



Fascination smartblock

Details that make all the difference

smartblock[®]

Your guide to the special smartblock features



Control switching cabinet
More informations page 18



Exhaust noise muffler
More informations page 14

Power cabinet
More informations page 16

Exhaust gas heat exchanger module
More informations page 13

Generator
More informations page 10

The engine
More informations page 08

Oil circulation system
More informations page 12

The combination of power and heat

A modern gas power plant used for the conventional production generation of electricity can convert about 40% of the primary energy (e.g. natural gas) used into electricity. The remainder of the heat energy created during combustion is, in most cases, dissipated through cooling towers to the environment and remains unused.

The advantage of a combined heating power plant (CHP) is in the fact that it combines the production of electrical and heat energy in a single system (cogeneration of heat and electricity). Or in short: In a CHP electricity is produced through a generator. At the same time an exhaust gas heat exchanger uses the engine heat, that of the exhaust gases and the residual heat of the asynchronous generator to create heat, which is converted into heating energy.

This cogeneration of electricity and heat is the reason for the extraordinarily high efficiency of CHPs. A modern smartblock excels with a total efficiency of almost 100 per cent.



In practice, the electricity generated is normally consumed on site and only excesses are fed into the grid and sold to the grid operator. The heat, however, is used directly on site for heating the building, such as a hotel or a public or administrative facility.

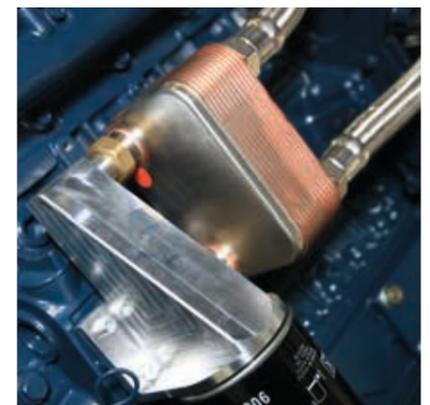
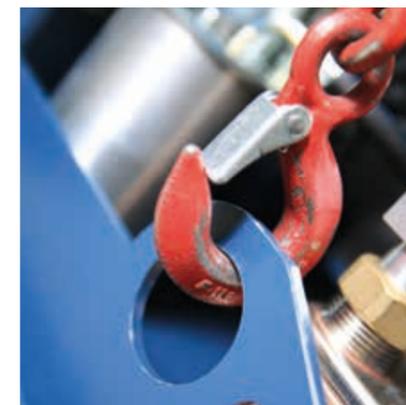
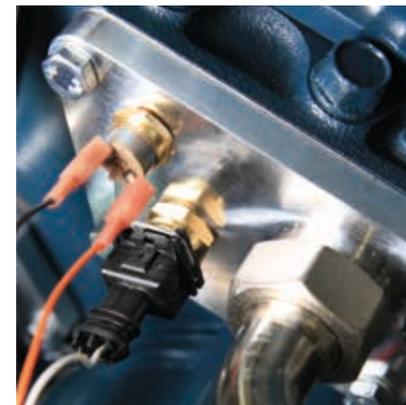
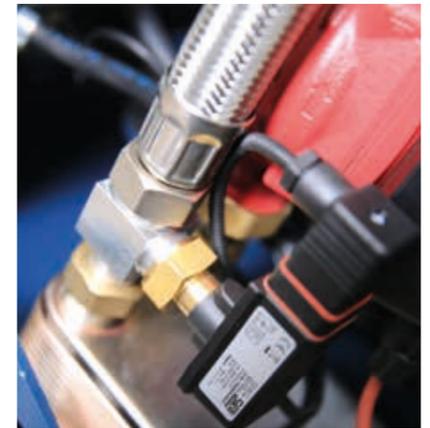
This means a considerable reduction of the energy costs for the operator of a smartblock, accordingly a distinct reduction in CO2 emissions, and an effective contribution to the "energy revolution".

You want to be safe in case of a power failure? The smartblock with emergency power provision function is for you, because it will cover any power grid outages and supply you with electricity immediately in case of power failures or cuts.

Details that make all the difference

AS any other CHP a smartblock generates electricity and heat according to the cogeneration principle. But here attention should be paid to all the details showing many innovations and new solutions, beyond the normal standards, but setting new ones.

