 | (*)                                     | (*)   | (*)   |                                                                      | a                                         |   |

# Spezifikation Ventilator C330, C340

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| #  | Name                                                                    |                      | Circulating gas fan |          |      |                                   | E   | Iss.                                   |                                             |   |   |
|----|-------------------------------------------------------------------------|----------------------|---------------------|----------|------|-----------------------------------|-----|----------------------------------------|---------------------------------------------|---|---|
|    | TAG                                                                     |                      | C-330, C-340        |          |      |                                   |     |                                        |                                             |   |   |
| 40 | Chemical and Physical Properties of fluid                               |                      |                     |          |      |                                   |     |                                        | Remarks                                     |   |   |
| 41 | Description medium                                                      |                      |                     |          |      | process gas N2 with additives     |     |                                        |                                             | a |   |
| 42 | Composition                                                             |                      |                     |          |      | min                               | max | norm                                   | design                                      |   | a |
| 43 | Oxygen O2                                                               | Mass-%               | 0                   | 3,5      | 2    | 2                                 |     |                                        |                                             | a |   |
| 44 | n-Butanol, C4H10O                                                       | Mass-%               | 0                   | 2,7      | 0,52 | 0,52                              |     |                                        |                                             | a |   |
| 45 | Carbon disulphide, CS2                                                  | Mass-%               | 0                   | 1        | 0,7  | 0,7                               |     |                                        |                                             | a |   |
| 46 | water, H2O                                                              | Mass-%               | 0                   | 3        | 1    | 1                                 |     |                                        |                                             | a |   |
| 47 | Special characteristics                                                 |                      |                     |          |      | slightly dusty (See below)        |     |                                        |                                             | a |   |
| 48 | Particle content                                                        | mg/Nm³               | < 0,1               |          |      |                                   |     |                                        |                                             | a |   |
| 49 | Particle Size                                                           | µm                   | 1..3                |          |      |                                   |     |                                        |                                             | a |   |
| 50 | Particle Structure                                                      |                      |                     |          |      | powder                            |     |                                        |                                             | a |   |
| 51 | pH-value of dissolved dust particles in water                           |                      |                     |          |      | k.a.                              |     |                                        |                                             | a |   |
| 52 | Composition (dust particles)                                            |                      |                     |          |      | Butyl potassium xanthate          |     |                                        |                                             | a |   |
| 53 | Dust properties                                                         |                      |                     |          |      | water soluble, hygroscopic, toxic |     |                                        |                                             | a |   |
| 54 | Construction details fan                                                |                      |                     |          |      |                                   |     |                                        | Remarks                                     |   |   |
| 55 | fan type                                                                |                      |                     |          |      | radial fan                        |     |                                        | vgl. Ref. 21500224SA                        | a |   |
| 56 | type name                                                               |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 57 | size                                                                    |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 58 | Position discharge opening                                              |                      |                     |          |      | GR 90° und GL 90°                 |     |                                        |                                             | a |   |
| 59 | drive system (direct with/without coupling or belt drive)               |                      |                     |          |      | direct with coupling              |     |                                        | (specify transmission ratio for belt drive) | a |   |
| 60 | Wellenlagerung (separat-einseitig/zweiseitig o. Laufrad auf Motorwelle) |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 61 | Dichtigkeit (normal/flüssigkeits- & staubdicht/gasdicht)                |                      |                     |          |      | gas tight                         |     |                                        |                                             | a |   |
| 62 | Cleaning/Sanitisation/Sterilisation                                     |                      |                     |          |      |                                   |     |                                        | Remarks                                     |   |   |
| 63 | Cleaning Media Product Side                                             |                      |                     |          |      | Dry cleaning                      |     |                                        |                                             | a |   |
| 64 | Cleaning Temperatur Product Side °C                                     |                      |                     |          |      | -                                 |     |                                        |                                             | a |   |
| 65 | Sanitisation/Sterilisation Medium                                       |                      |                     |          |      | -                                 |     |                                        |                                             | a |   |
| 66 | Sanitisation Temperature °C                                             |                      |                     |          |      | -                                 |     |                                        |                                             | a |   |
| 67 | Cleaning outside                                                        |                      |                     |          |      | Dry cleaning                      |     |                                        | In exceptional cases, manual wet cleaning   | a |   |
| 68 | Weights and Dimensions                                                  |                      |                     |          |      |                                   |     |                                        | Remarks                                     |   |   |
| 69 | Total Length mm                                                         |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 70 | Total Width mm                                                          |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 71 | Total Height mm                                                         |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 72 | Total Weight                                                            | Empty                | Operating           | Catastro | kg   | (*)                               | (*) | (*)                                    | -                                           | a |   |
| 73 | Heaviest Component kg                                                   |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 74 | Materials and Surface Treatments, Coatings, Certificates                |                      |                     |          |      |                                   |     |                                        | Remarks                                     |   |   |
| 75 | material casing                                                         |                      |                     |          |      | AISI 316Ti or higher grade        |     |                                        |                                             | a |   |
| 76 | material impeller                                                       |                      |                     |          |      | AISI 316Ti or higher grade        |     |                                        |                                             | a |   |
| 77 | External Surface                                                        |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 78 | Welding Seams inside                                                    |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 79 | External Welding Seams                                                  |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 80 | Seals/Gaskets inside                                                    |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 81 | Material compensators                                                   |                      |                     |          |      | AISI 304 or higher grade          |     |                                        |                                             | a |   |
| 82 | Coating System of non SS Parts                                          |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 83 | Material of Supports                                                    |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 84 | Shaft Sealing System                                                    |                      |                     |          |      |                                   |     |                                        | Remarks                                     |   |   |
| 85 | Type                                                                    | Shaft Sealing System |                     |          | (*)  |                                   |     | with hand fitting and pressure reducer | a                                           |   |   |
| 86 | Sealing Media                                                           |                      |                     |          |      | nitrogen N2                       |     |                                        |                                             | a |   |
| 87 | Flow Rate Nm³/h                                                         |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |
| 88 | Sealing Pressure bar(g)                                                 |                      |                     |          |      | (*)                               |     |                                        |                                             | a |   |

