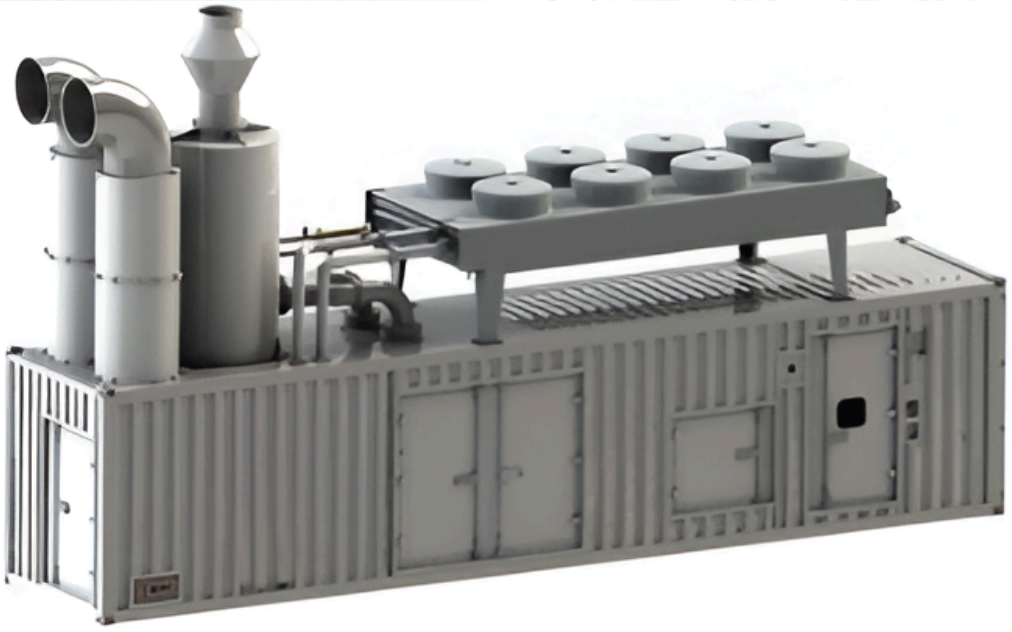
September 2024

2 MW Containerised MTU 16V4000L64F Natural Gas Gensets

Complete Plug&Play genset powered by **MTU 16V4000L64FNER**

Capacity: 2,026 MW
Fuel: Natural Gas
Year: Genset 2020, Container 2022
Hours: 0
Voltage: 11,000 V
Frequency: 50 Hz
Scope of supply: Container - Engine, Alternator, Base frame, Gas Line, MIP & MCS Control System, Radiator, Fire Alarm System, Gas Alarm System.
Warranty: 1 year.
Available: immediately.

Technical data sheets for each version are attached below.