Let's have a look **behind** the scenes of the ordinary.



From a single trader operation to a medium-size enterprise



Management: Konrad Weigel, Andreas Weigel (right side)

It all started some twenty years ago in a small workshop. Since then, KW Energie has evolved to a medium-sized enterprise and is now one of the leading manufacturers of smaller CHPs in Germany. With currently forty staff, this family-run business is intensively working on the cost-efficient design of energy production solutions for our clients, thereby providing an effective contribution to the energy revolution in this country and elsewhere.

Accompanied by many ground-breaking innovations KW Energie CHPs have been developed and manufactured for various fuels. KW Energie concentrates on CHP fuelled by vegetable and heating oil, but also those using natural gas. Based on many years of experience and intensive research and development work, in 2012 a new gas CHP with the name smartblock was presented, which set new standards in respect of compactness, efficiency and

serviceability. Some 500 smartblocks sold in just 24 months are an impressive proof of the quality of the new CHP generation.

For many years now the brand KW Energie has been synonymous with high quality and reliable combined heat and power plants. With the new smartblock series the company is ready for continuing along the success lines established in the past and reaching into the future and to further expand its market position.

Quality comes from teamwork



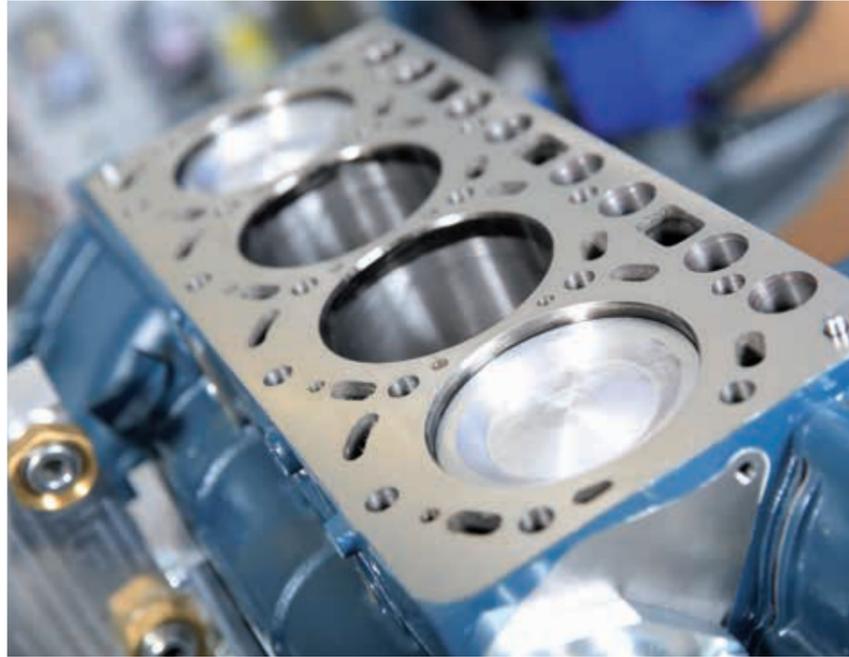
Almost 2,000 CHPs sold and installed since 1995, and recently more than 300 smartblock CHPs in the last year are a distinct sign of a successful team working together, and contributing to our success story, all in their own particular role and with high motivation. Whether talking with customers on site, when taking orders, during the mechanical installation of the machinery, when installing electrical devices and components, in the test lab or on the service hotline: only with a convincing team can your goals be reached.

Highly qualified staff in all positions in the company, using premium materials and prime components, most diligent production processes, and uncompromising quality assurance procedures and testing secure a consistently excellent quality and reliability for each and every unit produced and sold.

The result is a **smartblock**, a high-tech product setting new standards with innovative solutions.



The heart of our smartblocks



The pulse of the smartblock engines is controlled by the newly developed **GSC** technology (gas stream combustion). With this new combustion procedure a complete flaming of the combustion chamber, optimized by a minimized inside surface, is achieved. The uniformity of the combustion and the thermodynamic efficiency reach top values.

The result is the smartblock engine. Solid, robust, highly efficient and service-friendly.

*The new **GSC** technology is a procedure for which patents have been applied for and the utility model has been registered.

