

Technical datasheet of CHP unit

KE-MTUNG 1000-BLE

	400 V / 50 Hz		Natural gas	
	Electrical power		kW	999
	Total thermal output		kW	1114
	Energy input		kW	2326
	Fuel consumption		m _N ³ /h	246,3
	Electrical efficiency		%	42,9
	Thermal efficiency with LT		%	51,0
	Thermal efficiency without LT		%	47,9
Overall efficiency with LT			%	93,9

Engine: MTU Type: 8V4000L64FNER		Alternator: Stamford		Type:	
No. of cylinders / configuration	-	8V	Voltage / frequency	V/Hz	400/50
Engine speed	min ⁻¹	1500	PF (leading / lagging)	-	0,95 / 0,8
Bore / stroke / displacement	mm / mm / dm ³	170/210/38,1	Alternator efficiency at rated power	%	97,4
Compression ratio	-	12,5	Max. ambient temperature	°C	40
Engine power max.	kW	1026			
Spark plugs type	-	M18			
Lube oil consumption max.	dm ³ /h	0,17			
Lube oil filling quantity max.	dm ³	200			

					CHP unit performance parameters at rated load
Energy balance					
Load	%	100	75	50	100
ISO standard engine power	kW	1026	772	520	1026
Electrical power	kW	999	749	501	999
Engine cooling thermal output	kW	535	401	272	535
Exhaust gas thermal output (120 °C)	kW	516	428	345	516
Exhaust gas thermal output (80 °C)	kW	63	47	32	63
Thermal output mixture cooling - LT	kW	73	51	33	73
Total thermal output	kW	1114	876	649	1114
Radiation heat max.	kW	59	-	-	59
Energy input 1)	kW	2326	1789	1267	2326
Fuel consumption	m _N ³ /h	246,3	189,4	134,2	246,3
Combustion air mass flow	kg/h	5074	3830	2595	5074
Exhaust gas mass flow, wet	kg/h	5244	3960	2688	5244
Exhaust temperature after turbocharger	°C	431	461	521	431
Alternator efficiency at PF=1	%	97,4	97,1	96,3	97,4
Electrical efficiency 1)	%	42,9	41,9	39,5	42,9
Thermal efficiency	%	47,9	49,0	51,2	47,9
Overall efficiency without LT	%	90,8	90,9	90,7	90,8

1) According to ISO 3046.

Fuel: Natural gas

Min. methane number	-	72
Lower calorific value	MJ/m _N ³	34
Gas pressure at gas regulation line inlet 1)	kPa	12÷25
Max. gas temperature	°C	30

1) -

Heating water circuit

Thermal output	kW	1114
Temperature gradient	°C / °C	90 / 70
Min. cooling medium volume flow	m ³ /h	49,20
Max. allowable pressure loss 1)	kPa	50
Heat transfer medium	-	Treated water
Max. operating pressure	bar	6

1) Heating water circuit out of scope of supply of GENTEC CHP.

LT mixture cooling circuit

Thermal output	kW	73
Temperature gradient	°C / °C	44,6 / 43
Cooling medium volume flow	m³/h	41,70
Max. allowable pressure loss 1)	kPa	-
Heat transfer medium - ethylene glycol/water	%vol./%vol.	40/60
Max. operating pressure	bar	6
Dry cooler acoustic sound pressure level 2)	dB(A) at 10 m	65
Max. ambient temperature	°C	35

1) Pipework between CHP unit and dry cooler.

2) The value of the sound pressure level is considered in free field.

Emergency cooler

Thermal output	kW	1114
Heat transfer medium - ethylene glycol/water	%vol./%vol.	40/60
Max. allowable pressure loss 1)	kPa	-
Dry cooler acoustic sound pressure level 2)	dB(A) at 10 m	65
Max. ambient temperature	°C	35

1) Pipework between CHP unit and dry cooler.

2) The value of the sound pressure level is considered in free field

Ventilation and combustion air

Fan air volume flow 1)	m³/h	17900
Max. allowable pressure loss of air duct 2)	Pa	-
Max. inlet air temperature	°C	35

1) At temperature 35 °C and pressure 101,3 kPa.