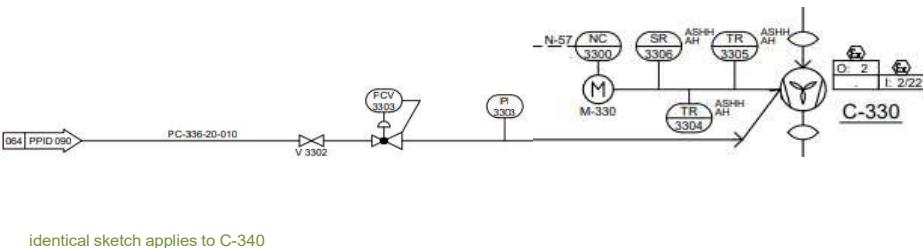
# Spezifikation Ventilator C330, C340

Confidential

| #   | Name                                                 |             | Circulating gas fan        |        |          | E                                          | Iss.                                                         |   |
|-----|------------------------------------------------------|-------------|----------------------------|--------|----------|--------------------------------------------|--------------------------------------------------------------|---|
|     | TAG                                                  |             | C-330, C-340               |        |          |                                            |                                                              |   |
| 89  | General Accessories                                  |             |                            |        |          | Remarks                                    |                                                              |   |
| 90  | Motor                                                | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 91  | frequency converter                                  | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 92  | base plate/base frame                                | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 93  | Vibration damper                                     | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 94  | compensators                                         | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 95  | Heating insulation                                   | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 96  | suction box                                          | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 97  | transition piece for suction box                     | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 98  | condensat drain                                      | Y/N         | Y                          |        |          | closed                                     | a                                                            |   |
| 99  | inspection opening                                   | Y/N         | Y                          |        |          | gas tight                                  | a                                                            |   |
| 100 | Pressure/flow controller for purging system          | Y/N         | (*) if necessary as option |        |          | incl. Piping                               | a                                                            |   |
| 101 | earthing/grounding-connection                        | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 102 | lifting lugs                                         | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 103 | shaft coupling                                       | Y/N         | Y                          |        |          | maintenance without motor displacement     | a                                                            |   |
| 104 | anchor bolts                                         | Y/N         | Y                          |        |          | installed on steel frame                   | a                                                            |   |
| 105 | sound adsorber                                       |             |                            |        |          | Remarks                                    |                                                              |   |
| 106 | Sound insulation                                     | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 107 | noise hood for fan                                   | Y/N         | (*) if necessary           |        |          |                                            | a                                                            |   |
| 108 | noise hood for motor                                 | Y/N         | (*) if necessary           |        |          |                                            | a                                                            |   |
| 109 | noise hood fan suction side                          | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 110 | insolation silencer                                  | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 111 | noise hood fan discharge side                        | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 112 | dimensions (B × H × L / Ø × L )                      | m           | -                          |        |          |                                            | a                                                            |   |
| 113 | sound pressure level before silencer                 | dB(A)       | -                          |        |          |                                            | a                                                            |   |
| 114 | silencer fan discharge                               | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 115 | insolation silencer                                  | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 116 | Transition piece from fan discharge side             | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 117 | dimensions (B × H × L / Ø × L )                      | m           | -                          |        |          |                                            | a                                                            |   |
| 118 | sound pressure level after silencer                  | dB(A)       | -                          |        |          |                                            | a                                                            |   |
| 119 | lifting lugs of silencer                             | Y/N         | N                          |        |          |                                            | a                                                            |   |
| 120 | Explosion Protection according to DIN EN 60079/80079 |             |                            |        |          | Remarks                                    |                                                              |   |
| 121 | Ex-protection version for the following Ex-zone      | -           | inside:                    | 2 / 22 | outside: | 2                                          | a                                                            |   |
| 122 | Medium conditioning the Ex zone                      | Medien-code | PE                         |        | PE       |                                            | Prozessgas N2 mit Zusatzanteilen                             | a |
| 123 | Hybrid mixture                                       | Y/N         | N                          |        | N        |                                            |                                                              | a |
| 124 | Permitted surface temperature                        | max. °C     | 150                        |        |          | for dust Ex areas!                         |                                                              | a |
| 125 | Permitted temperature class                          | -           | T4                         |        |          | for gas Ex areas!                          |                                                              | a |
| 126 | Permitted equipment group                            |             | IIIB, IIIC, IIB, IIC       |        |          | For non-electrical and electrical devices! |                                                              | a |
| 127 | Permitted Equipment protection level (EPL)           |             | Da                         |        | Dc       |                                            | For non-electrical and electrical devices!                   | a |
| 128 | Explosion protection type (mechanical)               |             | inside                     |        | outside  |                                            | Remarks                                                      |   |
| 129 | Type of ignition protection                          | -           | N2 atmosphere              |        | (*)      |                                            | acc. DIN/EN 80079-36/37, DIN EN 60079-0 & DIN EN 13463-1...8 | a |
| 130 | Explosion proof design                               | Y/N         | N                          |        | -        |                                            | If YES specify presure                                       | a |
| 131 | Explosion pressure shock resistant design            | Y/N         | N                          |        | -        |                                            | If YES specify presure                                       | a |
| 132 | Required dession pressure                            | bar(Ü)      | -                          |        | -        |                                            | For the explosion-proof / pressure-shock-proof design!       | a |
| 133 | Explosion protection type (electrical)               |             |                            |        |          | Remarks                                    |                                                              |   |
| 134 | Type of ignition protection electric motor           | -           | (*)                        |        |          | acc. DIN EN 60079-0...31                   |                                                              | a |
| 135 | Type of ignition protection other electrical parts   |             | (*)                        |        |          | acc. DIN EN 60079-0...31                   |                                                              | a |
| 136 | Special requirements Motor                           |             |                            |        |          | Remarks                                    |                                                              |   |
| 137 | Frequency Controlled operation                       | Y/N         | Y                          |        |          |                                            | a                                                            |   |
| 138 | Allowed frequency range / speed                      | min/max     | (*)                        |        | (*)      |                                            | a                                                            |   |
| 139 | Electric motor with forced ventilation               | Y/N         | (*)                        |        |          |                                            | a                                                            |   |

