Operational mode	**Mains parallel operation**
Energy efficiency [1]	**A++**
Fuel	**Natural gas**

Stepless modulation range	- 100% -	- 50% -
Electric output (P_{el})	**22,0 kW**	**11,0 kW**
Thermal output [7] (P_{th})		
with calorific value use (RT 40 °C)	**51,2 kW**	**34,7 kW**
with calorific value use (RT 60 °C)	47,0 kW	31,3 kW
Fuel consumption [1]		
with calorific value use (RT 40 °C)	**67,9 kW**	**41,6 kW**
with calorific value use (RT 60 °C)	68,1 kW	41,6 kW
CHPP coefficient [2]	**0,43**	0,32

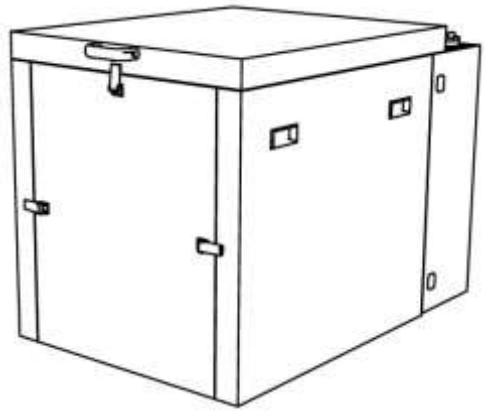
- All of the following information at rated power (100%) and 40 ° C return -

Efficiency	*- EN 50465 -*	*- actual value -*
Total effieciency	**107,9 %**	*102,5%*
Electric efficiency	**32,4 %**	*30,8 %*
Thermal efficiency	**75,5 %**	*71,7%*
Primary energy savings [3]	**35,4 %**	*32,0 %*
Primary energy factor $f_{PE,WV}$ [6]	**0,25**	*0,33*
Total annual use efficiency [3]	**107,9 %**	*102,5 %*

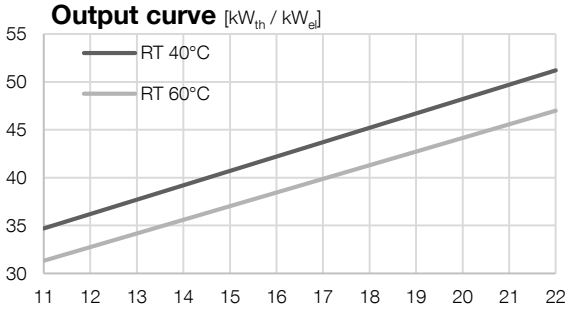
Gas-connection pressure	**20-50 mbar**
Gas-flow pressure	**≥ 16 mbar**
Flow rate *with natural gas*	**7,1 Nm³/h** *(10,0 kWh/m³)*
Flow temperature	**max. 90°C**
Return temperature	**max. 70°C**
Max. System pressure	**4 bar (heating side)**
Combustion air requirement	**min. 75 m³/h** *(85kg/h)*
Ambient temperature	**5°C to max. 35 °C**
Exhaust gas emissions	*at 0 Vol% remaining oxygen*
CO (carbon monoxide)	31,2 mg/kWh$_b$
NOx (nitrogen oxide)	17,1 mg/kWh$_b$
Exhaust gas temperature [2]	**~ 50 °C**
Exhaust gas volume flow	**~ 83 m³/h**
Exhaust gas mass flow *dry*	**~ 91 kg/h**
Exhaust gas back pressure [4]	**max. 5 mbar** *after CS*
Sound pressure level CHPP [5]	**47,1 dB(A)** *(1 m distance)*

