

Technical data

1560 kWel; 400 V, 50 Hz; Natural gas, MN = 80

Design conditions

Inlet air temperature / rel. Humidity:	[°C] / [%]	20 / 60
Altitude:	[m]	79
Exhaust temp. after heat exchanger:	[°C]	120
NO _x raw emissions genset (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 / Configuration code:	TCG 2020 V16	R
Speed / Mean piston speed:	[1/min] / [m/s]	1500 / 9.8
Configuration / number of cylinders:	[-]	V / 16
Bore / Stroke / Displacement:	[mm]/[mm]/[dm ³]	170 / 195 / 71
Compression ratio:	[-]	13
Mean effective pressure:	[bar]	18,1
Mean lube oil consumption at full load:	[g/kWh]	0,15
Generator:	Leroy Somer LSA 52.3 S7 or similar (*)	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	400 / 10 / 1
Speed / frequency:	[1/min] / [Hz]	1500 / 50

*CES reserves the right to change the alternator supplier and type during offer period. The genset data may thereby change slightly. The power output will not change. CES will confirm the alternator type, brand and alternator data sheet with the order confirmation.

Energy balance

Load:	[%]	100	75	50
Electrical power COP acc. ISO 8528-1:	[kW]	1560	1170	780
Engine jacket water heat:	[kW ±8%]	785	597	430
Intercooler LT heat:	[kW ±8%]	132	92	53
Lube oil heat:	[kW ±8%]			
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	780	639	481
Exhaust temperature:	[°C ±25°C]	421	445	476
Exhaust mass flow wet / dry:	[kg/h]	8487 / 7840	6407 / 5911	4386 / 4040
Combustion mass air flow:	[kg/h]	8206	6191	4235
Radiation heat engine / generator:	[kW ±8%]	54 / 43	52 / 31	41 / 22
Fuel consumption:	[kW+5%]	3601	2767	1935
Electrical / thermal efficiency:	[%]	43,3 / 43,5	42,3 / 44,7	40,3 / 47,1
Total efficiency:	[%]	86,8	87,0	87,4

System parameters ¹⁾

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	39300
Combustion air temperature minimum ⁷⁾ / design:	[°C]	20 / 20
Exhaust back pressure from / to:	[mbar]	30 / 50
Exhaust volume flow wet / dry:	[Nm ³ /h]	6654 / 5947
Maximum pressure loss in front of air cleaner:	[mbar]	5
Zero-pressure gas control unit selectable from / to: ²⁾	[mbar]	20 ³⁾ / 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]	18 / 24
Lube oil content engine / base frame*:	[dm ³]	265 / 685*
Dry weight engine / genset:	[kg]	6090 / 12300

Cooling system

Glycol content engine jacket water / intercooler:	[% Vol.]	33 / 33
Water volume engine jacket / intercooler:	[dm ³]	151 / 14
KVS / Cv value engine jacket water / intercooler:	[m ³ /h]	42 / 46
Jacket water coolant temperature in / out:	[°C]	80 / 93
Intercooler coolant temperature in / out:	[°C]	47 / 50
Engine jacket water flow rate from / to:	[m ³ /h]	50 / 65
Water flow rate engine jacket water / intercooler:	[m ³ /h]	55 / 35
Water pressure loss engine jacket water / intercooler:	[bar]	1,8 / 0,6
Engine jacket water pressure outlet min / max:	[bar rel.]	2 / 2,5

1) See also "Layout of power plants".

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

3) Minimum pressure may be higher, depending on project conditions.

7) In individual cases, the value may differ due to the final turbocharger design.

) optional

Frequency band	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 ⁴⁾	90,6	92,5	95,5	96,7	100,1	107,4	109,9	111,9	109,8	114,4	115,9	114,5	111,5	113,0	112,3	112,7	113,1	112,0	112,7	113,4	112,5	109,8	108,2	105,2	113,9	106,0	103,8	113,4	100,8	123,7	115
Exhaust noise ⁵⁾	118,7	119,6	121,7	121,1	122,6	127,4	126,3	137,6	123,6	124,8	122,4	122,3	124,0	123,6	123,2	122,8	121,7	120,4	120,0	120,0	118,6	118,6	118,0	117,2	116,9	115,8	115,7	115,0	113,6	132,3	15,5 ⁶⁾

4) DIN EN ISO 3746 (σ_{ro}=±4 dB)

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

L_w: Sound power level

S: Area of measurement surface (S₀=1m²)

6) DIN 45635-11, Appendix A