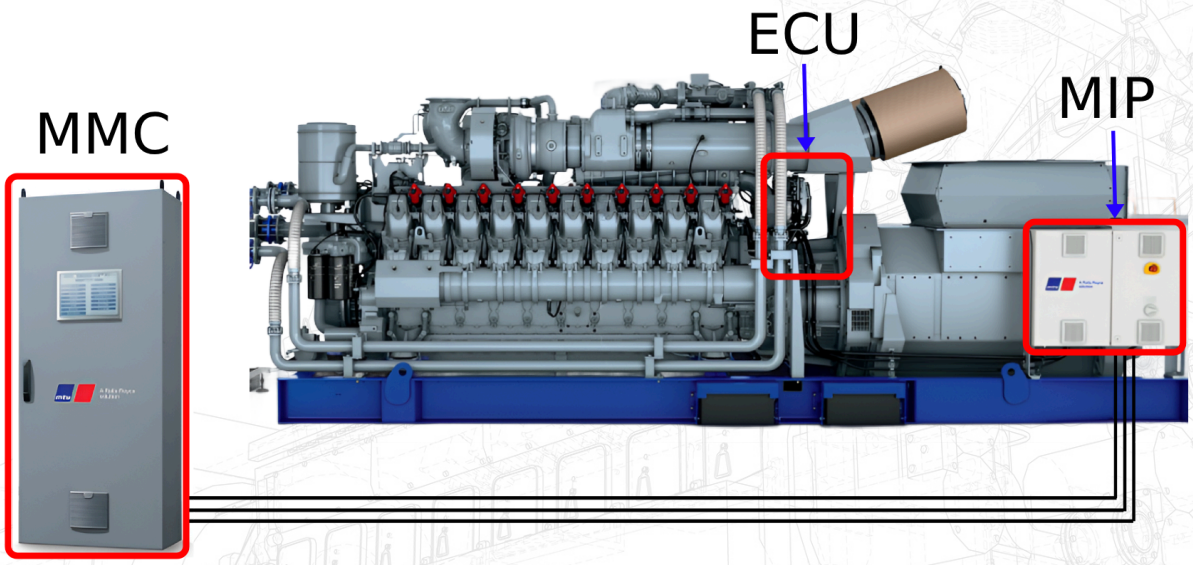
Automation systems MIP & MMC

Motor interface panel (MIP) with standalone mtu Module Control (MMC). The MMC provides all the functions necessary for controlling the system. All the auxiliary drives required for the CHP system can be operated from here. The integrated power circuitry minimizes the customer's need for cabling on site.

- Provides customizable control and regulation of CHP units.
- Continuously monitors system performance and detects faults.
- Offers protective features to prevent damage and ensure safety.
- User-friendly interface for easy operation and maintenance.
- Enhances reliability and efficiency of the system.
- Interface to Engine Control Unit (ECU)

The most important features are:

- Drive and control via PLC (programmable logic controller)
- Operation and visualization on industrial PC with color touch-screen panel
- Visual display of all functional processes and controls
- Supports additional controls (CH4, gas tank, heat production/storage, power usage)
- Networking of multi-module systems via Ethernet
- Connectivity with master control system
- Wide choice of interface protocols (Ethernet, Profibus DP, Modbus RTU/TCP, Profinet)
- Logs all fault and status messages in a database (up to six months)
- Optional remote diagnostics via DSL/ISDN
- Optional SMS/email integration for fault notifications and daily meter reports



Container: 40FT High Cube Acoustic Container

- Dimensions: (L×W×H) mm 12,192 x 2,438 x 7,000
- Weight: (kg) 35,700

Radiator: Cooling system for engine and mixture cooling circuit (electricity generation only)

