

2G - Natural Gas - 35% - 40°C - NOx 500

Technical data

1200 kWel; 600 V, 60 Hz; Natural gas, MN = 80

Design conditions

Comb. 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]	500

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:	TCG2020V12	
Speed:	[1/min]	1500
Configuration / number of cylinders:	[-]	V / 12
Bore / Stroke / Displacement:	[mm]/[mm]/[dm ³]	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 450 LB4	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	600 / ±5 / 1
Speed / frequency:	[1/min] / [Hz]	1800 / 60

Gear box:	Eisenbeiss GU 320	
Lube oil volume of gear box:	[dm ³]	58

Energy balance

Load:	[%]	100	75	50
Electrical power COP acc. ISO 8528-1:	[kW]	1200	900	600
Engine jacket water heat:	[kW ±8%]	613	472	339
Intercooler LT heat:	[kW ±8%]	116	78	46
Lube oil heat:	[kW ±8%]			
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	584	484	366
Exhaust temperature:	[°C ±25°C]	414	440	469
Exhaust mass flow, wet:	[kg/h]	6536	4948	3414
Combustion mass air flow:	[kg/h]	6320	4781	3297
Radiation heat engine / generator:	[kW ±8%]	41 / 35	40 / 29	36 / 24
Fuel consumption:	[kW+5%]	2769	2139	1504
Electrical / thermal efficiency:	[%]	43,3 / 43,2	42,1 / 44,7	39,9 / 46,9
Total efficiency:	[%]	86,5	86,8	86,8

System parameters 1)

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	30500
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: 2)	[mbar]	20 / 200
Pre-pressure gas control unit selectable from / to: 2)	[bar]	0,5 / 10
Starter battery 24V, capacity required:	[Ah]	430
Starter motor:	[kWel.] / [VDC]	15 / 24
Lube oil content engine / base frame:	[dm ³]	205 / 510
Dry weight engine / genset:	[kg]	5080 / 12950

Cooling system 5)

Glycol content engine jacket water / intercooler:	[% Vol.]	0 / 35
Water volume engine jacket / intercooler:	[dm ³]	111 / 20
KVS / Cv value engine jacket water / intercooler:	[m ³ /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 ³ /h]	36 / 56
Water flow rate engine jacket water / intercooler:	[m ³ /h]	42 / 35
Water pressure loss engine jacket water / intercooler:	[bar]	1,0 / 1,4

1) See also "Layout of power plants":

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

5) Gear oil cooling within intercooler coolant circuit

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)	94,1	94,8	898,2	100,6	106,2	109,1	107,7	108,6	106,1	115,4	115,2	114,9	108,7	110,3	109,6	108,9	109,3	108,3	108,2	107,7	107,1	108,7	103,6	102,4	114,3	107,1	101,5	103,9	98,3	120,8	122					
Exhaust noise 4)	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	15,5 ⁵⁾					
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 ₀ =1m ²)					5) DIN 45635-11, Appendix A				