# Spezifikation Ventilator C330, C340

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| #   | Name                                                                                                                                     |                                                                                                                                                                                                                               |              | Circulating gas fan |             | E                                                   | Iss.                                            |
|-----|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|-------------|-----------------------------------------------------|-------------------------------------------------|
|     | TAG                                                                                                                                      |                                                                                                                                                                                                                               | C-330, C-340 |                     |             |                                                     |                                                 |
| 140 | Electrical Accessories                                                                                                                   |                                                                                                                                                                                                                               |              |                     |             | Remarks                                             |                                                 |
| 141 | Frequency Converter                                                                                                                      |                                                                                                                                                                                                                               | Y/N          | Y, offer as option  |             | note doc. 2115_IEQS001, specify manufacturer & type | a                                               |
| 142 | Trace Heating                                                                                                                            |                                                                                                                                                                                                                               | Y/N          | N                   |             | note doc. 2115_IEQS001, specify voltage and power   | a                                               |
| 143 | Measuring Devices                                                                                                                        |                                                                                                                                                                                                                               | Y/N          | Y                   |             | note doc. 2115_IEQS001, specify manufacturer & type | a                                               |
| 144 | Listing of measuring devices (electrical accessories) and signal exchange                                                                |                                                                                                                                                                                                                               |              |                     |             |                                                     |                                                 |
| 145 | Pos.                                                                                                                                     | Designation                                                                                                                                                                                                                   | Type         | TAG ()              | Signal type | Remarks                                             |                                                 |
| 146 | 1                                                                                                                                        | bearing temperature monitoring                                                                                                                                                                                                | (*)          |                     | 4-20mA      | per bearing                                         | a                                               |
| 147 | 2                                                                                                                                        | vibration monitoring                                                                                                                                                                                                          | (*)          |                     | 4-20mA      |                                                     | a                                               |
| 148 |                                                                                                                                          |                                                                                                                                                                                                                               |              |                     |             |                                                     | a                                               |
| 149 | Nozzles List                                                                                                                             |                                                                                                                                                                                                                               |              |                     |             |                                                     |                                                 |
| 150 | Pos.                                                                                                                                     | NPS                                                                                                                                                                                                                           | PN           | Type of connection  | Norm        | Sealing Face                                        | Service                                         |
| 151 | N-01                                                                                                                                     | (*)                                                                                                                                                                                                                           | 10           | flange              | DIN EN 1092 | (*)                                                 | process gas inlet, min. 10 mm flange thickness  |
| 152 | N-02                                                                                                                                     | (*)                                                                                                                                                                                                                           | 10           | flange              | DIN EN 1092 | (*)                                                 | process gas outlet, min. 10 mm flange thickness |
| 153 | N-03                                                                                                                                     | (*)                                                                                                                                                                                                                           | (*)          | (*)                 | (*)         | (*)                                                 | inspection opening                              |
| 154 | N-04                                                                                                                                     | (*)                                                                                                                                                                                                                           | (*)          | (*)                 | (*)         | (*)                                                 | drain, closed                                   |
| 155 | (*)                                                                                                                                      |                                                                                                                                                                                                                               |              |                     |             |                                                     | a                                               |
| 156 |                                                                                                                                          |                                                                                                                                                                                                                               |              |                     |             |                                                     | a                                               |
