

Basic Technical Data

nominal electrical output	999	kW
maximum heat output ¹⁾	1089	kW

load	50	75	100	%
maximum heat output	643	876	1089	kW
fuel input	1299	1829	2345	kW
electrical efficiency	38,4	40,9	42,6	%
heat efficiency	49,5	47,8	46,4	%
total efficiency (fuel utilization)	87,9	88,7	89,0	%
gas consumption	200	281	361	Nm ³ /hr

The Basic Technical Data are applicable for the standard conditions pursuant to the "Technical instructions" document.

The minimum permanent electrical output must not drop below 50 % of the nominal output.

Gas consumption is mentioned for biogas with methane content 65%, at normal conditions (0°C, 101,325 kPa).

Gas consumption tolerance, or fuel input tolerance, at 100% load is +5%.

Tolerance of other parameters are mentioned in "Technical Instructions-Validity of Technical Data" document.

1) Maximum heat output is a sum of heat outputs of secondary circuit with exhaust gas cooled to 150°C and aftercooler circuit

Observance of Emission Limits

emissions	NOx	CO	
with 5% of O ₂ in exhaust gases	500	650	mg/Nm ³

Generator

type	MJB 450 LB4
producer	MARELLI
cos φ	1,0
efficiency in the working point	97,3 %
voltage	400 V
frequency	50 Hz

Engine

type	TCG 2020 V12
producer	MWM
number of cylinders	12
arrangement of cylinders	V
bore × stroke	170/195 mm
displacement	53 dm ³
compression ratio	14 : 1
speed	1500 rpm
nominal oil consumption	0,15 g/kWh
max. engine output	1026 kW

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Thermal System

Secondary Circuit

heat carrier	water
circuit's heat output	1037 kW
nominal water temperature, input / output	70/90 °C
nominal temperature drop	20 °C
return water temperature, min / max	40/70 °C
nominal flow rate	12,4 kg/s
max. working pressure	600 kPa
allowed operation over-pressure on connecting flanges ¹⁾	450 kPa
min. pressure in system	100 kPa
water volume in CHP unit circuit	150 dm ³
pressure reserve of pump for covering pressure losses outside container	50 kPa

1) highest allowed over-pressure created by connected system to secondary circuit in place of connecting flanges.

Primary Circuit

heat carrier	water + ethylene glycol
ethylene glycol's concentration	35 %
circuit's heat output	1037 kW
max. working pressure	300 kPa
water volume in CHP unit circuit	1500 dm ³



Aftercooler Circuit ¹⁾

heat carrier	water + ethylene glycol	
ethylene glycol's concentration	35	%
circuit's heat output	52	kW
coolant temperature (outlet from CHP unit – informative)	61	°C
coolant temperature (inlet into CHP unit) max	60	°C
nominal flow rate	9,7	kg/s
max. working pressure	300	kPa
water volume in CHP unit circuit	225	dm ³

1) Parameters are valid if the dry cooler (optional) is part of delivery

Fuel, Gas Inlet

methane content	65	%
minimal methane content	> 45	%
low heat value	23,4	MJ/Nm ³
gas pressure	6	kPa
max. pressure change under varying consumption	10	%
max. gas temperature	35	°C

Combustion and Ventilation Air

unused heat removed by the ventilation air	65	kW
amount of combustion air	3820	Nm ³ /hr
outdoor air temperature, min / max	-20/35	°C
max. air temperature at the outlet flange	50	°C

Exhaust Gas and Condensate Outlet

amount of exhaust gases	4149	Nm ³ /hr
exhaust gas temperature, nominal / max	150/180	°C
max. back-pressure of exhaust gases downstream the CHP unit flange	10	mbar
speed of exhaust gases at the outlet (DN 400)	14	m/s

Lubricant Charges

amount of lubrication oil in the engine	205	dm ³
volume of engine additional oil tank	510	dm ³
replenishment oil tank volume	350	dm ³

Noise Parameters

CHP unit in 10m from container	78	dB(A)
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Electrical Parameters

nominal voltage	230/400	V
nominal frequency	50	Hz
power factor ¹⁾	0,87	
nominal current at cos φ=0.8	1802	A
generator circuit breaker	NW25 H1 3P	
short-circuit resistance of switchboard R1	40	kA
short-circuit resistance of switchboards R2, R3, R4 and R5	10	kA
contribution of the actual source to the short-circuit current	< 20	kA
protection of power switchboard R1 closed/open	IP 31/00	
protection of control switchboard R2 closed/open	IP 31/00	
protection of frequency changers' switchboard R3 closed/open	IP 31/00	
protection of engine switchboard R4 closed/open	IP 31/00	
protection of cooling switchboard R5 closed/open	IP 66/00	
recommended superior protection	2250	A
recommended connection cable ²⁾ (l < 50m, at t < 35°C)	5xNYY (3x240+120)	

1) Power factor adjustable from 0,87C ÷ 1 ÷ 0,87L (range from 0.87C ÷ 1 must be verified according to the various types of generators).

L = inductive load - overexcited

C = capacitive load - underexcited

Operation of the generator with a power factor of less than 0.95 causes a power limitation sets the following table:

power factor [-]	1	0,95	0,87
output [% Pnom]	100	100	98

2) The stated cables are for information only. A check calculation for temperature rise and voltage drop must be made according to the actual length, placement and type of the cable (maximum allowed voltage drop is 10 V)



Colour Version

engine and generator, internal parts of unit	RAL 5010 (blue)
container	RAL 5013 (blue)

Unit Dimensions and Weight¹⁾

length total	14500	mm
width total	6000	mm
height total	10000	mm
service weight of the entire CHP unit	37230	kg

1) *Approximate values*

Caution

Manufacturer reserves the right to alter this document and the linked source materials.

