

**Operational mode** Mains parallel operation  
**Energy efficiency** <sup>4)</sup> **A++**

**Fuel** Natural gas

stepless modulation range	-100%-	-50%-
<b>Electric output</b> ( $P_{el}$ )	<b>50,0 kW</b>	<b>25,0 kW</b>
<b>Thermal output</b> <sup>9)</sup> ( $P_{th}$ )		
Return-temperature 40°C	<b>87,7 kW</b>	<b>54,0 kW</b>
Return-temperature 60°C	<b>85,5 kW</b>	<b>53,8 kW</b>
<b>Fuel consumption</b> <sup>1)</sup>		
Return-temperature 40°C	<b>138,9 kW</b>	<b>82,7 kW</b>
Return-temperature 60°C	<b>138,9 kW</b>	<b>82,9 kW</b>
<b>CHPP coefficient</b> <sup>3)</sup>	<b>0,57</b>	0,46

- All of the following information at rated power (100%) and 40 ° C return -

<b>Efficiency</b>	DIN ISO 3046-1	Actual value
<b>Total efficiency</b>	<b>99,1 %</b>	94,2%
<b>Electric efficiency</b>	<b>36,0 %</b>	34,2%
<b>Thermal efficiency</b>	<b>63,2 %</b>	60,0%
<b>Primary energy savings</b> <sup>5)</sup>	<b>32,9 %</b>	29,4 %
<b>Primary energy factor</b> $f_{PE,WV}$ <sup>6)</sup>	<b>0,15</b>	0,24
<b>Total annual use efficiency</b> <sup>5)</sup>	<b>99,1 %</b>	94,2 %

**Gas connection pressure** 20-50 mbar  
**Gas flow pressure**  $\geq$  16 mbar  
**Flow rate** with natural gas-H 14,6 Nm<sup>3</sup>/h (10,0 kWh/m<sup>3</sup>)

**Flow temperature** max. 90°C  
**Return temperature** max. 70°C  
**Max. System pressure** 4 bar (heating side)

**Supply air volume flow** min. 600 m<sup>3</sup>/h  
**Exhaust air volume flow** min. 450 m<sup>3</sup>/h  
**Ambient temperature** 5°C to max. 35°C

**Exhaust gas emissions** <sup>9)</sup> at 5 Vol% remaining oxygen  
CO (carbon monoxide) 80 mg/m<sup>3</sup>  
NOx (nitrogen oxide) 90 mg/m<sup>3</sup>  
CH<sub>2</sub>O (formaldehyde) < 1 mg/m<sup>3</sup>

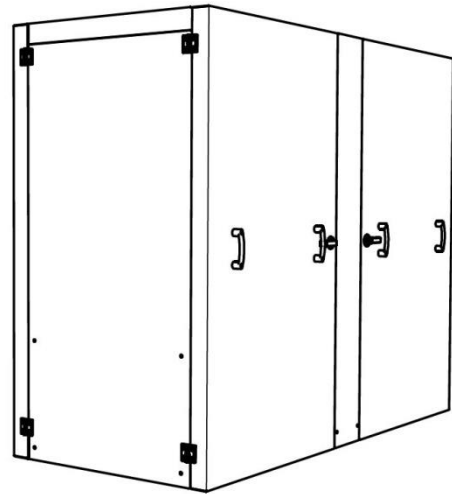
**Exhaust gas temperature** <sup>1)</sup> max. 130 °C  
**Exhaust gas volume flow** ~ 200 m<sup>3</sup>/h  
**Exhaust gas mass flow** dry ~ 195 kg/h  
**Exhaust gas back pressure** <sup>7)</sup> max. 5 mbar after CS  
**Sound pressure level CHPP** <sup>8)</sup> 53,9 dB(A) (1 m distance)

**CHPP: Dimensions, weights and connections**  
L x W x H CHPP 2,24 x 0,96 x 1,73 m  
(w/o handles, exhaust air opening)

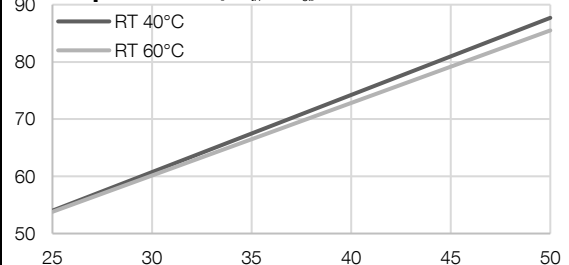
Weight CHPP incl. oil + water 1820 kg  
Colour CHPP Pantone 5517C

Heating connections R 1 1/4" Flow (warm)  
R 1 1/4" Return (cold)

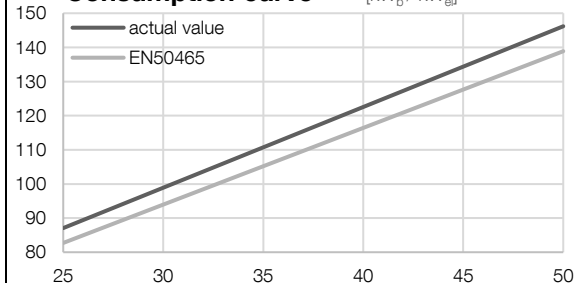
Exhaust gas connection <sup>7)</sup> DN120 (Jeremias ew-kl)  
Gas connection R 1"



