Voltage Frequency Voltage Vo	Technical Data Sheet 93800050309_V08_en_GB	MTU 8V4000 GS GG08V4000A1		onsite energy		
Note		V / Hz	400	1	50	
Michatus cooler fast stage water temperature (in) "C	Cooling water temperature (in / out)			78 / 90		
Mature cooler and stage water temperature (in)	NOx emissions (dry, 5 % O ₂)	mg/m³ i.N.		< 500		
Exhaust gas temperature Catalytic converter Special equipment Special equipmen	Mixture cooler 1st stage water temperature (in)					
Seable Septical equipment	Mixture cooler 2nd stage water temperature (in)			40		
Special equipment	Exhaust gas temperature	°C		443		
Aistude above seal level ("Combustion air Itempristure" ("Comb	Catalytic converter			not included		
Combustion air temperature "C 25 Relative combuston air hundridy "Sandra' specifications and regulations "Sandra' specifications "Sandra' specific						
Standard specifications and regulations Standard specifications Standard specifica	Altitude above sea level		100	I	1000	
	Combustion air temperature					
Electrical Power 1	•	%		30		
Electrical Power 15	Standard specifications and regulations					
Energy top 1		%	100	75	50	
Thermal output foot Section Se	Electrical Power (2)(3)					
Thermal output mixture cooler 1st stage "						
Thermal output mixture cooler 1st stage			443		240	
Thermal pulput mixture coder 2nd stage 6	Thermal output engine (block, lube oil, 13t stage mixture cooler)		443	334	240	
Exhaust hair (120°C) 9						
Engine power ISO 3046-1 7						
Generator efficiency at power factor = 1			. ,			
Electrical efficiency %						
Total efficiency						
Combustion air Vicknatus quarter (Fachauts gas						
Combustion air / Exhaust gas m*i N./h 338 2564 1765 Combustion air mass flow kgh 4376 3311 2279 Exhaust gas volume flow, weth m*i N./h 3277 2484 1824 Exhaust gas smass flow, weth kgh 4524 3425 2389 Exhaust gas mass flow, weth kgh 4524 3425 239 Exhaust gas mass flow, weth kgh 4524 3425 239 Exhaust gas mass flow, weth kgh 4524 3425 239 Exhaust gas mass flow, weth kgh 472 250 250 Reference fuell C 443 472 250			87.6	86.7	86.4	
Combustion air volume flow (%) m*I.N/h 3389 2564 1765 Combustion air mass flow kg/h 4376 3311 2279 Exhaust gas volume flow, welt (%) m*I.N.N 3497 2446 1884 Exhaust gas mass flow, welt kg/h 4524 3425 2399 Exhaust gas mass flow, welt c 4524 3425 239 Reference fuel (%) c 4524 3425 239 Reference fuel (%) c 4524 3425 239 Reference fuel (%) c 443 472 501 Registry (%) c 443 472 501 Registry (%) c 463 472 501 Registry (%) c 463 472 501 Registry (%) c 460 464 464 464 Registry (%) c 460 464 464 464 464 464 464 464 464 464 464 464		kW				
Combustion air mass flow kgh 4376 3311 2279 Exhaust gas volume flow, dry ¹¹ m²1 kJh 3237 2445 1881 Exhaust gas volume flow, dry ¹¹ kgh 4524 3425 2359 Exhaust gam sans flow, wet kgh 4524 3425 2359 Exhaust temperature after furbocharger "C 443 472 501 Reference fuel? "C 443 472 501 Reference fuel? "C 433 472 501 Reference fuel? "C 433 472 501 Reference fuel? "C 433 472 501 Blogas "C 443 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.0 - 11.0 10.0 - 10.5 / 8.	-,		2002	0504	4705	
Exhaust gas volume flow, wet 10						
Exhaust gas volume flow, dry 19						
Exhaust gas mas flow, wet Rofh 4524 3425 2398 Exhaust magnerature after turbocharger "C 443 472 3501 Reference fuel "O The properties of the propertie						
Exhaust temperature after turbocharger Federace froid						
Reference fuel ** Sewage gas CH, 95 Vol % Sewage gas not applicable Indigitable not not not applicable Indigitable not not not applicable Indigitable not						
Natural gas			443	472	501	
Sewage gas not applicable Biogas not applicable Fuel requirements *** not applicable Fuel requirements *** MN 80 Range of heating value: design / operation range without power derating MN 10.0 - 10.5 / 8.0 - 11.0 Exhaust gas emissions **** **** **** NOX, stated as NO₂ (dty, 5 % O₂) mg/m² l.N. < 1000 HCHO (diy, 5 % O₂) mg/m² l.N. < 80 HCHO (diy, 5 % O₂) mg/m² l.N. < 80 VOC (dry, 5 % O₂) mg/m² l.N. < 80 VOC (dry, 5 % O₂) mg/m² l.N. < 80 VOC (dry, 5 % O₂) mg/m² l.N. < 80 VOC (dry, 5 % O₂) mg/m² l.N. < 80 VOC (dry, 5 % O₂) mg/m² l.N. < 80 / V UCC (dry, 5 % O₂) mg/m² l.N. < 80 / V Engine speed 1 / l/m² 1 500 N 8 / V Regine type 8 / V 4 100 1 1 100 1 1 1 1 1				CH > 05 V/ol 9/		