Normally, the gas engines used in the performance rate of the smartblock series are based on conventional vehicle engines. The development of these engines focusses on lightweight design, high rpms and low production costs. Because of the required wide rpm range with high maximum performance and power the efficiency is not optimum in slow-running engines.

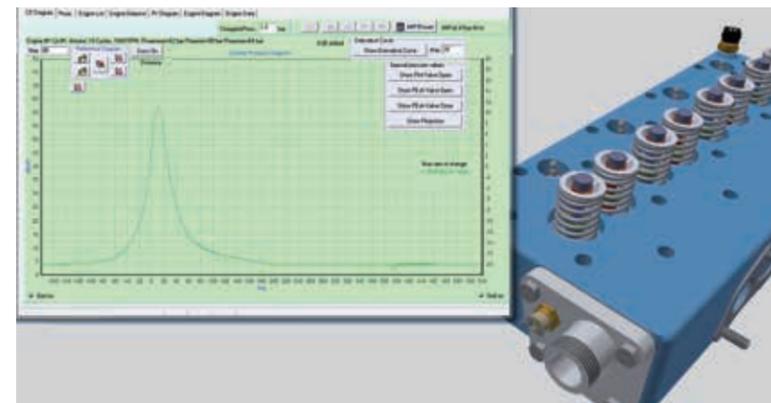
KW Energie has different requirements on an optimum CHP engine: The construction must be simple and consequently service-friendly, designed for a stable and extremely long engine life, with the valves controlled without toothed belts or control chains, with simple maintenance and a best possible efficiency at 1500 rpm.

Such engines are not available on the market, so KW Energie has decided to design and develop proprietary engines for the smartblock series.

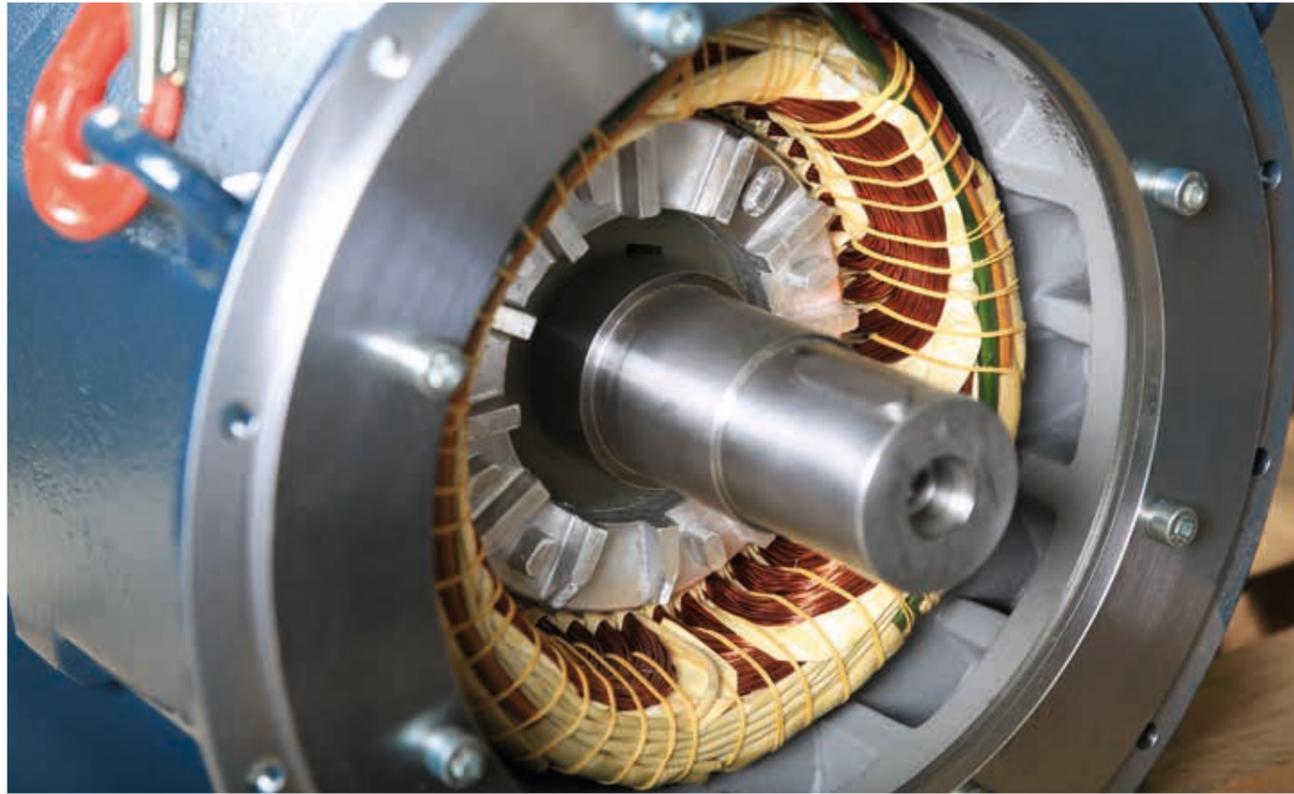
This in-company development is based on industrial diesel engines as found in construction machinery and smaller ships and which perfectly match for the requirements mentioned above. However, the requirements on a gas-fuelled engine are clearly different those on a diesel engine. The actual combustion process had to be developed from scratch, and also the material composition of various engine components and the peripherals had to be re-determined, all in order to achieve the optimum drive for a gas-fuelled smartblock CHP.

