Technical datasheet of CHP unit

KE-MNG 450-BL

	400 V / 50 Hz	Natural gas
Electrical power	kW	435
Total thermal output	kW	581
Energy input	kW	1169
Fuel consumption	Nm^3/h	123,8
Electrical efficiency	%	37,2
Thermal efficiency with LT	%	52,5
Thermal efficiency without LT	%	49,7
Overall efficiency with LT	**%**	**89,7**

Engine: MAN Type: E3262 LE232

No. of cylinders / configuration	-	12V
Engine speed	min^{-1}	1500
Bore / stroke / displacement	mm / mm / dm^3	132/157/25,78
Compression ratio	-	12
Engine power max.	kW	450
Spark plugs type	-	M18
Lube oil consumption max.	kg/h	0,18
Lube oil filling quantity max.	dm^3	90

Alternator: Leroy-Somer Type: LSA 47.3 L9

Voltage / frequency	V/Hz	400/50
PF	-	0,8L / 0,8C
Alternator efficiency at rated power	%	96,6
Max. ambient temperature	°C	40

Energy balance

					CHP unit performance parameters at rated load
Load	%	**100**	**75**	**50**	**100**
ISO standard engine power	kW	450	337	225	**450**
Electrical power	kW	435	326	216	**435**
Engine cooling thermal output	kW	234	200	171	**234**
Exhaust gas thermal output (120 °C)	kW	293	229	167	**293**
Thermal output mixture cooling - HT	kW	54	25	3	**54**
Thermal output mixture cooling - LT	kW	33	22	15	**33**
Total thermal output	kW	581	454	341	**581**
Radiation heat max.	kW	28	22	15	**28**
Energy input 1)	kW	1169	894	636	**1169**
Fuel consumption	Nm^3/h	123,8	94,7	67,3	**123,8**
Combustion air mass flow	kg/h	2403	1794	1237	**2403**
Exhaust gas mass flow, wet	kg/h	2492	1862	1285	**2492**
Exhaust temperature after turbocharger	°C	447	-	-	**447**
Alternator efficiency at PF=1	%	96,6	96,6	95,9	**96,6**
Electrical efficiency 1)	%	37,2	36,4	33,9	**37,2**
Thermal efficiency	%	49,7	50,8	53,6	**49,7**
Overall efficiency without LT	**%**	**86,9**	**87,2**	**87,5**	**86,9**

1) According to ISO 3046.

Fuel: Natural gas

Min. methane number	-	80
Lower calorific value	MJ/Nm^3	34
Gas pressure at gas regulation line inlet 1)	kPa	4÷10
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	581
Temperature gradient	°C / °C	90 / 70
Min. cooling medium volume flow	m^3/h	25,66
Pressure loss of heating circuit 1)	bar	0,27
Heat transfer medium	-	Treated water
Max. operating pressure	bar	6

1) Pressure loss of all heating water circuit components at GENTEC CHP scope of supply.

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LT mixture cooling circuit

Thermal output	kW	33
Temperature gradient	°C / °C	46 / 42
Cooling medium volume flow	m^3/h	7,71
Max. allowable pressure loss 1)	kPa	-
Heat transfer medium concentration - glycol / water	% vol./% vol.	40/60
Max. operating pressure	bar	3
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	11300
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	2492
Exhaust gas temperature at CHP unit outlet	°C	120
Max. allowable pressure loss 1)	mbar	-
Silencer flanges 2)	-	-

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	<300
NO_x	mg/Nm^3	<250

Correlation 5% O_2.

Noise level

CHP unit design inside container 2)	dB(A)	65
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

Container dimensions L/W/H	mm	8090/2490/3117
Dry weight CHP unit design inside container	kg	16000

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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	%	±7
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	