

Technical Data Sheet

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GB1718N5

16V4000L33



V / Hz	400	50	
°C		78 / 90	
mg/m ³ i.N.		< 500	
°C		40	
°C		426	
°C		not included	
Catalytic converter			
Special equipment			
Altitude above sea level ²⁾	m / mbar	100	1000
Intake air temperature	°C		25
Relative intake air humidity	%		30
Standard specifications and regulations			

Energy balance	%	100	75	50
Electrical Power COP, ISO 8528-1 ^{2) 3)}	kW	1718	1287	854
Energy input ^{4) 5)}	kW	3991	3064	2144
Thermal output total ⁶⁾	kW	974	734	506
Thermal output engine (block, lube oil, 1st stage intercooler) ⁶⁾	kW	974	734	506
Intercooler 1st stage water temperature (in) ⁶⁾	kW			
Intercooler 2nd stage water temperature (in) ⁶⁾	kW	113	78	56
Exhaust heat (120 °C) ⁶⁾	kW	(821)	(688)	(518)
Engine power ISO 3046-1 ²⁾	kW	1760	1320	880
Generator efficiency at power factor = 1	%	97.6	97.5	97.1
Electrical efficiency ⁴⁾	%	43	42	39.8
Total efficiency	%	88	88.4	87.6
CHP coefficient		1.76	1.75	1.69
Power consumption ⁷⁾	kW			

Combustion air / Exhaust gas				
Combustion air volume flow ¹⁾	m ³ i.N./h	6697	4998	3407
Combustion air mass flow	kg/h	8649	6455	4400
Exhaust gas volume flow, wet ¹⁾	m ³ i.N./h	6918	5169	3527
Exhaust gas volume flow, dry ¹⁾	m ³ i.N./h	6390	4767	3245
Exhaust gas mass flow, wet	kg/h	8940	6680	4557
Exhaust temperature after turbocharger	°C	426	459	487

Reference fuel ⁸⁾				
Natural gas				H
Sewage gas				not applicable
Biogas				not applicable
Landfill gas				not applicable

Fuel requirements ⁹⁾				
Minimum methane number	MZ			80
Range of heating value: design / operation range	kWh/m ³ i.N.			10.0 - 10.5 / 8.0 - 11.0
Exhaust gas emissions ^{5) 8)}				
NO _x , stated as NO ₂ (dry, 5 % O ₂)	mg/m ³ i.N.	< 500		
CO (dry, 5 % O ₂)	mg/m ³ i.N.	< 1000		
HCHO (dry, 5 % O ₂)	mg/m ³ i.N.			
VOC (dry, 5 % O ₂)	mg/m ³ i.N.			

Otto-gas engine, lean burn operation with turbocharging				
Number of cylinders / configuration		16	/	V
Engine type				16V4000L33FN
Engine speed	1/min			1500
Bore	mm			170
Stroke	mm			210
Displacement	dm ³			76.3
Mean piston speed	m/s			10.5
Compression ratio				12.8
BMEP at nominal engine speed min-1	bar	18.5		
Lube oil consumption ¹⁰⁾	dm ³ /h	0.6		
Exhaust back pressure min. - max. after engine	mbar - mbar			30 - 60

Generator				
Rating power (temperature rise class F) ¹¹⁾	kVA			2280
Insulation class / temperature rise class				F / F
Winding pitch				2/3
Protection				IP 23
Max. allowable p.f. inductive (overexcited) / capacitive (underexcited) ¹²⁾				0.8 / 0.95
Voltage tolerance / frequency tolerance	%			± 10.0 / ± 5.0

Engine cooling water system				
Coolant temperature (in / out)	°C		78 / 90	
Coolant flow rate ^{13) 14)}	m ³ /h		83.5	
Pressure drop ¹⁴⁾ CVs value ^{13) 15)}	bar / m ³ /h	3.3	/	46
Max. operation pressure (coolant before engine)	bar			6

Exhaust gas heat exchanger (EGHE)				
Exhaust gas temperature (out)	°C			
Coolant temperature (in / out)	°C		/	
Coolant volumetric flow ^{13) 14)}	m ³ /h			
Pressure drop ¹⁴⁾ CVs value ^{13) 15)}	bar / m ³ /h			/
Min. coolant flow rate / min. operation gauge pressure	m ³ /h / bar	--		/
Max. operation pressure (coolant water)	bar			

Intercooler 1st stage, external				
Coolant temperature (in / out)	°C			
Coolant volumetric flow ^{13) 14)}	m ³ /h			
Pressure drop ¹⁴⁾	CVs value ^{13) 15)}	bar / m ³ /h	/	
Min. coolant flow rate / min. operation gauge pressure		m ³ /h / bar	/	
Max. operation pressure in front of intercooler		bar		
Intercooler 2nd stage, external				
Coolant temperature (in / out)	°C	40 / 43		
Coolant volumetric flow ^{13) 14)}	m ³ /h	29.6		
Pressure drop ¹⁴⁾	CVs value ^{13) 15)}	bar / m ³ /h	/	30.2
Max. operation pressure in front of intercooler		bar	6	
Heating circuit interface				
Engine coolant temperature (in / out)	°C			
Heating water temperature (in / out)	°C			
Heating water flow rate ^{14) 16)}	m ³ /h			
Pressure drop ¹⁴⁾	CVs value ^{15) 16)}	bar / m ³ /h	/	
Max. operation gauge pressure (heating water)		bar		
Room ventilation				
Genset ventilation heat ¹⁷⁾	kW		88	
Combustion air temperature: (min./design/max.)	°C		20 / 25 / 30	
Min. engine room temperature ¹⁸⁾	°C		15	
Max. temperature difference ventilation air (in / out)	K		20	
Min. supply air volume flow rate (combustion+ventilation) ¹⁹⁾	m ³ i.N./h		19000	
Starter battery				
Nominal voltage / power / capacity required	V / kW / Ah		24 / 2 x 9 / --	
Filling quantities				
Lube oil for engine	dm ³		250	
Coolant for engine	dm ³		270	
Coolant for intercooler LT / HT	dm ³		22	
Heating water for plate heat exchanger ²⁰⁾	dm ³			
Lube oil for gearbox	dm ³			
Gas regulation line				
Nominal size / gas pressure min. - max.	DN / mbar - mbar	100	160 - 250	
Engine sound level ²¹⁾ (1 meter distance, free field)				
Frequency	Hz	63	125	250
Sound pressure level	dB	75.8	85.6	87.8
Frequency	Hz	1000	2000	4000
Sound pressure level	dB	88.2	85.5	85.8
	Lin dB	98.5		
Sum of pressure levels	dB A	96.8		
Sound power level	dB A	116.2		
Undampened exhaust noise ²¹⁾ (1 meter distance to outlet within 90°, free field)				
Frequency	Hz	63	125	250
Sound pressure level	dB	112.7	120.7	109.6
Frequency	Hz	1000	2000	4000
Sound pressure level	dB	103.1	101.7	100.3
	Lin dB	121.9		
Sum of pressure levels	dB A	110.1		
Sound power level	dB A	122.3		
Dimensions (Aggregate)				
Length	mm		5500	
Width	mm		2000	
Height	mm		2300	
Gross weight (dry weight)	kg		15500 (15000)	
Power derating				
Altitude			specific to the project	
Intake air temperature			specific to the project	
Intercooler 2nd stage coolant temperature			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:			DK-BS-0002	

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)

11) Genset 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

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 COP