Many years of experience, coupled with the necessary creativity were crucial in the development of the smartblock gas engines. In joint projects with external research institutes extensive development work was performed. This resulted in a number of improvements and optimizations on existing components and the development of completely new components and procedures.

Mainly, this includes high temperature resistant exit valves and valve seats made of a super-alloy based on cobalt and chrome, the extensive reworking of pistons and cylinder head to create a highly efficient combustion chamber, the combustion chamber for the **GSC** technology, the design of an optimum piston ring package, the adjustment of the characteristic-controlled high-performance ignition system, and the optimization of the lubricant circulation.



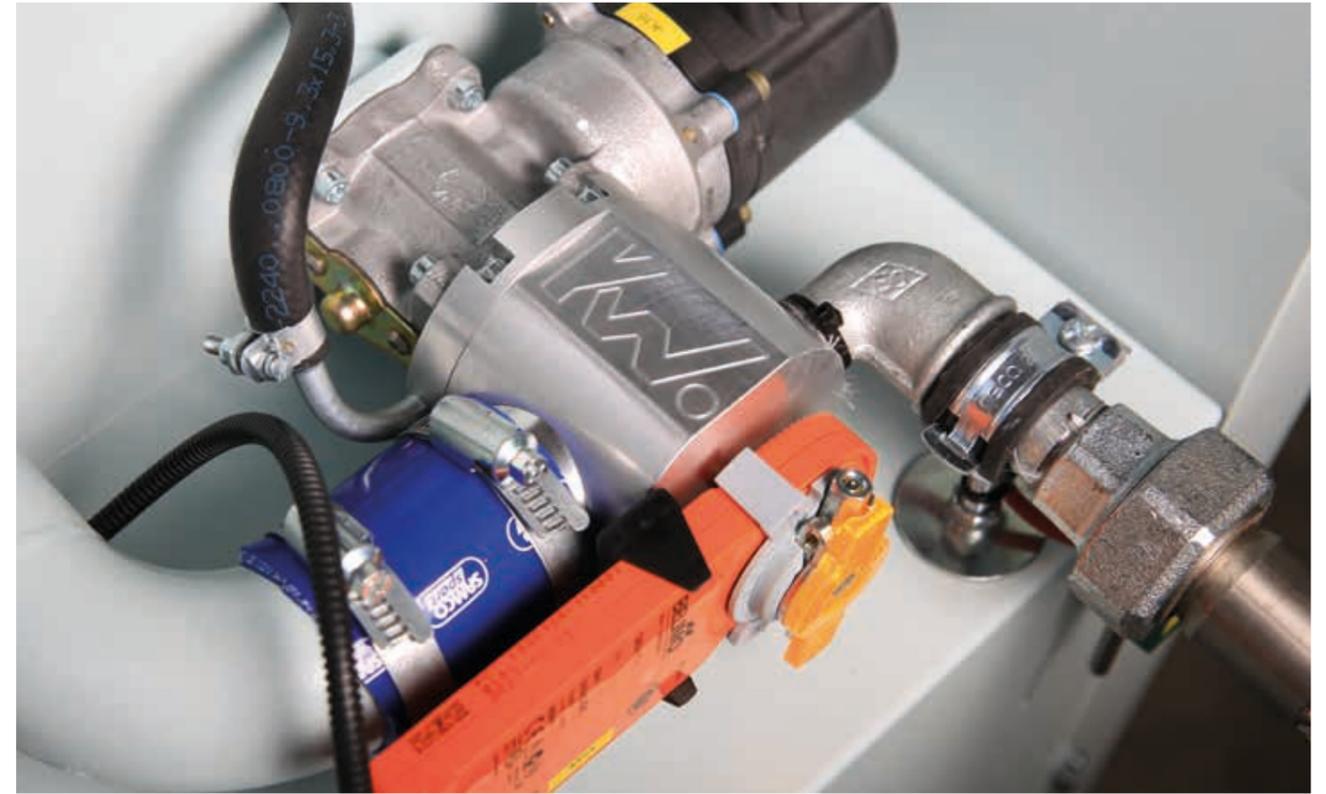
This is where electricity is produced



Depending on the CHP design either synchronous or asynchronous generators are used. For smartblocks operated purely in parallel to the grid the water-cooled asynchronous generator is the best solution, because of its simple design and the low number of wear and tear parts. The water coolant makes the residual heat from the generator available as an additional heat source.

All smartblocks are also available as grid substitution or insular systems. The smartblock "s" types are fitted with air-cooled synchronous generators. Because of their electronic voltage and cosPhi control these are technically more sophisticated, but they can be run in a normal grid-parallel mode or completely independently from the public power grid.