Elogas						
Landfill gas						
Fuel requirements 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 30 SW SW SW SW SW SW SW S						
MIN 80				пот арриоавто		
Range of heating value: design / operation range without power derating Exhaust gas emissions 90		MN		80		
Exhaust gase emissions 98 NOx, stated as NOz, (dry, 5 % Oz) mg/m³ i.N. < 500 mg/m³ i.N. < 1000						
CO (dry, 5 % O₂)	Exhaust gas emissions 5) 8)					
HCHO (dry, 5 % O₂)	NOx, stated as NO ₂ (dry, 5 % O ₂)	mg/m³ i.N.	< 500			
VCC (dry, 5 % 0_2)	CO (dry, 5 % O ₂)	mg/m³ i.N.	< 1000			
Number of cylinders / configuration 8	HCHO (dry, 5 % O ₂)	mg/m³ i.N.	< 80			
Number of cylinders / configuration 8 / V Engine type 8V4000L3FN 2 Engine speed 1/min 1500 Bore mm 170.0 Stroke mm 210.0 Displacement dm³ 38.1 Mean piston speed m/s 10.5 Compression ratio bar 18.5 BMEP at nominal engine speed min-1 bar 18.5 Lube oil consumption ¹⁰⁾ dm³/h 0.2 Exhaust back pressure min max. after module mbar - mbar 30 - 60 Generator mbar - mbar 30 - 60 Rating power (temperature rise class F) ¹¹⁾ kVA 1445 Insulation class / temperature rise class F) ¹¹⁰ kVA 1445 Insulation class / temperature rise class H / 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	VOC (dry, 5 % O ₂)	mg/m³ i.N.				
Engine type	Otto-gas engine, lean burn operation with turbocharging					
Engine speed	Number of cylinders / configuration		8	1	V	
Bore mm 170.0 Stroke mm 210.0 Stroke mm 38.1 Stroke mm 38.1 Stroke ms 38.1 Stroke 38.1	Engine type			8V4000L33FN		
Stroke mm 210.0 Displacement dm³ 38.1 Mean piston speed m/s 10.5 Compression ratio 12.8 BMEP at nominal engine speed min-1 bar 18.5 Lube oil consumption 100 dm³/h 0.2 Exhaust back pressure min max. after module mbar - mbar 30 - 60 Generator Rating power (temperature rise class F) 110 kVA 1445 Insulation class / temperature rise class H / F Winding pitch 2/3 Protection IP 23 Max. allowable p.f. inductive (overexcited) / capacitive (underexcited) 120 0.8 / 0.95 Voltage tolerance / frequency tolerance % ± 10 / ± 5 Engine cooling water system Coolant temperature (in / out), design °C 78 / 90 Coolant flow rate, constant 131-140 m³/h 34.4 1.3 / 30.7 Max. operation pressure (coolant before engine) bar / m³/h 1.3 / 30.7 Exhaust gas heat exchanger (EGHE) C C C Cool	Engine speed	1/min		1500		
Displacement September Mark Mean piston speed Miss Mean piston speed Miss Mean piston speed Miss Mean piston speed Miss	Bore	mm		170.0		
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⁾ dm³/h 0.2 Exhaust back pressure min max. after module mbar - mbar 30 - 60 Generator Rating power (temperature rise class F) ¹¹⁾ kVA 1445 Insulation class / temperature rise class H / 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 78 / 90 Coolant flow rate, constant ^{13/14)} m³/h 34.4 Pressure drop, design ¹⁴⁾ Cv value ^{13/15)} bar / m³/h 1.3 / 30.7 Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out) °C Coolant temperature (in / out), design °C Coolant temperature (in / out), design °C Coolant temperature (in / out), design °C		mm		210.0		
Compression ratio	Displacement	dm³		38.1		
BMEP at nominal engine speed min-1		m/s				
Lube oil consumption 10) dm³/h 0.2 Exhaust back pressure min max. after module mbar - mbar 30 - 60 Generator Rating power (temperature rise class F) 11) kVA 1445 Insulation class / temperature rise class H / 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 78 / 90 Coolant flow rate, constant 13 14) m³/h 34.4 4 Pressure drop, design 14) Cv value 13 15) bar / m³/h 1.3 / 30.7 Max. operation pressure (coolant before engine) bar / m³/h 1.3 / 30.7 Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out), design °C Coolant temperature (out), design °C Coolant temperature (in / out), design n³/h n³/h n³/h	·			12.8		