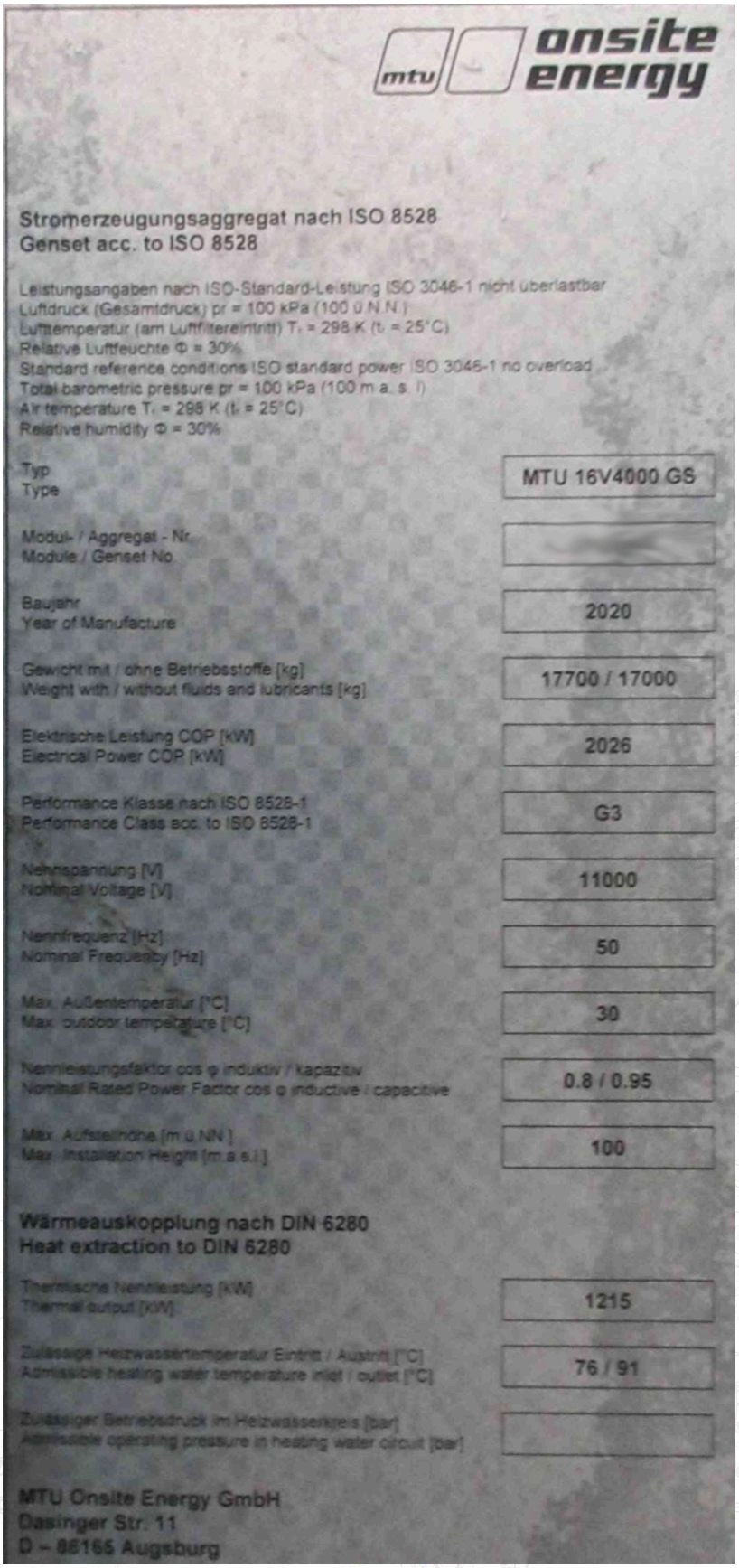
Subject to availability.

Containerised generator sets in stock available immediately.
Cooling radiator is available 6 to 8 weeks after down payment received.

Scope of Supply Origin:

NO.	NAME	MODEL	SPECIFICATION	BRAND	QTY	Country of Origin
1.	Container	40HQ/12192*2438*2896	40' ISO HQ	VPOWER	1	China
2.	Engine	16V4000L64FNER	2080 bkW 1500rpm	MTU	1	Germany
3.	Pre-lubrication pump	MTU Standard	P=5.5KW	MTU	1	European
4.	MCS	VPower	Controller	ComAp	1	China
5.	MIP	MIP4000	MTU interface panel	MTU	1	European
6.	Gas Regulation Line	MTU Standard	Gas Regulation	MTU	1	European
7.	Alternator	HVSI804T	11kV /50Hz Double Bearing	STAMFORD	1	European
8.	Exhaust Silencer	VPower	Silencing system	VPOWER	1	China
9.	Radiator	TBA	Flatbed type with 8 cooling fans	GUNTNER or Equivalent	1	Indonesia
10.	LT Water Pump	TP65-250/2 A-F-A-BQQV	4kW/400V 50Hz	GRUNDFOS	1	China
11.	HT Water Pump	TP65-720/2 A-F-A-BQQV	22kW/400V 50Hz	GRUNDFOS	1	China
12.	LT Pressure Tank	100L-1.0Mpa-130℃	VPower	BESTANK	1	China
13.	HT Pressure Tank	200L-1.0Mpa-130℃	VPower	BESTANK	1	China
14.	Air Exhausting Fan	PMSWF150L85P10-810H-710 B	2.8kW/380V 50Hz	MAER	2	China
15.	Starting Battery	D31A	75Ah DC12V	OPTIMA	4	China
16.	Battery Charger	SITOP PSU300B	2kW/400V 50Hz	Siemens	2	China