The correct mixture is decisive



The gas mixer is used to supply the engine with a gas-air mixture which is as homogenous as possible and with a precise mixture concentration.

The **central valve mixer** designed especially for our smartblocks excels with its robust design, simplest adjustment and excellent gas mixing performance, and all that with an almost constant mixture concentration over the entire performance range. In order to maintain the precise lambda value the CHP control system can adjust and fine-tune the central gas valve in the ppm (parts per million).

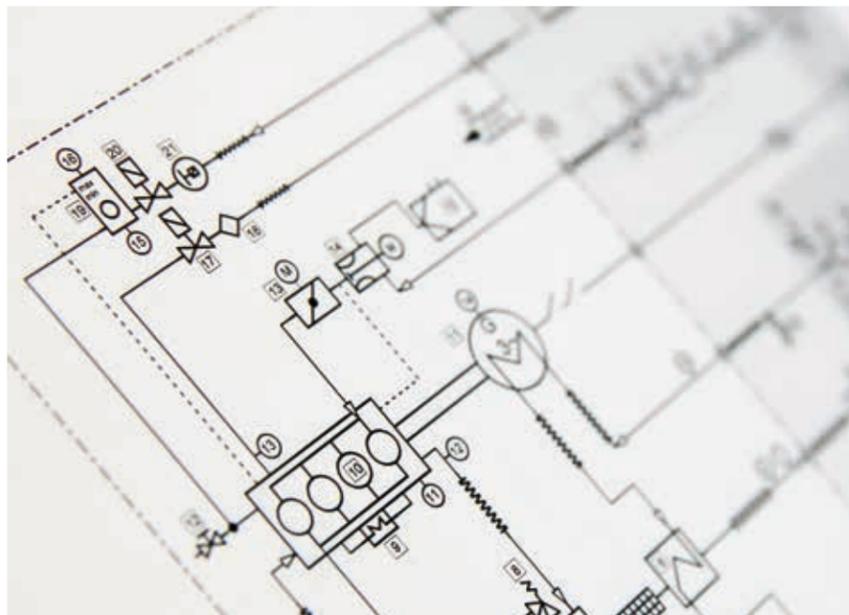
Permanent lubricant monitoring to servicing



All smartblocks are fitted with a fully automatic lubricant circulation system. The core piece of the system is the newly designed lubricant system module, into which a multitude of functions have been integrated.

The module maintains a constant level of the engine lubricant over the entire running time. It compensates the lubricant consumed by the engine, controls the lubricant circulation between engine and the external lubricant tank, and it also filters the lubricant during circulation by means of an additional fine residual flow filter. Also, the module will issue timely warnings if the lubricant reaches an unacceptable or incorrect level.

