

Technical data

400 kWel; 400 V, 50 Hz; Sewage gas

**Design conditions**

Comb. air temperature / rel. Humidity:	[°C] / [%]	25 / 70
Altitude:	[m]	100
Exhaust temp. after heat exchanger:	[°C]	180
NO <sub>x</sub> Emission (tolerance - 8%):	[mg/Nm <sup>3</sup> @5%O <sub>2</sub> ]	500

**Genset:**

Engine:	<b>CG132-8</b>	
Speed:	[1/min]	1500
Configuration / number of cylinders:	[-]	V / 08
Bore / Stroke / Displacement:	[mm]/[mm]/[dm <sup>3</sup> ]	132 / 160 / 17,5
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:	<b>Marelli MJB 355 MB4</b>	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	400 / ±10 / 1
Speed / frequency:	[1/min] / [Hz]	1500 / 50

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

Methane number:	[-]	134
Lower calorific value:	[kWh/Nm <sup>3</sup> ]	6,48
Gas density:	[kg/Nm <sup>3</sup> ]	1,16
Standard gas: Sewage gas		
Analysis: CO <sub>2</sub>	[Vol%]	35,00
N <sub>2</sub>	[Vol%]	0,00
O <sub>2</sub>	[Vol%]	0,00
H <sub>2</sub>	[Vol%]	0,00
CO	[Vol%]	0,00
CH <sub>4</sub>	[Vol%]	65,00
C <sub>2</sub> H <sub>4</sub>	[Vol%]	0,00
C <sub>2</sub> H <sub>6</sub>	[Vol%]	0,00
C <sub>3</sub> H <sub>6</sub>	[Vol%]	0,00
C <sub>3</sub> H <sub>8</sub>	[Vol%]	0,00
C <sub>4</sub> H <sub>8</sub>	[Vol%]	0,00
C <sub>4</sub> H <sub>10</sub>	[Vol%]	0,00
C <sub>5</sub> H <sub>12</sub>	[Vol%]	0,00
C <sub>x</sub> H <sub>y</sub>	[Vol%]	0,00
H <sub>2</sub> S	[Vol%]	0,00

**Energy balance**

Load:	[%]	100	75	50
Electrical power COP acc. ISO 8528-1:	[kW]	400	300	200
Engine jacket water heat:	[kW ±8%]	212	166	127
Intercooler LT heat:	[kW ±8%]	30	19	11
Lube oil heat:	[kW ±8%]			
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	162	137	103
Exhaust temperature:	[°C ±25°C]	420	447	467
Exhaust mass flow, wet:	[kg/h]	2195	1669	1155
Combustion mass air flow:	[kg/h]	2028	1539	1064
Radiation heat engine / generator:	[kW ±8%]	18 / 14	15 / 11	11 / 9
Fuel consumption:	[kW+5%]	935	724	513
Electrical / thermal efficiency:	[%]	42,8 / 39,9	41,4 / 41,9	39,0 / 44,8
Total efficiency:	[%]	82,7	83,3	83,8

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

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	12000
Combustion air temperature minimum / design:	[°C]	20 / 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]	143
Starter motor:	[kWel.] / [VDC]	5,4 / 24
Lube oil volume engine / external oil tank:	[dm <sup>3</sup> ]	60 / 270
Dry weight engine / genset:	[kg]	2080 / 5050

**Cooling system**

Glycol content engine jacket water / intercooler:	[% Vol.]	35 / 35
Water volume engine jacket / intercooler:	[dm <sup>3</sup> ]	28 / 5
KVS / Cv value engine jacket water / intercooler:	[m <sup>3</sup> /h]	37 / 10
Jacket water coolant temperature in / out:	[°C]	78 / 88
Intercooler coolant temperature in / out:	[°C]	40 / 44
Engine jacket water flow rate from / to:	[m <sup>3</sup> /h]	14 / 25
Water flow rate engine jacket water / intercooler:	[m <sup>3</sup> /h]	20 / 8
Water pressure loss engine jacket water / intercooler:	[bar]	0,3 / 0,6

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 <sub>WA</sub> [dB(A)]	S [m <sup>2</sup> ]
	<b>Air-borne noise <sup>3)</sup></b> L <sub>W, Terz</sub> [dB(lin)]	82,9	83,7	87,7	100,8	95,5	101,8	101,2	103,5	103,2	104,1	109,1	106,6	102,1	106,5	101	100,1	101,3	99,9	100,2	100,8	99,6	97,7	95,3	97,5	102,1	97,8	93,7	90,6	91,2	112,4
<b>Exhaust noise <sup>4)</sup></b> L <sub>W, Terz</sub> [dB(lin)]	106,9	104,9	106,8	128,2	109,1	109,8	135,7	122,9	128,6	128,5	132,1	128,8	124	123,5	120,4	122,6	120,5	118,5	119,5	119,6	118,4	114,4	113,5	114,2	111,7	109,6	108,1	97,2	94,6	132	14,8 <sup>5)</sup>

3) DIN EN ISO 3746 (0<sub>ref</sub>=±4 dB)

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

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

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

5) DIN 45635-11, Appendix A