Example Engine Plate Photo



mtu onsite energy

Stromerzeugungsaggregat nach ISO 8528
Genset acc. to ISO 8528

Leistungsangaben nach ISO-Standard-Leistung ISO 3046-1 nicht überlastbar
Luftdruck (Gesamtdruck) pr = 100 kPa (100 ü.N.N.)
Lufttemperatur (am Luftfiltereintritt) T_r = 298 K (t_r = 25°C)
Relative Luftfeuchte Φ = 30%
Standard reference conditions ISO standard power ISO 3046-1 no overload
Total barometric pressure pr = 100 kPa (100 m a. s. l)
Air temperature T_r = 298 K (t_r = 25°C)
Relative humidity Φ = 30%

Typ Type	MTU 16V4000 GS
Modul- / Aggregat - Nr. Module / Genset No.	
Baujahr Year of Manufacture	2020
Gewicht mit / ohne Betriebsstoffe [kg] Weight with / without fluids and lubricants [kg]	17700 / 17000
Elektrische Leistung COP [kW] Electrical Power COP [kW]	2026
Performance Klasse nach ISO 8528-1 Performance Class acc. to ISO 8528-1	G3
Nennspannung [V] Nominal Voltage [V]	11000
Nennfrequenz [Hz] Nominal Frequency [Hz]	50
Max. Außentemperatur [°C] Max. outdoor temperature [°C]	30
Nennleistungsfaktor cos φ induktiv / kapazitiv Nominal Rated Power Factor cos φ inductive / capacitive	0.8 / 0.95
Max. Aufstellhöhe [m ü.NN] Max. Installation Height [m a.s.l.]	100

Wärmeauskopplung nach DIN 6280
Heat extraction to DIN 6280

Thermische Nennleistung [kW] Thermal output [kW]	1215
Zulässige Heizwassertemperatur Eintritt / Austritt [°C] Admissible heating water temperature inlet / outlet [°C]	76 / 91
Zulässiger Betriebsdruck im Heizwasserkreis [bar] Admissible operating pressure in heating water circuit [bar]	

MTU Onsite Energy GmbH
Dasinger Str. 11
D – 86165 Augsburg

Technical Data Sheet

MTU 16V4000 GS

Voltage / Frequency	V / Hz	**11000**	**/**	**50**
Cooling water temperature (in / out)	°C		**76 / 91**	
NOx emissions (dry, 5 % O_2)	mg/m³ i.N.		**< 250**	
Mixture cooler 1st stage water temperature (in)	°C			
Mixture cooler 2nd stage water temperature (in)	°C		**43**	
Exhaust gas temperature	°C		**411**	
Catalytic converter			**not included**	
Special equipment			**Fast start capability 120s**	
Elevation above sea level	m / mbar	**100**	**/**	**1000**
Combustion air temperature	°C		**25**	
Relative combustion air humidity	%		**30**	
Standard specifications and regulations			**VDE-AR-N 4110**	

