

057270135_270136_Q01_1_8L64_999_50_250_EN_SI_V1

Voltage / Frequency

Cooling water temperature (in / out)

NOx emissions (dry, 5 % O₂)

Mixture cooler 1st stage water temperature (in)

Mixture cooler 2nd stage water temperature (in)

Exhaust gas temperature

Catalytic converter

Special equipment

Elevation above sea level

Combustion air temperature

Relative combustion air humidity

Standard specifications and regulations

V / Hz

°C

mg/m³ i.N.

°C

°C

°C

m / mbar

°C

%

400

/

50

77 / 92

< 250

60

412

not included

100

/

1000

35

60

VDE-AR-N 4110

Energy balance	%	100	75	50
Electrical Power ^{2) 3)}	kW	999	749	500
Energy input ^{4) 5)}	kW	2367	1818	1268
Thermal output total ⁶⁾	kW	1114	875	626
Thermal output engine (block, lube oil, 1st stage mixture cooler) ⁶⁾	kW	621	460	316
Thermal output mixture cooler 1st stage ⁶⁾	kW			
Thermal output mixture cooler 2nd stage ⁶⁾	kW	50	31	18
Exhaust heat optional (120 °C) ⁶⁾	kW	(493)	(415)	(310)
Engine power ISO 3046-1 ²⁾	kW	1027	772	519
Generator efficiency at power factor = 1	%	97.3	97.0	96.3
Electrical efficiency ⁴⁾	%	42.2	41.2	39.4
Total efficiency	%	89.3	89.3	88.8
Power consumption ⁷⁾	kW			
Combustion air / Exhaust gas				
Combustion air volume flow ¹⁾	m ³ i.N./h	4011	3022	2063
Combustion air mass flow	kg/h	5182	3903	2666
Exhaust gas volume flow, wet ¹⁾	m ³ i.N./h	4211	3176	2171
Exhaust gas volume flow, dry ¹⁾	m ³ i.N./h	3772	2838	1935
Exhaust gas mass flow, wet	kg/h	5355	4037	2759
Exhaust temperature after turbocharger	°C	412	444	474
Reference fuel ⁸⁾				
Natural gas			CH ₄ >95 Vol. %	
Sewage gas			not applicable	
Biogas			not applicable	
Landfill gas			not applicable	
Fuel requirements ⁹⁾				
Nominal rated methane number	MN		80	
Range of heating value: design / operation range without power derating	kWh/m ³ i.N.		10.0 - 10.5 / 8.0 - 11.0	
Exhaust gas emissions ^{5) 8)} Compliance with emissions standards only for ≥ 500 kWel				
NOx, stated as NO ₂ (dry, 5 % O ₂)	mg/m ³ i.N.	< 250		
CO (dry, 5 % O ₂)	mg/m ³ i.N.	< 1200		
HCHO (dry, 5 % O ₂)	mg/m ³ i.N.	< 130		
VOC (dry, 5 % O ₂)	mg/m ³ i.N.			
Otto-gas engine, lean burn operation with turbocharging				
Number of cylinders / configuration		8	/	v
Engine type			8V4000L64FNER TR	
Engine speed	1/min		1500	
Bore	mm		170.0	
Stroke	mm		210.0	
Displacement	dm ³		38.13	
Mean piston speed	m/s		10.5	
Compression ratio			12.5	
BMEP at nominal engine speed min-1	bar	21.5		
Lube oil consumption ¹⁰⁾	dm ³ /h	0.18		
Exhaust back pressure min. - max. after module	mbar - mbar		30 - 60	
Generator				
Rating power (temperature rise class F) ¹¹⁾	kVA		1625	
Insulation class / temperature rise class			H / F	
Winding pitch			2/3	
Protection			IP 23	
Max. admissible cos phi inductive (overexcited) / capacitive (underexcited) ^{12) 22)}			0.8 / 0.95	
Voltage tolerance / frequency tolerance	%		± 10 / ± 5	
Engine cooling water system				
Coolant temperature (in / out), design	°C	77 / 92		
Coolant flow rate, constant ^{13) 14)}	m ³ /h	40.0		
Pressure drop, design ¹⁴⁾	Cv value ^{13) 15)}	bar / m ³ /h	2.3	/
Max. operation pressure (coolant before engine)	bar		6	
Exhaust gas heat exchanger (EGHE)				
Exhaust gas temperature (out)	°C			
Coolant temperature (in / out), design	°C			
Coolant volumetric flow, constant ^{13) 14)}	m ³ /h			
Pressure drop, design ¹⁴⁾	Cv value ^{13) 15)}	kPa / m ³ /h	/	
Min. coolant flow rate / min. operation gauge pressure	m ³ /h / bar		/	
Max. operation pressure (coolant water)	bar			

