

## Technical data

999 kWel; 400 V, 50 Hz; Natural gas, MN = 80

### Design conditions

|  |   |         |
|--|---|---------|
| Comb. air temperature / rel. Humidity:     | [°C] / [%]                              | 25 / 60 |
| Altitude:                                  | [m]                                     | 376     |
| Exhaust temp. after heat exchanger:        | [°C]                                    | 120     |
| NO <sub>x</sub> Emission (tolerance - 8%): | [mg/Nm <sup>3</sup> @5%O <sub>2</sub> ] | 500     |

### Fuel gas data: <sup>2)</sup>

|                        |                        |       |
|------------------------|------------------------|-------|
| Methane number:        | [-]                    | 80    |
| Lower calorific value: | [kWh/Nm <sup>3</sup> ] | 10,17 |
| Gas density:           | [kg/Nm <sup>3</sup> ]  | 0,79  |
| Standard gas:          | Natural gas, MN = 80   |       |

### Genset:

|   |                              |                |
|---|------------------------------|----------------|
| Engine:                                 | CG170-12                     |                |
| Speed:                                  | [1/min]                      | 1500           |
| Configuration / number of cylinders:    | [-]                          | V / 12         |
| Bore / Stroke / Displacement:           | [mm]/[mm]/[dm <sup>3</sup> ] | 170 / 195 / 53 |
| Compression ratio:                      | [-]                          | 13,0           |
| Mean piston speed:                      | [m/s]                        | 9,8            |
| Mean lube oil consumption at full load: | [g/kWh]                      | 0,2            |
| Engine-management-system:               | [-]                          | TEM EVO        |

|                                    |                     |               |
|------------------------------------|---------------------|---------------|
| Generator:                         | Marelli MJB 500 MB4 |               |
| Voltage / voltage range / cos Phi: | [V] / [%] / [-]     | 400 / ±10 / 1 |
| Speed / frequency:                 | [1/min] / [Hz]      | 1500 / 50     |

### Energy balance

| Load:   | [%]        | 100         | 75          | 50          |
|---|------------|-------------|-------------|-------------|
| Electrical power COP acc. ISO 8528-1:         | [kW]       | 999         | 749         | 500         |
| Engine jacket water heat:                     | [kW ±8%]   | 520         | 403         | 293         |
| Intercooler LT heat:                          | [kW ±8%]   | 82          | 55          | 33          |
| Lube oil heat:                                | [kW ±8%]   |             |             |             |
| Exhaust heat with temp. after heat exchanger: | [kW ±8%]   | 514         | 423         | 318         |
| Exhaust temperature:                          | [°C ±25°C] | 430         | 453         | 478         |
| Exhaust mass flow, wet:                       | [kg/h]     | 5435        | 4142        | 2884        |
| Combustion mass air flow:                     | [kg/h]     | 5253        | 4001        | 2785        |
| Radiation heat engine / generator:            | [kW ±8%]   | 41 / 29     | 38 / 25     | 33 / 22     |
| Fuel consumption:                             | [kW+5%]    | 2334        | 1808        | 1278        |
| Electrical / thermal efficiency:              | [%]        | 42,8 / 44,3 | 41,4 / 45,7 | 39,1 / 47,8 |
| Total efficiency:                             | [%]        | 87,1        | 87,1        | 86,9        |

### System parameters <sup>1)</sup>

|  |                    |              |
|--|--------------------|--------------|
| Ventilation air flow (comb. air incl.) with ΔT = 15K               | [kg/h]             | 27400        |
| Combustion air temperature minimum / design:                       | [°C]               | 5 / 25       |
| Exhaust back pressure from / to:                                   | [mbar]             | 30 / 50      |
| Maximum pressure loss in front of air cleaner:                     | [mbar]             | 5            |
| Zero-pressure gas control unit selectable from / to: <sup>2)</sup> | [mbar]             | 20 / 200     |
| Pre-pressure gas control unit selectable from / to: <sup>2)</sup>  | [bar]              | 0,5 / 10     |
| Starter battery 24V, capacity required:                            | [Ah]               | 430          |
| Starter motor:   | [kWel.] / [VDC]    | 15 / 24      |
| Lube oil content engine / base frame:                              | [dm <sup>3</sup> ] | 205 / 695    |
| Dry weight engine / genset:  | [kg]               | 5080 / 11430 |

### Cooling system

|  |                     |           |
|--|---------------------|-----------|
| Glycol content engine jacket water / intercooler:      | [% Vol.]            | 35 / 35   |
| Water volume engine jacket / intercooler:              | [dm <sup>3</sup> ]  | 111 / 20  |
| KVS / Cv value engine jacket water / intercooler:      | [m <sup>3</sup> /h] | 42 / 30   |
| Jacket water coolant temperature in / out:             | [°C]                | 80 / 93   |
| Intercooler coolant temperature in / out:              | [°C]                | 40 / 43   |
| Engine jacket water flow rate from / to:               | [m <sup>3</sup> /h] | 36 / 56   |
| Water flow rate engine jacket water / intercooler:     | [m <sup>3</sup> /h] | 37 / 35   |
| Water pressure loss engine jacket water / intercooler: | [bar]               | 0,8 / 1,4 |

<sup>1)</sup> See also "Layout of power plants":

<sup>2)</sup> See also Techn. Circular 0199-99-3017

| Frequency band<br>f [Hz]                                     | 25   | 31,5 | 40    | 50    | 63    | 80    | 100   | 125   | 160   | 200 | 250   | 315   | 400   | 500   | 630   | 800   | 1k    | 1,25k | 1,6k  | 2k    | 2,5k  | 3,15k | 4k    | 5k    | 6,3k  | 8k    | 10k   | 12,5k | 16k   | L <sub>WA</sub><br>[dB(A)] | S<br>[m <sup>2</sup> ] |
|--|--|------|-------|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------------|------------------------|
|  | Air-borne noise <sup>3)</sup><br>L <sub>W,Totz</sub> [dB(lin)] | 94   | 94,7  | 98    | 100,5 | 106,1 | 106,9 | 107,6 | 108,5 | 106 | 115,3 | 115   | 114,8 | 108,8 | 110,2 | 109,5 | 108,8 | 109,2 | 108,2 | 108,1 | 107,5 | 107   | 106,5 | 103,5 | 102,3 | 114,1 | 107   | 101,4 | 103,8 | 98,1                       | 120,7<br>±4dB(A)       |
| Exhaust noise <sup>4)</sup><br>L <sub>W,Totz</sub> [dB(lin)] | 114,2  | 116  | 124,6 | 115,9 | 120   | 129   | 125,3 | 134,1 | 125,3 | 130 | 128,4 | 128,2 | 126,4 | 125,8 | 125   | 119   | 117,8 | 116,6 | 117,7 | 117,6 | 116,3 | 115,5 | 114,6 | 113,7 | 114,9 | 113,9 | 113,4 | 112,9 | 111,1 | 132,1<br>±3dB(A)           | 15,6 <sup>5)</sup>     |

<sup>3)</sup> DIN EN ISO 3745 (α<sub>100</sub> ±4 dB)

<sup>4)</sup> Measured in exhaust pipe (f ≤ 250Hz: ±5dB; f > 250Hz: ±3dB)

L<sub>Wp</sub>: Sound power level

S: Area of measurement surface (S<sub>0</sub> = 1m<sup>2</sup>)

<sup>5)</sup> DIN 45635-11, Appendix A