Energy balance	**%**	**100**	**75**	**50**
Electrical Power [2) 3)]	kW	2026	1520	1013
Energy input [4) 5)]	kW	4834	3688	2566
Thermal output total [6)]	kW	1215	883	600
Thermal output engine (block, lube oil, 1st stage mixture cooler) [6)]	kW	1215	883	600
Thermal output mixture cooler 1st stage [6)]	kW			
Thermal output mixture cooler 2nd stage [6)]	kW	170	116	74
Exhaust heat (120 °C) [6)]	kW	(995)	(840)	(663)
Engine power ISO 3046-1 [2)]	kW	2080	1561	1045
Generator efficiency at power factor = 1	%	97.4	97.4	96.9
Electrical efficiency [4)]	%	41.9	41.2	39.5
Total efficiency	%	87.6	87.9	88.7
Power consumption [7)]	kW			
Combustion air / Exhaust gas				
Combustion air volume flow [1)]	m³ i.N./h	8090	6062	4041
Combustion air mass flow	kg/h	10447	7829	5218
Exhaust gas volume flow, wet [1)]	m³ i.N./h	8496	6374	4259
Exhaust gas volume flow, dry [1)]	m³ i.N./h	7600	5690	3783
Exhaust gas mass flow, wet	kg/h	10801	8101	5408
Exhaust temperature after turbocharger	°C	411	447	503
Reference fuel [8)]				
Natural gas			CH_4 >95 Vol.%	
Sewage gas			not applicable	
Biogas			not applicable	
Landfill gas			not applicable	
Fuel requirements [9)]				
Minimum methane number	MN		72	
Range of heating value: design / operation range without power derating	kWh/m³ i.N.		10.0 - 10.5 / 8.0 - 11.0	
Exhaust gas emissions [5) 8)] Compliance with emissions standards only for ≥ 1013 kWel				
NOx, stated as NO_2 (dry, 5 % O_2)	mg/m³ i.N.	< 250		
CO (dry, 5 % O_2)	mg/m³ i.N.	< 1000		
HCHO (dry, 5 % O_2)	mg/m³ i.N.	< 120		
VOC (dry, 5 % O_2)	mg/m³ i.N.			
Otto-gas engine, lean burn operation with turbocharging				
Number of cylinders / configuration		16	/	V
Engine type			16V4000L64FNER	
Engine speed	1/min		1500	
Bore	mm		170.0	
Stroke	mm		210.0	
Displacement	dm³		76.3	
Mean piston speed	m/s		10.5	
Compression ratio			12.5	
BMEP at nominal engine speed min-1	bar	21.8		
Lube oil consumption [10)]	dm³/h	0.35		
Exhaust back pressure min. - max. after module	mbar - mbar		30 - 60	
Generator				
Rating power (temperature rise class F) [11)]	kVA		2840	
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 / ± 5	
Engine cooling water system				
Coolant temperature (in / out), design	°C	76 / 91		
Coolant flow rate, constant [13) 14)]	m³/h	75.5		
Pressure drop, design [14)] Cv value [13) 15)]	bar / m³/h	2.94	/	44.7
Max. operation pressure (coolant before engine)	bar		6.0	
Exhaust gas heat exchanger (EGHE)				
Exhaust gas temperature (out)	°C			
Coolant temperature (in / out), design	°C			
Coolant volumetric flow, constant [13) 14)]	m³/h			
Pressure drop, design [14)] Cv value [13) 15)]	kPa / m³/h		/	
Min. coolant flow rate / min. operation gauge pressure	m³/h / bar		/	
Max. operation pressure (coolant water)	bar			

