

reference data sheet



Technical data

400 kWel; 400 V, 50 Hz; Natural gas, MN = 70

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:	[-]	70
Lower calorific value:	[kWh/Nm ³]	10,95
Gas density:	[kg/Nm ³]	0,83
Standard gas:	Natural gas, MN = 70	

Genset:

Engine:	CG132B-8	
Speed:	[1/min]	1500
Configuration / number of cylinders:	[-]	V / 08
Bore / Stroke / Displacement:	[mm]/[mm]/[dm ³]	132 / 160 / 17,5
Compression ratio:	[-]	13,0
Mean piston speed:	[m/s]	8
Mean lube oil consumption at full load:	[g/kWh]	0,1
Engine-management-system:	[-]	TPEM

Generator:	Marelli MJB 355 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]	400	300	200
Engine jacket water heat:	[kW ±8%]	220	170	124
Intercooler LT heat:	[kW ±8%]	33	23	14
Lube oil heat:	[kW ±8%]			
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	201	165	124
Exhaust temperature:	[°C ±25°C]	407	428	451
Exhaust mass flow, wet:	[kg/h]	2307	1758	1223
Combustion mass air flow:	[kg/h]	2235	1702	1184
Radiation heat engine / generator:	[kW ±8%]	17 / 14	16 / 11	15 / 9
Fuel consumption:	[kW+5%]	948	733	520
Electrical / thermal efficiency:	[%]	42,2 / 44,4	40,9 / 45,7	38,5 / 47,7
Total efficiency:	[%]	86,6	86,6	86,2

System parameters ¹⁾

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	11900
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 content engine & extension / clean oil tank:	[dm ³]	320 / 250
Dry weight engine / genset:	[kg]	2080 / 5800

Cooling system

Glycol content engine jacket water / intercooler:	[% Vol.]	35 / 35
Water volume engine jacket / intercooler:	[dm ³]	28 / 5
KVS / Cv value engine jacket water / intercooler:	[m ³ /h]	30 / 14
Jacket water coolant temperature in / out:	[°C]	78 / 88
Intercooler coolant temperature in / out:	[°C]	45 / 49
Engine jacket water flow rate from / to:	[m ³ /h]	14 / 25
Water flow rate engine jacket water / intercooler:	[m ³ /h]	20 / 8
Water pressure loss engine jacket water / intercooler:	[bar]	0,5 / 0,4

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⁾	88,8	83,4	90,5	109,5	94,9	104,8	103,4	104,1	102,7	102,6	105,9	105,4	103,8	103,3	99,7	100,0	100,0	100,7	99,1	99,4	98,4	96,4	94,4	98,1	100,5	105,5	102,8			112,3	66,8	
L _{W, Terz} [dB(lin)]																															±4dB(A)	
Exhaust noise ⁴⁾	104,7	104,6	111,9	135,8	115,2	111,3	134,8	118,6	142,0	121,3	118,6	123,8	116,6	118,4	115,2	114,1	115,0	112,2	112,4	112,3	111,8	108,9	107,5	105,3	104,4	100,3	94,1	96,5	92,1	130,3	14,8 ⁵⁾	
L _{W, Terz} [dB(lin)]																															±3dB(A)	

3) DIN EN ISO 3746 (σ_{RD}±4 dB)

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

L_W: Sound power level

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

5) DIN 45635-11, Appendix A