Exhaust back pressure min max. after module mbar - mbar 30 - 60 Generator Rating power (temperature rise class F) 11) kVA 1445 Insulation class / temperature rise class H / F Winding pitch 2/3 Protection 1P 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 78 / 90 Coolant flow rate, constant 13 14) 34.4 Pressure drop, design 14) Cv value 13 15) bar / m³/h 1.3 / 30.7 Max. operation pressure (coolant before engine) bar 6.0 Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out) design °C Coolant temperature (in / out), design °C Coolant tolumetric flow, constant 13 14) m³/h						
Generator Rating power (temperature rise class F) 11) kVA 1445 Insulation class / temperature rise class H / 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 78 / 90 Coolant flow rate, constant 13) 14) m3/h 34.4 Pressure drop, design 14) Cv value 13) 15) bar / m3/h 1.3 / 30.7 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 temperature (in / out), design °C Coolant temperature (in / out), design			0.2			
Rating power (temperature rise class F) 111	·	mbar - mbar		30 - 60		
Insulation class / temperature rise class		13/4		4445		
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 78 / 90 Coolant flow rate, constant 13) 14) m3/h 34.4 Pressure drop, design 14) Cv value 13) 15) bar / m3/h 1.3 / 30.7 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 tolumetric flow, constant 13) 14) m3/h m3/h		kVA				
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 78 / 90 Coolant flow rate, constant ^{13) 14)} m³/h 34.4 Pressure drop, design ¹⁴⁾ Cv value ^{13) 15)} bar / m³/h 1.3 / 30.7 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 tolumetric flow, constant ^{13) 14)} m³/h "	·					
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 Coolant flow rate, constant 13) 14) °C 78 / 90 Coolant flow rate, constant 13) 14) 34.4 1.3 / 30.7 Max. operation pressure (coolant before engine) bar / m³/h 1.3 / 30.7 Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out) °C Coolant temperature (in / out), design °C Coolant temperature (in / out), design °C Coolant tolumetric flow, constant 13) 14) m³/h m³/h						
Voltage tolerance / frequency tolerance % ± 10 / ± 5 Engine cooling water system °C 78 / 90 Coolant temperature (in / out), design °C 78 / 90 Coolant flow rate, constant ^{13) 14)} m³/h 34.4 Pressure drop, design ¹⁴⁾ Cv value ^{13) 15)} bar / m³/h 1.3 / 30.7 Max. operation pressure (coolant before engine) bar 6.0 Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out) °C Exhaust gas temperature (in / out), design °C Coolant temperature (in / out), design °C Coolant volumetric flow, constant ^{13) 14)} m³/h m³/h						
Engine cooling water system Coolant temperature (in / out), design °C 78 / 90 Coolant flow rate, constant ^{1,3) 14)} m³/h 34.4 Pressure drop, design ¹⁴⁾ Cv value ^{13) 15)} bar / m³/h 1.3 / 30.7 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 toolumetric flow, constant ^{13) 14)} m³/h m³/h		0/,				
Coolant temperature (in / out), design Coolant flow rate, constant 13) 14) Pressure drop, design 14) Cv value 13) 15) Bar / m³/h 1.3 / 30.7 Max. operation pressure (coolant before engine) Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out) Coolant temperature (in / out), design Coolant tolumetric flow, constant 13) 14) m³/h		70		± 10 / ± J		
Coolant flow rate, constant 13 14 34.4 Pressure drop, design 14 Cv value 13 15 bar / m3/h 1.3 / 30.7 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		°C	78 / 90			
Pressure drop, design ¹⁴⁾ Cv value ^{13) 15)} bar / m³/h 1.3 / 30.7 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	Coolant flow rate, constant 13) 14)					
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)}			/	30.7	
Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out) Coolant temperature (in / out), design °C Coolant volumetric flow, constant 13) 14) m³/h				<u> </u>		
Coolant temperature (in / out), design °C Coolant volumetric flow, constant 13) 14) m³/h						
Coolant volumetric flow, constant ^{13) 14)} m ³ /h	Exhaust gas temperature (out)	°C				
Coolant volumetric flow, constant ^{13) 14)} Pressure drop, design ¹⁴⁾ Cy value ^{13) 15)} kPa / m³/h	Coolant temperature (in / out), design	°C				
Pressure drop, design ¹⁴⁾	Coolant volumetric flow, constant 13) 14)					
	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	Max. operation pressure (coolant water)	bar				