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 cooling 2nd stage, external						
Coolant temperature (in / out), design		°C	43 / 47.6			
Coolant volumetric flow, design, constant [13) 14)]		m³/h	34.3			
Pressure drop, design [14)]	Cv value [13) 15)]	bar / m³/h	0.6	/	45.3	
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		120		
Inlet air temperature: (min./design/max.)		°C		20 / 25 / 30.0		
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)]		m³ i.N./h		25000		
Gearbox		**%**	**100**	**75**	**50**	
Efficiency		%	-	-	-	
Starter battery						
Nominal voltage / power / capacity required		V / kW / Ah		24 / 2 x 9 / --		
Filling quantities						
Lube oil for engine		dm³		330		
Coolant in engine		dm³		270		
Coolant in mixture cooler		dm³		25		
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	100	/	155 - 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	84.8	90.5	90.0	93.0
Frequency		Hz	**1000**	**2000**	**4000**	**8000**
Sound pressure level		dB	92.5	91.8	99.2	101.4
Linear total sound pressure level		Lin dB	104.8			
A-weighted total sound pressure level		dB(A)	104.4			
A-weighted total sound power level		dB(A)	124.1			
Undampened 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	113.9	119.8	111.9	104.5
Frequency		Hz	**1000**	**2000**	**4000**	**8000**
Sound pressure level		dB	97.1	96.8	94.0	83.9
Linear total sound pressure level		Lin dB	121.6			
A-weighted total sound pressure level		dB(A)	108.0			
A-weighted total sound power level		dB(A)	121.0			
Dimensions (aggregate)						
Length		mm		~ 5300		
Width		mm		~ 2000		
Height		mm		~ 2300		
Gross weight (dry weight)		kg		~ 17700 (~ 17000)		
Power derating						
Elevation				specific to the project		
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)
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.
Resonance effects of the connected exhaust line can influence the exhaust noise sound pressure level
22) Max. admissible cos phi depending on voltage in accordance with the requirements of the valid 'Standard specifications and regulations'

Technical Data Sheet

MTU 16V4000 GS

Voltage / Frequency	V / Hz	**11000**	/	**50**
Cooling water temperature (in / out)	°C		**78 / 92**	
NOx emissions (dry, 5 % O_2)	mg/m³ i.N.		**< 500**	
Mixture cooler 1st stage water temperature (in)	°C			
Mixture cooler 2nd stage water temperature (in)	°C		**58**	
Exhaust gas temperature	°C		**421**	
Catalytic converter			**not included**	
Special equipment			**SRD**	
Elevation above sea level	m / mbar	**100**	/	**1000**
Combustion air temperature	°C		**35**	
Relative combustion air humidity	%		**60**	
Standard specifications and regulations				

