Voltage Programmy Voltage Programmy Voltage	Technical Data Sheet 93800050292_V07_en_GB		/4000 GS /4000A1	mu onsite energy		
Moceanisses (asty, 5 % Cg) Michael cooler 2nd stage water temperature (in) C C C C C C C C C	• • •		400	·	50	
Multure cooler 1st stage water temperature (ii) C	• , ,					
Mature cooler 2nd stage water temperature (in) C Mature 2nd Catalytic converter C C Add C C Add C C C C C C C C C		•		< 500		
Catalytic converter	• • • • • • • • • • • • • • • • • • • •					
Catalytic Converter	• • • • •					
Special pulpment Mittude above sea level	• •	°C				
Additional above see level	· ·			not included		
Contact proper pattern Co Relative combustion and tremplations Seminary aspecifications and regulations Seminary aspecifications Seminary as	·					
Security			100	·	1000	
	•					
Electrical Power No. 1286 985 643 645 646 64	· · · · · · · · · · · · · · · · · · ·	%		30		
Energy in part March Mar						
Thermal output totaling (blook, lube oil, 1st stage mixture cooler) 6						
Thermal quount engine (block), kbe oil. 1st stage minuture cooler) 348 186 47 18						
Thermail output mixture cooler 1st stage 6						
Thermal part (170°C)			664	495	348	
Enhance March Carlo Ca			00	66	47	
Engine power ISO 3046-1						
Cenerator efficiency at power factor = 1	Engine power ISO 2046 1 2)					
Electrical efficiency						
Total efficiency						
Power consumption Power consumption Power community Power						
Combustion air / Exhaust gas Combustion of wolume flow " m² 1 N.h 5019 3786 2582 Combustion air mass flow kgh 6481 4889 3335 Exhaust gas volume flow, vot "0 m² 1 N.h 5183 3914 2673 Exhaust gas sons flow met the flow of "0" m² 1 N.h 4791 3910 2460 Exhaust gas sons flow wet the trubcocharger "C 440 472 498 Exhaust temperature after trubcocharger "C 440 472 498 Reference foul' "C 440 472 498 Reference foul' "C 440 472 498 Blogas "C 440 72 89 Whirmal gas MZ 80 10.0 10.5 18.0 11.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0			01.1	07.0	57.1	
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Exhaust gas volume flow, ord, ""						
Exhaust gas mass flow, we!						
Exhaust temperature after turbocharger Netural gas Reference tuel Regerance tuel Regeranc			6700	5060	3455	
Natural gas		-	440	472	498	
Sewange pase						
Biogas	Natural gas			CH ₄ >95 Vol.%		
Landfill gas	Sewage gas			not applicable		
Fuel requirements ** Minimum menthume number MAZ 80	Biogas			not applicable		
Minimum methane number MZ 80 Range of heating valuer design / operation range without power derating Shathing valuer design / operation range without power derating Shathing valuer design / operation range without power derating Shathing valuer design / operation range without power derating Shathing valuer design / operation range without power derating Shathing valuer design / operation valuer Shathing valuer design / operation valuer Shathing valuer design / operation valuer Shathing	Landfill gas			not applicable		
Range of heating value: design / operation range without power derating kWh/m³ l.N. 40.0 - 10.5 / 8.0 - 11.0 Exhaust gas emissions ³³9 mg/m³ l.N. < 500	Fuel requirements 9)					
Exhaust gas emissions 918						
CO (dry, 5 % O₂) mg/m³ i.N. < 1000 HCHO (dry, 5 % O₂) mg/m² i.N. Otto-gas engine, lean burn operation with turbocharging Number of cylinders / configuration 12 / V Engine speed 1/min 1500 Bore mm 170.0 Stroke mm 210.0 Displacement dm³ 57.2 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 dm³h 0.45 Exhaust back pressure min max. after module mbar - mbar 30 - 60 Generator Rating power (temperature rise class F) ¹¹⁾ kVA 1770 Insulation class / temperature rise class F) ¹¹⁰ kVA 1770 Insulation class / temperature rise class F) ¹¹⁰ kVA 1770 Insulation class / temperature rise class F) ¹¹⁰ kVA 1770 Insulation class / temperature rise class F) ¹¹⁰ kVA 1770	Exhaust gas emissions 5) 8)		500	10.0 - 10.5 / 8.0 - 11.0		
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Mode March March			< 1000			
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Engine speed	, ,		12	12\/4000L23EN	V	
Bore	0 71	1/min				
Stroke mm 210.0 Displacement dm³ 57.2 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 0.45 Exhaust back pressure min max. after module mbar - mbar 30 - 60 Generator Rating power (temperature rise class F) ¹¹ kVA 1770 Insulation class / temperature rise class F / F Winding pitch 2/3 7 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 Colant temperature (in / out), design °C 78 / 90 Coolant flow rate, constant ¹³ ¹⁴ m³/h 51.6 51.6 Pressure drop, design ¹⁴ Cv value ¹³ ¹⁵ ¹⁵ bar / m³/h 6.0 Exhaust gas heat exchanger (EGHE) Exhaust gas keat exchanger (EGHE) Exhaust gas keat exchanger (EGHE) Coolant temperature (in / out),		· · · · · · · · · · · · · · · · · · ·				
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BMEP at nominal engine speed min-1		111/3				
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Insulation class / temperature rise class		kVA		1770		
Protection				F/F		
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Exhaust gas heat exchanger (EGHE) Exhaust gas temperature (out) Coolant temperature (in / out), design °C 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 Coolant volumetric flow, constant 13) 14) Min. design 14) Cv value 13) 15) KPa / m³/h / bar /			2.43	/ e o	<i>33.</i> b	
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Pressure drop, design ¹⁴⁾ Cv value ^{13) 15)} kPa / m³/h / min. coolant flow rate / min. operation gauge pressure m³/h / bar /	Coolant volumetric flow constant ^{13) 14)}					
Min. coolant flow rate / min. operation gauge pressure m³/h / bar /	Pressure drop design 14) Cy value 13) 15)					
	Max. operation pressure (coolant water)	bar		· · · · · · · · · · · · · · · · · · ·		

