



400 V / 50 Hz

Biogas

Electrical power	kW	105
Total thermal output	kW	130
Energy input	kW	280
Fuel consumption	Nm ³ /h	46,7
Electrical efficiency	%	37,5
Thermal efficiency with LT	%	49,6
Thermal efficiency without LT	%	46,3
Overall efficiency with LT	%	87,1

Engine: MAN Type: E0836 LE302

Alternator: Leroy-Somer

Type: LSA 44.3 L10

No. of cylinders / configuration	-	6 in line	Voltage / frequency	V/Hz	400/50
Engine speed	min ⁻¹	1500	PF	-	0,8L / 0,8C
Bore / stroke / displacement	mm / mm / dm ³	108/125/6,87	Alternator efficiency at rated power	%	95,4
Compression ratio	-	11	Max. ambient temperature	°C	40
Engine power max.	kW	110			
Spark plugs type	-	M14			
Lube oil consumption max.	kg/h	0,125			
Lube oil filling quantity max.	dm ³	34			

Energy balance

					CHP unit performance parameters at rated load
Load	%	100	75	50	100
ISO standard engine power	kW	110	83	55	110
Electrical power	kW	105	79	52	105
Engine cooling thermal output	kW	77	71	60	77
Exhaust gas thermal output (180 °C)	kW	47	37	26	47
Thermal output mixture cooling - HT	kW	6	2	0	6
Thermal output mixture cooling - LT	kW	9	3	1	9
Total thermal output	kW	130	110	86	130
Radiation heat max.	kW	5	3	2	5
Energy input 1)	kW	280	220	159	280
Fuel consumption	Nm ³ /h	46,7	36,7	26,5	46,7
Combustion air mass flow	kg/h	527	398	227	527
Exhaust gas mass flow, wet	kg/h	584	442	310	584
Exhaust temperature after turbocharger	°C	410	-	-	410
Alternator efficiency at PF=1	%	95,4	95,2	94	95,4
Electrical efficiency 1)	%	37,5	35,9	32,5	37,5
Thermal efficiency	%	46,3	50,2	54,3	46,3
Overall efficiency without LT	%	83,8	86,1	86,8	83,8

1) According to ISO 3046.

Fuel: Biogas

Min. methane number	-	100
Lower calorific value	MJ/Nm ³	21,6
Biogas composition CH ₄ /CO ₂	% vol./% vol.	60/40
Gas pressure at gas regulation line inlet 1)	kPa	1,5÷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	130
Temperature gradient	°C / °C	87 / 70
Min. cooling medium volume flow	m ³ /h	6,71
Pressure loss of heating circuit 1)	bar	0,19
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.

LT mixture cooling circuit

Thermal output	kW	9
Temperature gradient	°C / °C	46 / 42
Cooling medium volume flow	m ³ /h	2,10
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.

Emergency cooler

Thermal output	kW	130
Heat transfer medium	-	Ethylene glycol/Water-40/60
Max. allowable pressure loss 1)	kPa	15
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	2600
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	584
Exhaust gas temperature at CHP unit outlet	°C	180
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	<450
NO _x	mg/Nm ³	<500

Correlation 5% O₂.

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	6010/1900/2438
Dry weight CHP unit design inside container	kg	5500

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	