CG170-12 TA Luft

Technical data
1200 kWel; 400 V, 50 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:	**CG170-12**	
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 500 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]	**1200**	**900**	**600**
Engine jacket water heat:	[kW ±8%]	613	472	338
Intercooler LT heat:	[kW ±8%]	102	68	39
Lube oil heat:	[kW ±8%]			
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	582	481	364
Exhaust temperature:	[°C]	414	440	469
Exhaust mass flow, wet:	[kg/h]	6488	4909	3387
Combustion mass air flow:	[kg/h]	6273	4743	3271
Radiation heat engine / generator:	[kW ±8%]	41 / 34	40 / 27	36 / 22
Fuel consumption:	[kW+5%]	2750	2123	1492
Electrical / thermal efficiency:	[%]	43,6 / 43,4	42,4 / 44,9	40,2 / 47,1
Total efficiency:	[%]	87,0	87,3	87,3

System parameters [1)]

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	30300
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: [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 / 11730

Cooling system

Glycol content engine jacket water / intercooler:	[% Vol.]	35 / 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]	42 / 45
Engine jacket water flow rate from / to:	[m^3/h]	36 / 56
Water flow rate engine jacket water / intercooler:	[m^3/h]	43 / 35
Water pressure loss engine jacket water / intercooler:	[bar]	1,1 / 1,4

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1) See also "Layout of power plants": 2) See also Techn. Circular 0199-99-3017 1234

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)] $L_{W,Terz}$ [dB(lin)]	94	95	98	100	106	109	108	109	106	115	115	115	109	110	109	109	109	108	108	108	107	109	103	102	114	107	101	104	98	121	114
Exhaust noise [4)] $L_{W,Octave}$ [dB(lin)]				128			135			134			131			123			122			120			119					132	15,5

3) DIN EN ISO 3746 4) DIN 45635-11 Appendix A (±3 dB) L_W: Sound power level S: Area of measurement surface (S_0=1m^2)