KW Energie GmbH & Co. KG

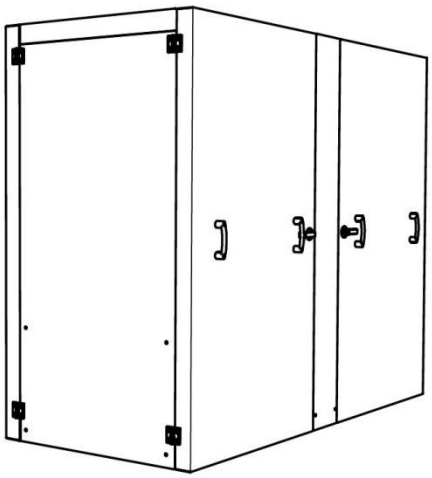
Data sheet high efficiency CHP

smartblock® | 50T

Version	**Grid parallel operation**
Fuel	**Wood gas**
Continuous modulation range (Pel)	*- 100 % -*
Electrical power (P_{el})	**50.0 kW**
Thermal power [7] (P_{th})	
Return flow 40 °C	**88.3 kW**
Fuel consumption[1] (P_b)	
Return flow 40 °C	**150,2 kW**
Current rating[2]	**0.57**
Efficiency at 100 %[1] [2]	*- actual value -*
Efficiency total	*92,1%*
Efficiency electrical	*33,3 %*
Efficiency thermal	*58,8 %*
Flow temperature	**max. 90 °C**
Return flow temperature	**max. 70 °C**
Max. system pressure	**4 bar** *(heating side)*
Input air volume	**min. 600 m³/h**
Ambient temperature	**5 °C to max. 35 °C**
Exhaust gas emissions	*at 5 vol.% residual oxygen*
CO (carbon monoxides)	< 300 mg/m³
NOx (nitric oxides)	< 500 mg/m³
Exhaust gas temperature [2]	**max. 160 °C**
Exhaust gas volume flow	**~ 290 m³/h**
Exhaust gas mass flow *dry*	**~ 330 kg/h**
Exhaust gas counter-pressure *acc. to KSD*[4]	**max. 5 mbar**
Noise pressure level CHP[8]	**55.0 dB(A)**

CHP: dimensions, weights and connections

L x W x H CHP *w7o handles*	2.26 x 0.96 x 1.71 m
Weight CHP *incl. oil + water*	2020 kg
ø x H KSD [4]	0.41 x 1.74 m *(w/o flanges)*
Weight KSD[4]	80 kg
Colour CHP	Pantone 5517C
Heating connections	R 1 1/4“ flow *(warm)*
	R 1 1/4“ return flow *(cold)*
Exhaust gas fitting KSD[4]	DN120 *(Jeremias ew-kl)*
Gas fitting	R 2“



Motor	**K49T**
Construction	Serial engine
Stroke mode	4 stroke Otto with turbo charger
Cylinder number	4
Cylinder volume	4.9 litre
Nominal speed	1500 1/min
Asynchronous generator	**Emod WKASYG**
Cooling	water-cooled
Power	53.0 kW
Rated voltage	400 V
Rated current	88.0 A
Frequency	50 Hz

Switching cabinet: dimensions and weight

(floor standing cabinet, side connections, standard 6 m cable harness)

W x D x H	0.90 x 0.31 x 1.27 m
Weight	105 kg
Colour	Pantone 5517C

[1] acc. to. EN 50465, tolerance 5 %
[2] RL-(Return)-temperature 40 °C
[3] acc. to EU RL 2004/8/EG at 100 % proprietary usage
[4] with combination sound muffler
[5] acc. to DIN EN ISO 3744:2011-2
[6] acc.to EnEV 2014: f_{PE}-Strom = 2.8
[7] acc. to evaluation of assets subject to the land as new
[8] Messured at sb 50 (HMG) NG without turbo
[9] Standard delivery

Electrical data smartblock 50T

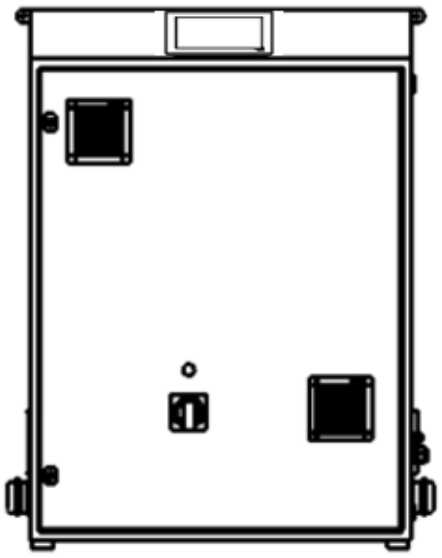
max. effective power P_{Amax}	50.0 kW	
max. apparent power S_{Amax}	51.5 kVA	55.5 kVA
cos φ	0.97 ind. [9]	0.90 ind.
Nominal current I_N	74.4 A	80.2 A
Nominal voltage U_N	400 V AC	
Grid feed	three-phase	
Island operation aveilable	no	
Motor start provided	no	
Starting current I_A	0 A	
Short circuit current I''_K	0.91 kA	
Short-circuit resistance of the system I_K	10 kA	
Reactive power compensation	present	
Number of compensation steps	1	
Reactive power per step	23.3 kvar	12.4 kvar
Choke coil factor	0 %	
Own consumption (Stand-by)	0.060 kW	
Enclosure rating (DIN EN 60529)	IP 20	
Line protection at building site	SLP 100 A „C"-Characteristics	

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"

Installations values for the EL protection for the NA protection (VDE-AR-N 4105)

Voltage reduction 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 reduction f<	47.5 Hz *(100 ms)*
Frequency increase protection f>	51.5 Hz *(100 ms)*



smartblock 50T 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.

Optionally, the BR18 can be expanded to include a heating control, peak boiler load (up to two boilers), remote data transmission (though network and error advisor via email, remote transmission on external interfaces, with heating control, peak load boiler control (up to two boilers), remote data transmission through network connectivity with fault messaging via email (only with DSL) and an interface to external systems (Ethernet UDP, Mod-Bus RTU/TCP, RK512, 3964R).

In addition, there is the option by which the CHP can be connected to virtual power plants via VHP-Ready and net.strom.

Technical data are based on natural gas H with a calorific value of 10.0 kWh/Nm³ and on standard supply conditions according to DIN ISO 3046-1 (absolute atmospheric pressure: 100 kPa, air temperature: 25 °C, relative humidity: 30 %) and relative to an elevation of 0 m AMSL. The nominal power is reduced depending on the installation elevation. The tolerance for the specific fuel consumption is +5 % at nominal power (DIN ISO 3046-1 resp. DIN 6271-3), and the tolerance for the effective heat power is 7 % at nominal power. It is our corporate policy to reserve the right to modify and amend data and characteristics due to continuous further development and improvement without prior notice. All data are based on new systems without any wear and tear.