The advantages of the lubricant circulation system lay in the maintenance of a constant level of lubricant levels, but especially in the significant increase of the engine lubricant volume by means of the external lubricant tank. The increased lubricant volume in connection with the fine residual flow filter protects the gas engine and ensures very long lubricant change intervals. This is aided by the relatively low storage temperature of the main lubricant storage vessel (external lubricant tank).

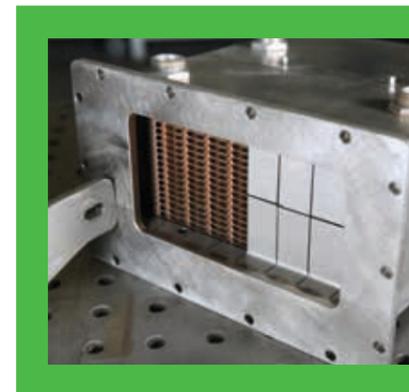


Producing heat energy with maximum efficiency

A further milestone in the construction of the smartblock is the development of the patent pending **exhaust gas heat exchanger module**. Many other individually installed assemblies in the CHP can be replaced by this revolutionary and compact module.

In the heat exchange module the water-cooled exhaust gas collector pipe, the cooling water expansion vessel, the monitoring of the coolant level, the 3-way catalytic converter, the broadband lambda sensor and also the burning value exhaust gas heat exchanger are integrated.

By means of this integrated solution not only the dimensions of the smartblock could be reduced, but also the intended service-friendliness could be significantly enhanced. This way the catalytic converter can be quickly and easily exchanged without cutting the exhaust gas line.



Curious? What exactly happens inside the module?

The exhaust from the engine streams into the module at a temperature of more than 500°C. At this point the emissions are still charged with approx. 5,000 mg/m³ of the contaminants CO and NOx. A split second later the exhaust gas leaves the module at a temperature of only 50°C and with a contaminant level of only 50 mg/m³ each towards the exhaust gas muffler module. The exhaust gases have been cooled down by the module by more than 90%, and the contaminant level is reduced by more than 99%.

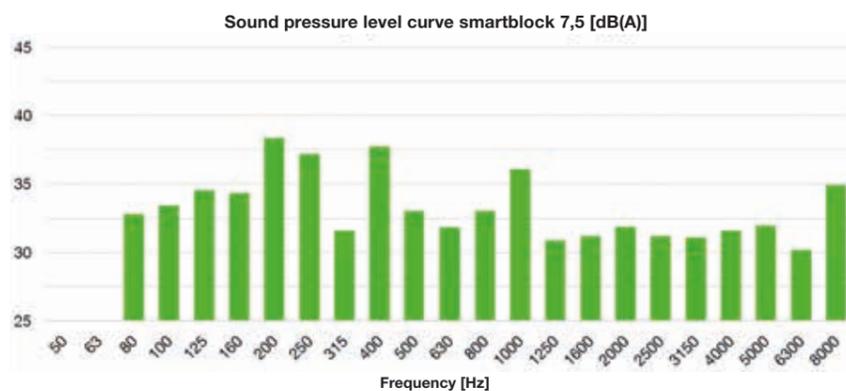
All is quiet

Noise protection is an issue especially attended to in the design of the smartblock.

All smartblocks are enclosed in a highly effective **sound-proofing hood**, which is easy to open despite the stable construction, so that the access to the CHP is easy. The individual sound-proofing elements consist of stable powder-coated steel sheets with a multi-layer non-flammable filler material. Everything is covered by a galvanized perforated sheet to protect the filler against mechanical damage.

In order to prevent any body sound transfer to the floor the smartblock is mounted on special anti-vibration elements. All connections to feed and supply lines are also flexible and thereby vibration isolated. The combustion air supply line to the drive engine, which is one of the most problematic noise sources, is arranged through specially adjusted intake mufflers integrated in the sound-proofing hood, so that particularly disturbing low-frequency sounds are reduced to a minimum.

All these measures and many other detail solutions make it possible that the smartblock can also be installed in noise-sensitive areas and buildings.



Masterpiece of exhaust noise muffling

With the design of the exhaust noise muffler module KW Energie entered a new dimension. This module not only contains a muffler for the exhaust noise but also a number of other integrated functions.