CHPP: Dimensions, weights and connections

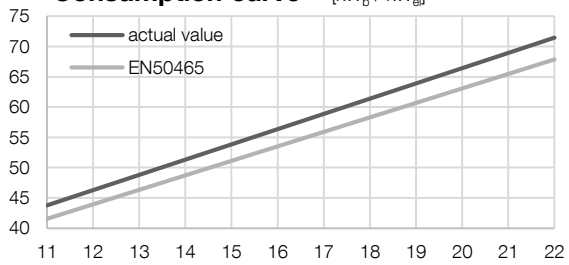
L x B x H CHPP *w/o handles*	1,41 x 0,82 x 0,98 m
Weight CHPP *incl. oil + water*	895 kg
ø x H CS [4]	0,30 x 1,52 m *(w/o flanges)*
Weight CS [4]	30 kg
Colour CHPP	Pantone 5517C
Heating connections (VL)	R 1“ Flow *(warm)*
	R 1“ Return *(cold)*
Exhaust gas connection CS [4]	DN100 *(Jeremias ew-kl)*
Gas connection	R 3/4“ *(NG)*



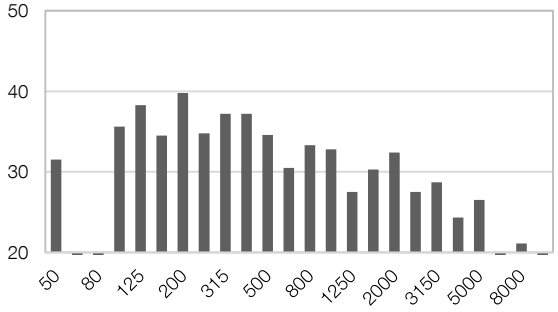
Output curve [kW_{th} / kW_{el}]



Consumption curve [2] [kW_b / kW_{el}]



Sound pressure level curve [5] [dB(A) / Hz]



[1] According to EN 50465, tolerance 5%
[2] Return-temperature 40°C
[3] According to EU RL 2004/8/EG with 100% internal use
[4] Combination silencer
[5] According to DIN EN ISO 3744:2011-2
[6] According to EnEV 2014: f_{PE} -power = 2,8
[7] System as new values

Engine	**K24**
Type	Straight engine (Otto)
Operation	4-stroke
Cylinder	4
Displacement	2,4 litres
Nominal engine speed	1500 1/min

Cabinet: Dimension and weight

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

B x T x H	0,40 x 0,19 x 0,52 m
Weight	21 kg
Colour	Pantone 5517C

Asynchronous generator	**Emod WKASYG**
Cooling	Water-cooled
Power	22 kW
Voltage	400 V
Nominal current	33 A
Frequency	50 Hz
Operating mode	S1

Electrical data smartblock 22

max. effective power PA_{max}:	22 kW
max. apparent power SA_{max}:	23 kVA
cos φ	0,97
Nominal voltage UN:	400 V
Rated current Ir:	33 A
Grid input:	Three phase current
Isolated operation intended?	No
Motor-driven start intended?	No
Starting current IA:	-
Short circuit current I"K:	0,21 kA
Short circuit stability of the complete system IK:	10 kA
Reactive power compensation:	Existing
Number of compensation steps:	1
Reactive power per step:	9 kVAr
Detuning factor respectively resonance frequency:	0
Own requirement:	0,045 kVA

Connection to the low voltage grid

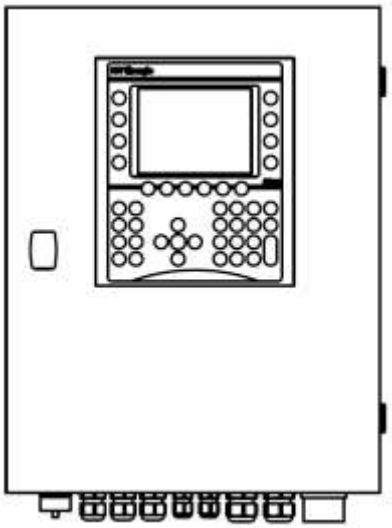
Operational mode according to VDE-AR-N 4105 "Generation units at the low voltage grid - technical minimum requirements for connection and parallel operation of generation units at the low voltage grid"

Settings grid protection (VDE-AR-N 4105)

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

Line protection on building site

Circuit breaker 50 A type C



smartblock 22 control BR06

Freely programmable SPS control system to control, adjust, calculate, measure and display results. The control system is equipped with a full graphics display and all function buttons, required to operate the combined heat and power plant. The 5,7“ LCD display shows information about the system and its current status.

The BR06 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^3 (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.