

Technical data

4500 kWel; 6300 V, 50 Hz; Natural gas, MN = 80

Design conditions

Inlet air temperature / rel. Humidity:	[°C] / [%]	25 / 60
Altitude:	[m]	160
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 2032B V16	R
Speed / Mean piston speed:	[1/min] / [m/s]	1000 / 10,7
Configuration / number of cylinders:	[-]	V / 16
Bore / Stroke / Displacement:	[mm]/[mm]/[dm ³]	260 / 320 / 272
Compression ratio:	[-]	12
Mean effective pressure:	[bar]	20,3
Mean lube oil consumption at full load:	[g/kWh]	0,2
Generator:	TDPS TD145 or similar (*)	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	6300 / 10 / 1,00
Speed / frequency:	[1/min] / [Hz]	1000 / 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]	4500	3375	2250
Engine jacket water heat:	[kW ±8%]	1790	1318	871
Intercooler LT heat:	[kW ±8%]	270	180	106
Lube oil heat:	[kW ±8%]	688	616	520
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	1942	1626	1273
Exhaust temperature:	[°C ±25°C]	384	413	453
Exhaust mass flow wet / dry:	[kg/h]	24258 / 22348	18234 / 16763	12439 / 11406
Combustion mass air flow:	[kg/h]	23466	17621	12006
Radiation heat engine / generator:	[kW ±8%]	198 / 97	154 / 83	109 / 72
Fuel consumption:	[kW+5%]	10156	7857	5546
Electrical / thermal efficiency:	[%]	44,3 / 43,5	43,0 / 45,3	40,6 / 48,0
Total efficiency:	[%]	87,8	88,3	88,6

System parameters ¹⁾

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	115700
Combustion air temperature minimum / design:	[°C]	5 / 25
Exhaust back pressure from / to:	[mbar]	30 / 50
Exhaust volume flow wet / dry:	[Nm ³ /h]	18954 / 16956
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
Air bottle, volume / pressure	[dm ³] / [bar]	2000 / 30
Starter motor:	[dm ³ /s] / [bar]	800 / 16
Lube oil content engine / base frame:	[dm ³]	1850 / -
Dry weight engine / genset:	[kg]	24890 / 54300

Cooling system

Glycol content engine jacket water / intercooler:	[% Vol.]	33 / 33
Water volume engine jacket / intercooler:	[dm ³]	570 / 51
KVS / Cv value engine jacket water / intercooler:	[m ³ /h]	88 / 62
Jacket water coolant temperature in / out:	[°C]	78 / 92
Intercooler coolant temperature in / out:	[°C]	40 / 44
Engine jacket water flow rate from / to:	[m ³ /h]	110 / 137
Water flow rate engine jacket water / intercooler:	[m ³ /h]	117 / 65
Water pressure loss engine jacket water / intercooler:	[bar]	1,8 / 1,1
Engine jacket water pressure outlet min / max:	[bar rel.]	3,1 / 3,4
Lube oil temp. engine inlet max. / lube oil flow rate:	[°C] / [m ³ /h]	80 / 125

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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.

^{*)} optional

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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 ⁴⁾ L _{w, Terz} [dB(lin)]	101,1	104,1	107,5	107,4	112,6	113,7	120,6	121,2	120,5	117,3	116,4	114,9	114,2	112,9	115,0	115,9	115,3	112,0	112,1	111,6	112,8	115,8	124,8	129,1	121,8	111,5	111,5	108,8	104,2	132,4 ±4dB(A)	224
Exhaust noise ⁵⁾ L _{w, Terz} [dB(lin)]	123,0	127,2	141,9	125,1	144,6	129,2	132,4	133,0	133,3	130,0	129,2	129,0	128,5	128,8	128,6	126,5	125,7	124,4	124,4	124,6	123,2	124,0	126,3	123,5	121,7	119,6	119,6	122,4	117,9	137,2 ±3dB(A)	16,9 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