The support has a base with a fastening eye so that an installation is possible without additional support structures. If necessary it can be bolted down through the base plate base and into the floor with sound-muffling plugs.



A condensate siphon is installed in the base of the exhaust noise muffler through which any condensate from the CHP, muffler module and the subsequent exhaust line can exit. Because the condensate outlet is fastened with a central union nut the condensate output can be turned in almost any direction.

The secure draining of condensates is of crucial importance for the operational safety of the CHP. For the detection of possible faults a float switch is integrated in the muffler module which monitors the function of the condensate drain. So that the regular exhaust measurements are easy and simple a measurement point is fitted to the top of the exhaust gas noise muffler module in an easily accessible position.

The exhaust gas outlet line complies with the Jeremias exhaust system EW-KL. This means the subsequent exhaust line can be quickly and easily plugged in directly. The **exhaust gas noise muffler module** is made completely of corrosion-resistant V4E stainless steel. Even the wool inside the muffler is made of stainless steel, ensuring a permanently excellent noise muffling performance. Clogging or collapsing of the muffler wool, common in mineral or rock wool, is impossible. Because of the gleaming and shiny surface of the module it is visually attractive and has a sophisticated appearance.

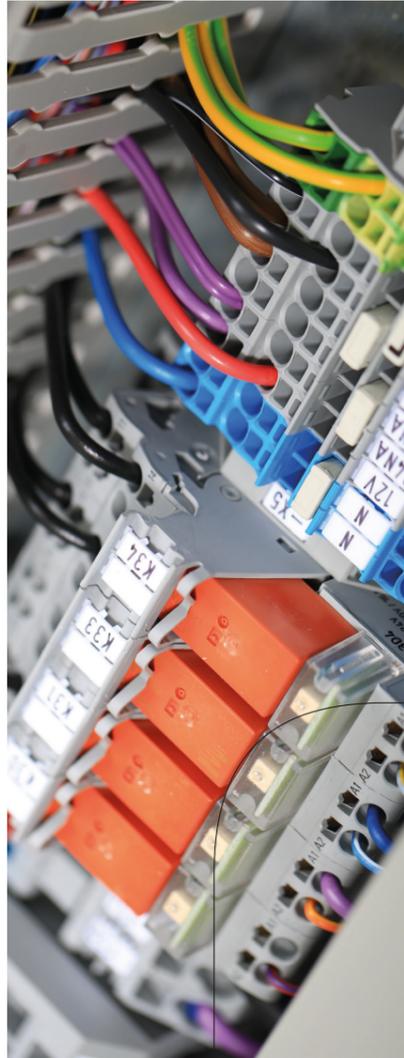
The brains: the power switching cabinet

In the design of the electrical equipment for the new smartblock series new approaches were used. Normally the entire electrical equipment, the control unit and the power switching unit are housed in a large single switching cabinet, either integrated in the CHP module are installed separately. Both variants have advantages and disadvantages.

In the new smartblock series the electrical equipment is split into an integrated power switching cabinet integrated in the CHP module and an external control cabinet. With this solution the advantages of both variants mentioned above have been combined:

Very little cabling is required when setting up the CHP, a compact CHP module with increased freedom when installing the system in restricted space, ease of access to the small CHP control cabinet, which can be installed anywhere.

Communication between the two cabinets is by means of a stretchable CAN bus control line.