Energy balance		**%**	**100**	**75**	**50**
Electrical Power [2) 3)]		kW	2026	1520	1013
Energy input [4) 5)]		kW	4622	3524	2444
Thermal output total [6)]		kW	1173	871	601
Thermal output engine (block, lube oil, 1st stage mixture cooler) [6)]		kW	1173	871	601
Thermal output mixture cooler 1st stage [6)]		kW			
Thermal output mixture cooler 2nd stage [6)]		kW	93	53	24
Exhaust heat (120 °C) [6)]		kW	(974)	(806)	(606)
Engine power ISO 3046-1 [2)]		kW	2080	1561	1045
Generator efficiency at power factor = 1		%	97.4	97.4	96.9
Electrical efficiency [4)]		%	43.8	43.1	41.4
Total efficiency		%	90.3	90.7	90.9
Power consumption [7)]		kW			
Combustion air / Exhaust gas					
Combustion air volume flow [1)]		m³ i.N./h	7673	5737	3876
Combustion air mass flow		kg/h	9909	7409	5006
Exhaust gas volume flow, wet [1)]		m³ i.N./h	8064	6035	4083
Exhaust gas volume flow, dry [1)]		m³ i.N./h	7207	5382	3631
Exhaust gas mass flow, wet		kg/h	10250	7669	5187
Exhaust temperature after turbocharger		°C	421	452	487
Reference fuel [8)]					
Natural gas				CH_4 >95 Vol.%	
Sewage gas				not applicable	
Biogas				not applicable	
Landfill gas				not applicable	
Fuel requirements [9)]					
Minimum methane number		MN		80	
Range of heating value: design / operation range without power derating		kWh/m³ i.N.		10.0 - 10.5 / 8.0 - 11.0	
Exhaust gas emissions [5) 8)] Compliance with emissions standards only for ≥ 1013 kWel					
NOx, stated as NO_2 (dry, 5 % O_2)		mg/m³ i.N.	< 500		
CO (dry, 5 % O_2)		mg/m³ i.N.	< 800		
HCHO (dry, 5 % O_2)		mg/m³ i.N.	< 75		
VOC (dry, 5 % O_2)		mg/m³ i.N.			
Otto-gas engine, lean burn operation with turbocharging					
Number of cylinders / configuration			16	/	V
Engine type				16V4000L64FNER	
Engine speed		1/min		1500	
Bore		mm		170.0	
Stroke		mm		210.0	
Displacement		dm³		76.3	
Mean piston speed		m/s		10.5	
Compression ratio				12.5	
BMEP at nominal engine speed min-1		bar	21.8		
Lube oil consumption [10)]		dm³/h	0.35		
Exhaust back pressure min. - max. after module		mbar - mbar		30 - 60	
Generator					
Rating power (temperature rise class F) [11)]		kVA		2840	
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 / 1.0	
Voltage tolerance / frequency tolerance		%		± 5 / ± 5	
Engine cooling water system					
Coolant temperature (in / out), design		°C	78 / 92		
Coolant flow rate, constant [13) 14)]		m³/h	78.1		
Pressure drop, design [14)]	Cv value [13) 15)]	bar / m³/h	3.15	/	44.7
Max. operation pressure (coolant before engine)		bar		6.0	
Exhaust gas heat exchanger (EGHE)					
Exhaust gas temperature (out)		°C			
Coolant temperature (in / out), design		°C			
Coolant volumetric flow, constant [13) 14)]		m³/h			
Pressure drop, design [14)]	Cv value [13) 15)]	kPa / m³/h		/	
Min. coolant flow rate / min. operation gauge pressure		m³/h / bar		/	
Max. operation pressure (coolant water)		bar			

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 cooling 2nd stage, external						
Coolant temperature (in / out), design		°C	58 / 60.5			
Coolant volumetric flow, design, constant [13) 14)]		m³/h	34.3			
Pressure drop, design [14)]	Cv value [13) 15)]	bar / m³/h	0.48	/	50.6	
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		117		
Inlet air temperature: (min./design/max.)		°C		30 / 35 / 40.0		
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)]		m³ i.N./h		24000		
Gearbox		**%**	**100**	**75**	**50**	
Efficiency		%	-	-	-	
Starter battery						
Nominal voltage / power / capacity required		V / kW / Ah		24 / 2 x 9 / --		
Filling quantities						
Lube oil for engine		dm³		330		
Coolant in engine		dm³		270		
Coolant in mixture cooler		dm³		25		
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	100	/	150 - 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	84.8	90.5	90.0	93.0
Frequency		Hz	**1000**	**2000**	**4000**	**8000**
Sound pressure level		dB	92.5	91.8	99.2	101.4
Linear total sound pressure level		Lin dB	104.8			
A-weighted total sound pressure level		dB(A)	104.4			
A-weighted total sound power level		dB(A)	124.1			
Undampened 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	113.9	119.8	111.9	104.5
Frequency		Hz	**1000**	**2000**	**4000**	**8000**
Sound pressure level		dB	97.1	96.8	94.0	83.9
Linear total sound pressure level		Lin dB	121.6			
A-weighted total sound pressure level		dB(A)	108.0			
A-weighted total sound power level		dB(A)	121.0			
Dimensions (aggregate)						
Length		mm		~ 5300		
Width		mm		~ 2000		
Height		mm		~ 2300		
Gross weight (dry weight)		kg		~ 17700 (~ 17000)		
Power derating						
Elevation				specific to the project		
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)
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.
Resonance effects of the connected exhaust line can influence the exhaust noise sound pressure level
22) Max. admissible cos phi depending on voltage in accordance with the requirements of the valid 'Standard specifications and regulations'