56847R1 EC Vyskov

Technical data

4500 kWel; 10500 V, 50 Hz; Acc. to gas analysis

Design conditions

Inlet air temperature / rel. Humidity:	[°C] / [%]	25 / 60
Altitude:	[m]	260
Exhaust temp. after heat exchanger:	[°C]	120
NO_x raw emissions genset (tolerance -8 %):	[mg/Nm^3 @5%O_2]	500
Datasheet specification considers the grid codes EU 631/2016 (NC-RfG)		

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:	**Marelli MJH 800 MC6 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.

Fuel gas data: 2)

Methane number:	[-]	78
Lower calorific value:	[kWh/Nm^3]	10,43
Gas density:	[kg/Nm^3]	0,79
	Acc. to gas analysis	
Analysis CO_2	[Vol%]	1,21
N_2	[Vol%]	1,06
O_2	[Vol%]	0,00
H_2	[Vol%]	0,00
CO	[Vol%]	0,00
CH_4	[Vol%]	90,91
C_2H_4	[Vol%]	0,00
C_2H_6	[Vol%]	5,41
C_3H_6	[Vol%]	0,00
C_3H_8	[Vol%]	1,02
C_4H_8	[Vol%]	0,00
C_4H_{10}	[Vol%]	0,29
C_5H_{12}	[Vol%]	0,05
C_xH_y	[Vol%]	0,05
H_2S	[Vol%]	0,00
H_2O	[Vol%]	0

Energy balance

Load:	[%]	**100**	**75**	**50**
Electrical power COP acc. ISO 8528-1:	[kW]	**4500**	**3375**	**2250**
Engine jacket water heat:	[kW ±8%]	1796	1322	875
Intercooler LT heat:	[kW ±8%]	270	180	106
Lube oil heat:	[kW ±8%]	687	615	519
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	1930	1616	1265
Exhaust temperature:	[°C ±25°C]	382	411	452
Exhaust mass flow | wet / dry:	[kg/h]	24263 / 22353	18229 / 16758	12434 / 11401
Combustion mass air flow:	[kg/h]	23491	17631	12012
Radiation heat engine / generator:	[kW ±8%]	198 / 98	154 / 83	109 / 72
Fuel consumption:	[kW+5%]	10151	7850	5540
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]	116100
Combustion air temperature minimum / design:	[°C]	5 / 25
Exhaust back pressure from / to:	[mbar]	30 / 50
Exhaust volume flow | wet / dry:	[Nm³/h]	18946 / 16954
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 / 52900

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

56847

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[5)]

4) DIN EN ISO 3746 (σ_{R0}=±4 dB) 5) Measured in exhaust pipe (f ≤ 250Hz: ±5dB; f > 250Hz: ±3dB) L_W: Sound power level S: Area of measurement surface (S_0=1m^2) 6) DIN 45635-11, Appendix A