| 157 | Sketch, PID-Section                                                                                                                      |                                                                                                                                                                                                                               |              |                     |             |                                                     |                                                 |
| 158 | <div></div> <p>identical sketch applies to C-340</p> |                                                                                                                                                                                                                               |              |                     |             |                                                     |                                                 |
| 159 | Further requirements / Required further information                                                                                      |                                                                                                                                                                                                                               |              |                     |             | Remarks                                             |                                                 |
| 160 | Design acc.to Technical Instruction Air                                                                                                  |                                                                                                                                                                                                                               | Y/N          | N                   |             | German rule 'TA-Luft'                               | a                                               |
| 161 | sound power level                                                                                                                        |                                                                                                                                                                                                                               | dB(A)        | (*)                 |             | all operating points                                | a                                               |
| 162 | Heat load at normal process conditions                                                                                                   |                                                                                                                                                                                                                               | kW           | (*)                 |             |                                                     | a                                               |
| 163 | Additional documents                                                                                                                     |                                                                                                                                                                                                                               |              |                     |             | Doc.-no.                                            |                                                 |
| 164 | 1x                                                                                                                                       | General design conditions                                                                                                                                                                                                     |              |                     |             | 2115_GDCB001                                        | a                                               |
| 165 | 1x                                                                                                                                       | Electrical, Instrumentation, Control Requirements                                                                                                                                                                             |              |                     |             | 2115_IEQS001                                        | a                                               |
| 166 | 1x                                                                                                                                       | Safety characteristics                                                                                                                                                                                                        |              |                     |             | 2115_SSDS001                                        | a                                               |
| 167 |                                                                                                                                          |                                                                                                                                                                                                                               |              |                     |             |                                                     | a                                               |
| 168 |                                                                                                                                          |                                                                                                                                                                                                                               |              |                     |             |                                                     | a                                               |
| 169 | Editing instructions                                                                                                                     |                                                                                                                                                                                                                               |              |                     |             |                                                     |                                                 |
| 170 | SIGNAL IN                                                                                                                                | Signal goes to                                                                                                                                                                                                                |              |                     |             |                                                     | a                                               |
| 171 | SIGNAL OUT                                                                                                                               | Signal comes from                                                                                                                                                                                                             |              |                     |             |                                                     | a                                               |
| 172 | (n.a.)                                                                                                                                   | not applicable                                                                                                                                                                                                                |              |                     |             |                                                     | a                                               |
| 173 | (n.e.)                                                                                                                                   | not required                                                                                                                                                                                                                  |              |                     |             |                                                     | a                                               |
| 174 | (n.b.)                                                                                                                                   | not known                                                                                                                                                                                                                     |              |                     |             |                                                     | a                                               |
| 175 | (*)                                                                                                                                      | To be specified by the supplier and named in the quotation, described in the supplier data sheet after the order (handover in accordance with the deadline agreement) and documented in detail in the delivery documentation! |              |                     |             |                                                     | a                                               |