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Technical Data Sheet	MTU 12V4000 GS
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GG12V4	UUUAI			energ
			mtu	
00				
°C				
m³/h				
bar / m³/h				
		/		
bar				
	0.24	/		53.7
bar		6	i	
°C				
m³/h				
bar / m³/h		/		
bar				
kW		70	0	
°C		20 / 2	5 / 30	
°C		1:	5	
K		20	0	
%	100			50
%	-			-
, ,				
V / kW / Ah		24 / 9	9 /	
V / KVV / / UI		217	<i>,</i>	
dm3		22	20	
			J	
am³				
	80	/		170 - 250
				=
				500
				93.6
				8000
· · · · · · · · · · · · · · · · · · ·		89.8	87.9	98.1
Lin dB	101.2			
dB A	100.4			
dB	119.7			
(A) for total A-weighted	l level tolerance	•		
Hz	63	125	250	500
dB	113.8	115.7	113.1	105.7
Hz	1000	2000	4000	8000
dB				86.3
· · · · · · · · · · · · · · · · · · ·		<u> </u>		
QD	120.0			
mm		_ 47	700	
mm		~ 47		
mm		~ 2300 ~ 12500 (~ 12000)		
		~ 12500 (~ 12000)	
kg				
kg				
kg		specific to t		
kg		specific to t	the project	
kg		specific to to	the project the project	
kg		specific to t	the project the project	
	bar / m³/h bar kW °C °C K m³ i.N./h % V / kW / Ah dm³ dm³ dm³ dm³ dm³ dm³ dm³ dm³ dm³ dm	bar °C 40 / 43.2 m³/h 25.7 bar / m³/h 0.24 bar °C °C °C m³/h bar / m³/h bar / m³/h bar kW °C °C °C K m³ i.N./h % 100 % - V / kW / Ah 4m³ dm³ dm³ dm³ dm³ dm³ dm³ el tolerance Hz 63 dB 78.1 Hz 1000 dB 92.3 Lin dB 101.2 dBA 100.4 dB 119.7 (A) for total A-weighted level tolerance Hz dB 113.8 Hz 1000 dB 97.7 Lin dB 119.3 dBA 107.9 dB 120.5	°C 40 / 43.2 m³/h 25.7 bar / m³/h 0.24 / bar 6 °C °C °C m³/h bar / m³/h / bar / m³/h / bar kW 7 °C °C 20 / 22 °C K 21 °C 19 K 22 °C 11 7 % 100 73 7 2 V / kW / Ah 24 / 3 24 3	bar °C 40 / 43.2 m³/h 25.7 bar / m³/h 0.24 / bar 6 °C °C m³/h / bar / kW 70 °C 20 / 25 / 30 °C 15 K 20 m³ i.N./h 15000 % 100 75 % 100 75 % - - V/ kW / Ah 24 / 9 / dm³ 220 dm³ 200 dm³ 200 dm³ 200 dm³ 200 dm³ 200 dm³ 20 db 78.1 86.0

- 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
 According to ISO 3046 (+ 5 % tolerance), using reference fuel used at nominal voltage, power factor = 1 and nominal frequency 4)
- 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)
- 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
- 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)

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