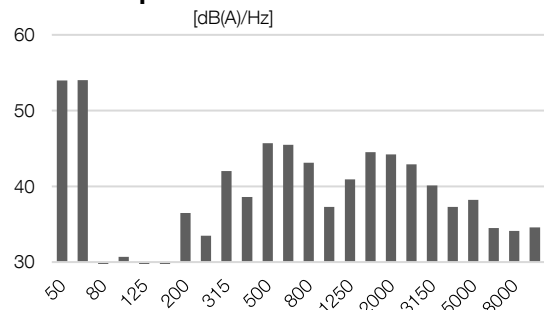
**Output curve** [kW<sub>th</sub> / kW<sub>el</sub>]



**Consumption curve** <sup>1) 2)</sup> [kW<sub>b</sub> / kW<sub>el</sub>]



**Sound pressure level curve** <sup>8)</sup>



<sup>1)</sup> Independent of return temperature

<sup>2)</sup> Exhaust gas temperature 90°C

<sup>3)</sup> Return-temperature 40°C

<sup>4)</sup> According to EN 50465, tolerance 5%

<sup>5)</sup> According to EU RL 2004/8/EG with 100% internal use

<sup>6)</sup> According to EnEV 2014:  $f_{PE}$ -power = 2,8

<sup>7)</sup> Combination silencer

<sup>8)</sup> According to DIN EN ISO 3744®:2011-2

<sup>9)</sup> System as new values

<b>Engine</b>	<b>MAN E0834</b>
Type	Straight engine (Otto)
Operation	4-stroke
Cylinder	4
Displacement	4,58 litres
Nominal engine speed	1500 1/min

**Cabinet: Dimensions and weight**

(Wall mounting, connections at the bottom, standard cable set 6m)

W x D x H	0,80 x 0,40 x 1,80 m
Weight	190 kg
Colour	Pantone 5517C

**Asynchronous generator Weier DASGM**

Cooling	Water cooled
Power	56 kW
Voltage	400 V
Nominal current	94 A
Frequency	50 Hz

**Electrical data smartblock 50**

max. effective power $P_{Amax}$ :	50 kW
max. apparent power $S_{Amax}$ :	52 kVA
cos $\phi$	0,90
Nominal voltage UN:	400 V
Rated current $I_r$ :	75 A
Grid input:	Three phase current
Isolated operation intended?	No
Motor-driven start intended?	No
Starting current $I_A$ :	-
Short circuit current $I''K$ :	0,55 kA
Short circuit stability of the complete system $I_K$ :	10 kA
Reactive power compensation:	Existing
Number of compensation steps:	1
Reactive power per step:	25 kVAr
Detuning factor respectively resonance frequency:	0
Own requirement:	0,065 kVA

**Connection to the low voltage grid**

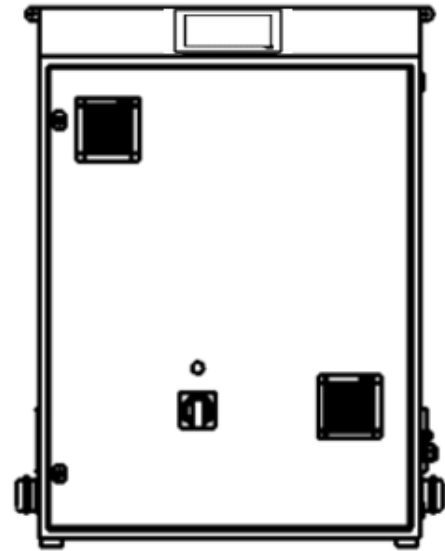
Operational mode according to VDE-AR-N 4105  
 "Generation units at the low voltage grid - technical minimum requirements for connection and parallel operation of generation units at the low voltage grid"

**Settings grid protection (VDE-AR-N 4105)**

Voltage drop protection U<	0,8 UN (100 ms)
Voltage increase protection U>	1,1 UN (100 ms)
Voltage increase protection U>>	1,15 UN (100 ms)
Frequency drop protection f<	47,5 Hz (100 ms)
Frequency increase protection f>	51,5 Hz (100 ms)

**Line protection on building site**

NH-fuses 100 A gL/gG



**smartblock 50 control BR18**

The freely programmable PLC system is equipped with analogue resistive touch screen display for controlling, regulating, counting and visualization, which are required for operating the CHP. The 10.1" display shows information from the CHP and the current status of the system.

The BR18 can optionally be expanded by a heating control system, requirement peak load boiler (up to 2 boilers), data transfer via LAN and Internet with an error notification via email (only with DSL) and an interface connection to external systems (Ethernet UDP, Mod-Bus RTU/TCP, RK512, 3964R).

Additionally, the CHPP can be connected to virtual power plants using VHP-Ready and net.storm.

Standard reference conditions according to EN 50465: The technical data are based on natural gas H with a heating value of 10,0 kWh/Nm<sup>3</sup> (Total air pressure 100 kPa, air temperature 25 °C, relative humidity 30 %, 0m above sea level). The nominal power can be less, depending on the actual height above sea level. The tolerance of the specific fuel consumption is +5% at nominal power (EN 50465) and the tolerance of the usable thermal output is 7% at nominal power. We reserve the right to change data and characteristics without prior notice in accordance with our business policy and the ongoing development process. All details refer to systems as new without wear and tear or traces of usage.