

reference data sheet

Technical data

4300 kWel; 10500 V, 50 Hz; Natural gas, MN = 80

Design conditions

Inlet 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:	TCG 2032 V16	
Configuration code:	[-]	R
Speed:	[1/min]	1000
Configuration / number of cylinders:	[-]	V / 16
Bore / Stroke / Displacement:	[mm]/[mm]/[dm ³]	260 / 320 / 272
Compression ratio:	[-]	12
Mean piston speed:	[m/s]	10,7
Mean lube oil consumption at full load:	[g/kWh]	0,2
Generator:	TDPS TD145 or similar (*)	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	10500 / 10 / 1
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]	4300	3225	2150
Engine jacket water heat:	[kW ±8%]	1403	1040	718
Intercooler LT heat:	[kW ±8%]	360	256	166
Lube oil heat:	[kW ±8%]	472	393	339
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	2347	1944	1491
Exhaust temperature:	[°C ±25°C]	456	484	515
Exhaust mass flow, wet:	[kg/h]	22783	17364	12227
Combustion mass air flow:	[kg/h]	22017	16769	11800
Radiation heat engine / generator:	[kW ±8%]	212 / 97	207 / 85	203 / 72
Fuel consumption:	[kW+5%]	9816	7625	5475
Electrical / thermal efficiency:	[%]	43,8 / 43,0	42,3 / 44,3	39,3 / 46,6
Total efficiency:	[%]	86,8	86,6	85,9

System parameters ¹⁾

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	117500
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
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 / 0
Dry weight engine / genset:	[kg]	24890 / 44890

Cooling system

Glycol content engine jacket water / intercooler:	[% Vol.]	35 / 35
Water volume engine jacket / intercooler:	[dm ³]	570 / 51
KVS / Cv value engine jacket water / intercooler:	[m ³ /h]	90 / 62
Jacket water coolant temperature in / out:	[°C]	78 / 90
Intercooler coolant temperature in / out:	[°C]	40 / 45
Engine jacket water flow rate from / to:	[m ³ /h]	100 / 120
Water flow rate engine jacket water / intercooler:	[m ³ /h]	108 / 65
Water pressure loss engine jacket water / intercooler:	[bar]	1,4 / 1,1
Lube oil temp. engine inlet max. / lube oil flow rate:		80 / 125

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1) See also "Layout of power plants".

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

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⁾	102,1	100,6	104,0	106,4	109,4	113,0	117,0	115,8	121,3	119,9	116,2	114,2	114,2	110,4	109,8	111,1	109,6	109,5	111,8	115,3	111,0	112,4	116,6	116,8	111,4	105,6	104,6	107,0	102,9	125	215
L _{W, Terz} [dB(lin)]																														±4dB(A)	
Exhaust noise ⁴⁾	118,4	125,5	141,4	124,6	143,0	128,6	130,1	133,0	131,5	128,0	127,7	128,3	127,2	127,7	127,3	126,1	125,5	124,1	124,2	124,5	123,1	123,0	124,8	122,4	120,5	118,5	118,5	120,6	116,6	137,1	16,9 ⁵⁾
L _{W, Terz} [dB(lin)]																														±3dB(A)	

3) DIN EN ISO 3746 (d₁₀₀±4 dB)

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

L_W: Sound power level

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

5) DIN 45635-11, Appendix A