

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

## Technical data

1200 kWel; 480 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 <sub>x</sub> Emission (tolerance - 8%):	[mg/Nm <sup>3</sup> @5%O <sub>2</sub> ]	500

### Fuel gas data: 2)

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:	<b>TCG2020V12</b>	
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:	<b>Marelli MJB 450 LB4</b>	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	480 / ±5 / 1
Speed / frequency:	[1/min] / [Hz]	1800 / 60

Gear box:	<b>Eisenbeiss GU 320</b>	
Lube oil volume of gear box:	[dm <sup>3</sup> ]	58

### Energy balance

Load:	[%]	100	75	50
Electrical power COP acc. ISO 8528-1:	[kW]	1200	900	600
Engine jacket water heat:	[kW ±8%]	612	473	340
Intercooler LT heat:	[kW ±8%]	116	78	46
Lube oil heat:	[kW ±8%]			
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	584	484	367
Exhaust temperature:	[°C ±25°C]	414	440	469
Exhaust mass flow, wet:	[kg/h]	6531	4951	3423
Combustion mass air flow:	[kg/h]	6315	4784	3305
Radiation heat engine / generator:	[kW ±8%]	41 / 34	40 / 29	36 / 26
Fuel consumption:	[kW+5%]	2767	2140	1508
Electrical / thermal efficiency:	[%]	43,4 / 43,2	42,1 / 44,7	39,8 / 46,9
Total efficiency:	[%]	86,6	86,8	86,7

### System parameters 1)

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	30300
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 <sup>3</sup> ]	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 <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]	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 <sub>WA</sub> [dB(A)]	S [m <sup>2</sup> ]																									
<b>Air-borne noise 3)</b>	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																									
<b>Exhaust noise 4)</b>	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 <sup>5)</sup>																									
3) DIN EN ISO 3746 (σ <sub>RD</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									