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Mixture cooler 1st stage, external					
Coolant temperature (in / out), design	°C				
Coolant volumetric flow, design, constant ^{13) 14)}	m³/h				
Pressure drop, design ¹⁴⁾	Cv value ^{13) 15)}	bar / m³/h	/		
Min. coolant flow rate / min. operation gauge pressure	m³/h / bar	/			
Max. operation pressure before mixture cooler	bar				
Mixture cooler 2nd stage, external					
Coolant temperature (in / out), design	°C	60 / 61.2			
Coolant volumetric flow, design, constant ^{13) 14)}	m³/h	39.0			
Pressure drop, design ¹⁴⁾	Cv value ^{13) 15)}	bar / m³/h	0.73	/	46.0
Max. operation pressure before mixture cooler	bar			6	
Heating circuit interface					
Engine coolant temperature (in / out), design	°C				
Heating water temperature (in / out), design	°C				
Heating water flow rate, design ^{14) 16)}	m³/h				
Pressure drop, design ¹⁴⁾	Cv value ^{15) 16)}	bar / m³/h	/		
Max. operation gauge pressure (heating water)	bar				
Room ventilation					
Genset ventilation heat ¹⁷⁾	kW			59	
Inlet air temperature: (min./design/max.)	°C			30 / 35 / 40	
Min. engine room temperature ¹⁸⁾	°C			15	
Max. temperature difference ventilation air (in / out)	°C			20	
Min. supply air volume flow rate (combustion + ventilation) ¹⁹⁾				12500	
Gearbox	%	100		75	
Efficiency	%				
Starter battery					
Nominal voltage / power / capacity required	V / kW / Ah			24 / 9 / --	
Filling quantities					
First filling quantity lube oil / refilling amount lube oil	dm³			220 / 200	
Coolant in engine circuit	dm³			135	
Coolant in mixture cooler	dm³			15	
Heating water for plate heat exchanger ²⁰⁾	dm³				
Lube oil for gearbox	dm³				
Gas regulation line					
Nominal size / gas pressure min. - max. (at gas regulation line inlet)	DN / mbar - mbar	80	/	118 - 250	
Engine sound level ²¹⁾ (1 meter distance, free field) +3 dB(A) for total A-weighted level tolerance; + 5 dB for single octave level					
Frequency	Hz	63	125	250	500
Sound pressure level	dB	79.3	89.1	90.0	92.6
Frequency	Hz	1000	2000	4000	8000
Sound pressure level	dB	92.2	89.2	88.8	100.0
Linear total sound pressure level	Lin dB	102.3			
A-weighted total sound pressure level	dB(A)	101.0			
A-weighted total sound power level	dB(A)	120.0			
Undamped exhaust noise ²¹⁾ (1 meter distance to outlet within 90°, free field) +3 dB(A) for total A-weighted level tolerance; + 5 dB for single octave level					
Frequency	Hz	63	125	250	500
Sound pressure level	dB	102.1	118.4	110.3	106.1
Frequency	Hz	1000	2000	4000	8000
Sound pressure level	dB	101.4	99.5	93.4	84.1
Linear total sound pressure level	Lin dB	119.4			
A-weighted total sound pressure level	dB(A)	109.0			
A-weighted total sound power level	dB(A)	121.5			
Dimensions (aggregate)					
Length	mm			~ 4100	
Width	mm			~ 1900	
Height	mm			~ 2300	
Gross weight (dry weight)	kg			~ 12000 (~ 11500)	
Power derating					
Maximum ambient air dew point on site	°C			26.0	
Combustion air temperature				specific to the project	
Mixture cooler coolant temperature (in)				specific to the project	
Methane number				specific to the project	
Boundary conditions and consumables					
Systems and consumables have to conform to the following actual company standards:			A001072		

- 1) Normal cubic meter at 1013 mbar and T = 273 K
- 2) Prime power operation will be designed specific to the project
- 3) Generator gross power at nominal voltage, power factor = 1 and nominal frequency
- 4) According to ISO 3046 (+ 5 % tolerance), using reference fuel used at nominal voltage, power factor = 1 and nominal frequency
- 5) Emission values during grid parallel operation
- 6) Thermal output at layout temperature; tolerance +/- 8 %
- 7) Power consumption of all electrical consumers which are mounted at the module / genset
- 8) Deviations from the layout parameters respectively the reference fuel can have influence on the obtained efficiency and exhaust emissions
- 9) Functional capability
- 10) Reference value at nominal load (without amount of oil exchange) oil density set to 860g/l
- 11) Generator (at nominal power) max. 1000 m height of location and max. 40 °C intake air temperature; else power derating
- 12) Max. allowable cos phi at nominal power (view of producer)
- 13) Stated values for cooling fluid composition 65% water and 35% glycol, adaption for use of other cooling fluid composition necessary
The system design must consider the tolerance.
- 14) Pressure loss at reference flow rate
- 15) The Cv value declares the volumetric flow in m³/h at a pressure drop of 1 bar. Min. and max. flow rate limits are defined.
- 16) Stated values for pure water, adaption for other cooling fluid composition necessary
- 17) Only generator- and surface losses
- 18) Frost-free conditions must be guaranteed
- 19) Amount of ventilation air must be adapted to the gas safety concept
- 20) Assemblies including pipe work
- 21) All sound pressure levels at nominal load, according to ISO 8528-10 and ISO 6798.
- 22) Max. admissible cos phi depending on voltage in accordance with the requirements of the valid 'Standard specifications and regulations'