Technical datasheet of CHP unit

KE-MTUNG 2000-ASE

	400 V / 50 Hz	Natural gas
Electrical power	kW	1999
Total thermal output	kW	2146
Energy input	kW	4519
Fuel consumption	Nm^3/h	478,5
Electrical efficiency	%	44,2
Thermal efficiency with LT	%	50,6
Thermal efficiency without LT	%	47,5
Overall efficiency with LT	**%**	**94,8**

Engine: MTU Type: 16V4000L64FNER

No. of cylinders / configuration	-	16V
Engine speed	min^{-1}	1500
Bore / stroke / displacement	mm / mm / dm^3	170/210/76,3
Compression ratio	-	12,5
Engine power max.	kW	2050
Spark plugs type	-	M18
Lube oil consumption max.	dm^3/h	0,35
Lube oil filling quantity max.	dm^3	330

Alternator: Stamford Type:

Voltage / frequency	V/Hz	400/50
PF	-	0,8L / 0,95C
Alternator efficiency at rated power	%	97,5
Max. ambient temperature	°C	40

Energy balance

					CHP unit performance parameters at rated load
Load	%	**100**	**75**	**50**	**100**
ISO standard engine power	kW	2050	1538	1040	**2050**
Electrical power	kW	1999	1499	1009	**1999**
Engine cooling thermal output	kW	1043	780	560	**1043**
Exhaust gas thermal output (120 °C)	kW	984	804	627	**984**
Exhaust gas thermal output (80 °C)	kW	119	89	61	**119**
Thermal output mixture cooling - LT	kW	142	95	60	**142**
Total thermal output	kW	2146	1673	1248	**2146**
Radiation heat max.	kW	113	-	-	**113**
Energy input 1)	kW	4519	3451	2453	**4519**
Fuel consumption	Nm^3/h	478,5	365,4	259,7	**478,5**
Combustion air mass flow	kg/h	9611	7206	4898	**9611**
Exhaust gas mass flow, wet	kg/h	9942	7459	5078	**9942**
Exhaust temperature after turbocharger	°C	432	459	506	**432**
Alternator efficiency at PF=1	%	97,5	97,5	97	**97,5**
Electrical efficiency 1)	%	44,2	43,4	41,1	**44,2**
Thermal efficiency	%	47,5	48,5	50,9	**47,5**
Overall efficiency without LT	**%**	**91,7**	**91,9**	**92,0**	**91,7**

1) According to ISO 3046.

Fuel: Natural gas

Min. methane number	-	72
Lower calorific value	MJ/Nm^3	34
Gas pressure at gas regulation line inlet 1)	kPa	15÷25
Max. gas temperature	°C	30

1) The gas regulation line for MAN engines is standardly dimensioned at 4 ÷ 5 kPa.

Heating water circuit

Thermal output	kW	2146
Temperature gradient	°C / °C	90 / 70
Min. cooling medium volume flow	m^3/h	94,78
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.

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LT mixture cooling circuit

Thermal output	kW	142
Temperature gradient	°C / °C	46,9 / 43
Cooling medium volume flow	m^3/h	34,30
Max. allowable pressure loss 1)	kPa	25
Heat transfer medium concentration - glycol / water	% vol./% vol.	40/60
Max. operating pressure	bar	6
Dry cooler acoustic sound pressure level at 10 m 2)	dB(A)	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)	m^3/h	34100
Max. allowable pressure loss of air duct 2)	Pa	50
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	9942
Exhaust gas temperature at CHP unit outlet	°C	80
Max. allowable pressure loss 1)	mbar	10
Silencer flanges 2)	-	DN500-PN10

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/Nm^3	<650
NO_x	mg/Nm^3	<500

Correlation 5% O_2.

Noise level

CHP unit design without canopy 1)	dB(A)	104,4
CHP unit design with canopy 1)	dB(A)	80
Exhaust gas noise at 1 meter distance to silencer outlet 3)	dB(A)	80
Input/Output air ventilation 1)	dB(A)	80/80

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

1) Sound pressure level measured at 1 m distance from the CHP unit.

2) Sound pressure level measured at 10 m distance from the container.

3) On request, noise can be reduced by additional optimization of the standard silencer.

Dimensions and weight

Canopy dimensions L/W/H	mm	8100/2800/2900
Dry weight of CHP unit design with canopy	kg	28200

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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.

Release date	Created	Revision	Project / Offer
2205	EB	0	