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Technical Data Sheet		MTU 8V4	MTU 8V4000 GS GG08V4000A1			onsite energy		
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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			1			
Min. coolant flow rate / min. operation gauge pressure	01 14140	m³/h / bar			,			
Max. operation pressure before mixture cooler		bar		•				
Mixture cooler 2nd stage, external		Dai						
Coolant temperature (in / out), design		°C	40 / 41.9					
Coolant volumetric flow, design, constant ^{13) 14)}		m³/h	23.5					
Pressure drop, design ¹⁴⁾	Cv value 13) 15)	bar / m³/h	0.84		,	26.3		
Max. operation pressure before mixture cooler	CV value	bar	0.04		2	20.3		
Heating circuit interface		Dai		,	,			
Engine coolant temperature (in / out), design		°C						
Heating water temperature (in / out), design		°€						
Heating water flow rate, design 14) 16)								
Pressure drop, design ¹⁴⁾	Cv value 15) 16)	bar / m³/h			,			
Max. operation gauge pressure (heating water)	Ov value	bar		/				
Room ventilation		Dai						
Genset ventilation heat ¹⁷⁾		kW		5	0			
		°C						
Inlet air temperature: (min./design/max.) Min. engine room temperature ¹⁸⁾				20 / 2				
		<u>°</u> C			5			
Max. temperature difference ventilation air (in / out)	19)	K		2				
Min. supply air volume flow rate (combustion + ventilation)	,	m³ i.N./h	400	115		F0		
Gearbox		%	100		5	50		
Efficiency		%	-			-		
Starter battery								
Nominal voltage / power / capacity required		V / kW / Ah		24 / 9	0.0 /			
Filling quantities								
Lube oil for engine		dm³		16				
Coolant in engine		dm³		13				
Coolant in mixture cooler		dm³		1	5			
Heating water for plate heat exchanger 20)		dm³						
Lube oil for gearbox		dm³						
Gas regulation line								
Nominal size / gas pressure min max.		DN / mbar - mbar	65	,	/	170 - 250		
Engine sound level ²¹⁾ (1 meter distance, free field) +3	dB(A) for total A-weighted	level tolerance						
Frequency		Hz	63	125	250	500		
Sound pressure level		dB	76.3	86.1	88.7	90.0		
Frequency		Hz	1000	2000	4000	8000		
Sound pressure level		dB	89.1	86.0	87.2	93.8		
<u>.</u>		Lin dB	98.0					
Sum of pressure levels		dB A	96.5					
Sound power level		dB	115.7					
Undampened exhaust noise ²¹⁾ (1 meter distance to ou	tlet within 90°. free field) +3			е				
Frequency	,	Hz	63	125	250	500		
Sound pressure level		dB	101.1	117.9	109.3	103.9		
Frequency		Hz	1000	2000	4000	8000		
Sound pressure level		dB	96.0	94.2	90.4	85.1		
Odana prodouro lovoi		Lin dB	118.7	J-7.2	30.4	00.1		
Sum of pressure levels		dB A	106.0					
Sound power level		db A	118.2					
Dimensions (aggregate)		UD	110.2					
, 65 6 7				44	200			
Length Width		mm		~ 42				
Width		mm		~ 20	JUU			

- Systems and consumables have to conform to the following actual company standards: 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 %
- 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
- Functional capability

Gross weight (dry weight)

Combustion air temperature

Mixture cooler coolant temperature (in)

Boundary conditions and consumables

Power derating Altitude

Methane number

- 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 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
- 22) Max. admissible cos phi depending on voltage in accordance with the requirements of the BDEW Mittelspannungsrichtlinie (German Medium Voltage Directive)

EDAM / EDAT

~ 2300 ~ 10350 (~ 10000)

specific to the project

specific to the project

specific to the project

specific to the project

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kg