SG0275 / 1425560 / T 5550

Technical data
600 kWel; 400 V, 50 Hz; Bio gas

Design conditions

Comb. air temperature / rel. Humidity:	[°C] / [%]	25 / 60
Altitude:	[m]	100
Exhaust temp. after heat exchanger:	[°C]	180
NO_x Emission (tolerance - 8%):	[mg/Nm^3 @5%O_2]	500

Genset:

Engine:	**TCG 2016 V12 C**	
Speed:	[1/min]	1500
Configuration / number of cylinders:	[-]	V / 12
Bore / Stroke / Displacement:	[mm]/[mm]/[dm^3]	132 / 160 / 26
Compression ratio:	[-]	15,0
Mean piston speed:	[m/s]	8
Mean lube oil consumption at full load:	[g/kWh]	0,2
Engine-management-system:	[-]	TEM EVO
Generator:	**Marelli MJB 400 LC4**	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	400 / ±10 / 1
Speed / frequency:	[1/min] / [Hz]	1500 / 50

Fuel gas data: 2)

Methane number:		[-]	149
Lower calorific value:		[kWh/Nm^3]	4,99
Gas density:		[kg/Nm^3]	1,35
Standard gas:	Bio gas		
Analysis:	CO_2	[Vol%]	50,00
	N_2	[Vol%]	0,00
	O_2	[Vol%]	0,00
	H_2	[Vol%]	0,00
	CO	[Vol%]	0,00
	CH_4	[Vol%]	50,00
	C_2H_4	[Vol%]	0,00
	C_2H_6	[Vol%]	0,00
	C_3H_6	[Vol%]	0,00
	C_3H_8	[Vol%]	0,00
	C_4H_8	[Vol%]	0,00
	C_4H_{10}	[Vol%]	0,00
	C_5H_{12}	[Vol%]	0,00
	C_xH_y	[Vol%]	0,00
	H_2S	[Vol%]	0,00

Energy balance

Load:	[%]	**100**	**75**	**50**
Electrical power COP acc. ISO 8528-1:	[kW]	**600**	**450**	**300**
Engine jacket water heat:	[kW ±8%]	314	250	192
Intercooler LT heat:	[kW ±8%]	51	32	15
Lube oil heat:	[kW ±8%]			
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	290	239	181
Exhaust temperature:	[°C]	472	495	522
Exhaust mass flow, wet:	[kg/h]	3197	2429	1684
Combustion mass air flow:	[kg/h]	2808	2128	1470
Radiation heat engine / generator:	[kW ±8%]	22 / 20	17 / 17	13 / 14
Fuel consumption:	[kW+5%]	1441	1114	790
Electrical / thermal efficiency:	[%]	41,6 / 41,9	40,4 / 43,9	38,0 / 47,2
Total efficiency:	[%]	83,5	84,3	85,2

System parameters 1)

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	16200
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]	143
Starter motor:	[kWel.] / [VDC]	5,4 / 24
Lube oil volume engine / external oil tank:	[dm^3]	100 / -
Dry weight engine / genset:	[kg]	2650 / 7000

Cooling system

Glycol content engine jacket water / intercooler:	[% Vol.]	35 / 35
Water volume engine jacket / intercooler:	[dm^3]	43 / 5
KVS / Cv value engine jacket water / intercooler:	[m^3/h]	37 / 10
Jacket water coolant temperature in / out:	[°C]	78 / 88
Intercooler coolant temperature in / out:	[°C]	40 / 45
Engine jacket water flow rate from / to:	[m^3/h]	22 / 37
Water flow rate engine jacket water / intercooler:	[m^3/h]	29 / 10
Water pressure loss engine jacket water / intercooler:	[bar]	0,6 / 1,0

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1) See also "Layout of power plants": 2) See also Techn. Circular 0199-99-3017 T 5550

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)]	86	86	91	91	95	109	107	111	104	108	103	109	101	103	103	100	102	102	101	102	101	107	103	102	108	102	102	96	95	115	81
Exhaust noise 4) $L_{W,Octave}$ [dB(lin)]				118			129			134			129			128			128			123			117					134	15,2

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)