

reference data sheet



Technical data

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

Design conditions

| | | |
|--|---|---------|
| Inlet air temperature / rel. Humidity: | [°C] / [%] | 25 / 60 |
| Altitude: | [m] | 100 |
| Exhaust temp. after heat exchanger: | [°C] | 120 |
| NO _x Emission (tolerance - 8%): | [mg/Nm ³ @5%O ₂] | 250 |

Fuel gas data: ²⁾

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

Genset:

| | | |
|---|------------------------------|----------------|
| Engine: | CG132-12 | |
| Speed: | [1/min] | 1500 |
| Configuration / number of cylinders: | [-] | V / 12 |
| Bore / Stroke / Displacement: | [mm]/[mm]/[dm ³] | 132 / 160 / 26 |
| Compression ratio: | [-] | 14,6 |
| Mean piston speed: | [m/s] | 8 |
| Mean lube oil consumption at full load: | [g/kWh] | 0,1 |
| Engine-management-system: | [-] | TEM EVO |

| | | |
|------------------------------------|----------------------------|---------------|
| Generator: | Marelli MJB 400 LC4 | |
| 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] | 515 | 386 | 257 |
| Engine jacket water heat: | [kW ±8%] | 269 | 215 | 164 |
| Intercooler LT heat: | [kW ±8%] | 45 | 32 | 20 |
| Lube oil heat: | [kW ±8%] | | | |
| Exhaust heat with temp. after heat exchanger: | [kW ±8%] | 274 | 226 | 169 |
| Exhaust temperature: | [°C ±25°C] | 408 | 429 | 447 |
| Exhaust mass flow, wet: | [kg/h] | 3147 | 2409 | 1692 |
| Combustion mass air flow: | [kg/h] | 3052 | 2334 | 1639 |
| Radiation heat engine / generator: | [kW ±8%] | 20 / 18 | 16 / 16 | 12 / 14 |
| Fuel consumption: | [kW+5%] | 1228 | 957 | 684 |
| Electrical / thermal efficiency: | [%] | 42,0 / 44,2 | 40,4 / 46,1 | 37,7 / 48,7 |
| Total efficiency: | [%] | 86,2 | 86,5 | 86,4 |

System parameters ¹⁾

| | | |
|--|--------------------|-------------|
| Ventilation air flow (comb. air incl.) with ΔT = 15K | [kg/h] | 15000 |
| Combustion air temperature minimum / design: | [°C] | 15 / 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: ²⁾ | [mbar] | 20 / 200 |
| Pre-pressure gas control unit selectable from / to: ²⁾ | [bar] | 0,5 / 10 |
| Starter battery 24V, capacity required: | [Ah] | 143 |
| Starter motor: | [kWel.] / [VDC] | 5,4 / 24 |
| Lube oil volume engine / external oil tank: | [dm ³] | 71 / 270 |
| Dry weight engine / genset: | [kg] | 2650 / 7000 |

Cooling system

| | | |
|--|---------------------|-----------|
| Glycol content engine jacket water / intercooler: | [% Vol.] | 35 / 35 |
| Water volume engine jacket / intercooler: | [dm ³] | 43 / 5 |
| KVS / Cv value engine jacket water / intercooler: | [m ³ /h] | 37 / 10 |
| Jacket water coolant temperature in / out: | [°C] | 84 / 91 |
| Intercooler coolant temperature in / out: | [°C] | 40 / 44 |
| Engine jacket water flow rate from / to: | [m ³ /h] | 32 / 47 |
| Water flow rate engine jacket water / intercooler: | [m ³ /h] | 35 / 10 |
| Water pressure loss engine jacket water / intercooler: | [bar] | 0,9 / 1,0 |

1) See also "Layout of power plants":

2) See also Techn. Circular 0199-99-3017

| Frequency band 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 _{WA} [dB(A)] | S [m ²] |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------------|------------------------|
| Air-borne noise ³⁾ | 86,5 | 86,1 | 91,2 | 90,7 | 94,8 | 108,9 | 106,6 | 111,4 | 103,8 | 107,8 | 103,5 | 109,0 | 101,3 | 102,8 | 102,9 | 99,9 | 101,6 | 102,2 | 100,5 | 102,1 | 101,0 | 106,9 | 103,0 | 102,2 | 108,0 | 102,4 | 101,9 | 96,3 | 94,7 | 115,4 | 81 |
| L _{W, Terz} [dB(lin)] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust noise ⁴⁾ | 110,9 | 109,3 | 122,1 | 108,6 | 111,7 | 133,0 | 117,6 | 127,4 | 122,2 | 118,7 | 133,5 | 118,4 | 124,1 | 124,0 | 123,8 | 124,2 | 123,0 | 121,4 | 123,3 | 123,4 | 121,9 | 118,6 | 118,4 | 117,6 | 113,2 | 111,9 | 111,5 | 107,9 | 102,9 | 133,7 | 15,2 ⁵⁾ |
| L _{W, Terz} [dB(lin)] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

3) DIN EN ISO 3746 (σ₉₀±4 dB)

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

L_W: Sound power level

S: Area of measurement surface (S₀=1m²)

5) DIN 45635-11, Appendix A