2) Air ducts between CHP unit and air inlet/air outlet.

Exhaust gas system

Exhaust gas mass flow, wet	kg/h	5244
Exhaust gas temperature at CHP unit outlet	°C	80
Max. allowable pressure loss 1)	mbar	-
Silencer flanges 2)	-	-
Max. allowed exhaust gas velocity donstream silencer	m/s	40

1) Exhaust gas pipe between CHP unit and outlet excluding components at GENTEC CHP scope of supply.

2) According to EN 1092-1.

Emissions

CO	mg/m _N ³ @ 5 % O ₂	<300
NO _x	mg/m _N ³ @ 5 % O ₂	<250

Noise level

CHP unit design inside container	dB(A) at 10 m	70
Exhaust gas system	dB(A) at 1 m	80
Input/Output air ventilation	dB(A) at 1 m	80/80

All values of the sound pressure level is considered in free field.

Dimensions and weight

Container dimensions L/W/H	mm	12200/2438/2900
Dry weight CHP unit design inside container	kg	23000

Standard conditions and tolerances

Atmospheric pressure	kPa	100
Air temperature	°C	25
Relative air humidity	%	30
Tolerance for the electrical power	%	±3
Tolerance for the usable thermal output	%	±8
Tolerance for the specific fuel consumption	%	+5

The energy balance parameters listed in this data sheet are related to the standard conditions.

Detailed technical specifications of components on demand.

Change of technical parameters and printing errors reserved.

All values in the data sheet related to Normal conditions assume $T = 273,15\text{ K}$; $p = 101,325\text{ kPa}$

Minimum requirements for gas quality

Parameter	Unit	Limit value	Unit	Comment
Methane number ¹⁾	MN	> 72	-	Consult GENTEC CHP in case of lower methane numbers
Lower calorific value	H _u	> 8	kWh/m _N ³	
Chlorine concentration*	Cl	< 10	mg/m _N ³	Chlorine exists as a volatile compound
Fluorine concentration*	F	< 5	mg/m _N ³	Fluorine exists as a volatile compound
Total Chlorine - Fluorine content*	Σ(Cl, F)	< 10	mg/m _N ³	
Dust content < 3 µm*		< 5	mg/m _N ³	
Oil vapour*		< 0,4	mg/m _N ³	Condensation must not occur in the mixture section
Volatile organic compounds*	VOC	-	mg/m _N ³	Without saturated hydrocarbon compounds
Silicion content ^{2)*}	Si	< 1	mg/m _N ³	In the case of high concentrations, please consult GENTEC CHP
Total sulphur content*	S	< 30	mg/m _N ³	Hydrogen sulfide is included in the total sulfur content
Hydrogen sulphide content ^{3)*}	H ₂ S	< 3	ppm	Consult GENTEC CHP in case of higher concentrations
		< 5	mg/m _N ³	
Ammonia content*	NH ₃	< 70	ppm	
		< 53	mg/m _N ³	
Relative humidity	φ	< 80	%	Condensation must not occur in the mixture section
Temperature of the gas mixture after the gas mixer	T _G	5 ÷ 45	°C	
Hydrogen ^{4)*}	H ₂	< 2	% _{vol.}	

* If these components are also part of the intake air, they need to be allocated to the fuel gas as components. The limit values mentioned above yield a limit value for the total of components contained from intake air and fuel gas.

1) For all fuel gases, except natural gas, please contact GENTEC CHP

2) The engine oil may contain silicon due to additives (defoamers) being added. However, silicon may also have been diffused into the engine oil in form of dust due to insufficient air filtering or gas filtering. Therefore, the concentration of silicone in the gas shall always be evaluated together with the oil analyses. Depending on the occurrence in organic or inorganic form, high concentrations of silicone in the engine oil can result in increased component wear. The contents of wear elements such as iron, chromium and aluminum shall also be included in the evaluation in case of increased silicon content in the engine oil.

3) If catalyst is used, maximum allowed hydrogen sulphide is < 3 ppm (5 mg/ m_N3)

4) In case of higher hydrogen content, contact GENTEC CHP s.r.o.

Release date	Created	Revision	Project / Offer
24.07.2024	EB	1	