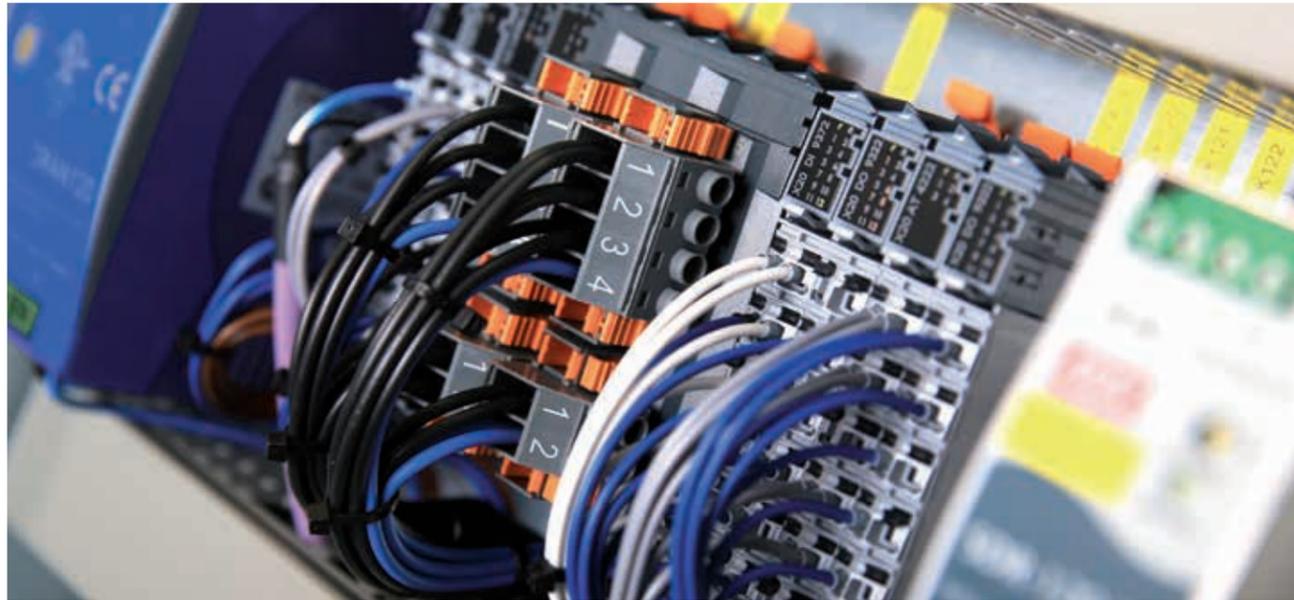


Power switching cabinet

The **power switching cabinet** integrated in the CHP the generator power is switched and secured by circuit breakers, This were the plug-and-play configured connection cables for the gas valve, the gas pressure monitor, the condensate switch and the charging pump as well as further sockets for external sensors are

located. In separate compartments the starter battery and the standard reactive current compensation are located. At the easily accessible top of the switching cabinet the main switch with the emergency stop function is installed.

The brains: The control system



Control switching cabinet and control system (BR06)

Control switching cabinet

The control switching cabinet is used to control, monitor and operate the smartblock, and for this purpose the control system BR06 has been installed. Additional functions such as heating control, boiler peak load requesting etc. can be installed. Inputs and outputs for a number of special functions are already available.

CHP control system BR06

An economical and ecological efficient operation of a CHP requires an intelligent control and operating system as well as a continuous monitoring and supervision. The high-performance CHP control system BR06 is the brains of all smartblocks, and it meets the requirements in an ideal way. The system is based on a professional industrial PLC system with full graphic display and a neatly organized keyboard. During many years of continuing development an enormous range of protection mechanisms and operating and control functions were added to the software of our BR06 control system.

On overview of the function features:

Operating mode

- Temperature-dependent connection and disconnection: The smartblock is started and stopped via the top and bottom buffer storage tank temperatures.
- Current consumption-dependent connection and disconnection: The smartblock is started and stopped depending on the current demand.
- External requests: The smartblock is started and stopped by an external switch or a super-ordinate control system.
- External requests through a BUS system: Various BUS protocols have been implemented, e.g. Modbus RTU, Modbus TCP.
- Emergency power: The smartblock "s" is started by the event 'grid failure'.
- Timer: The smartblock is started and stopper by a programmable timer.

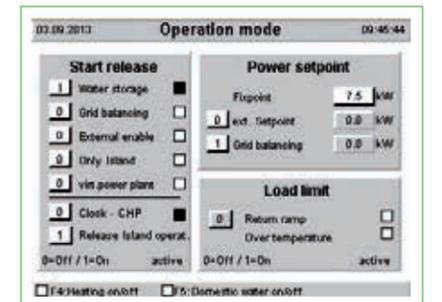
- Virtual power plant: The smartblock is started and stopped by a central control computer. With this function many CHPs can be joined to form a large virtual power plant.

Power controls

- Fixed power: The smartblock is operated with a fixed power set by the operator.
- External target value: The target power value is set by an external 4 to 20mA signal.
- Grid consumption: The power of the smartblock depends on the current grid consumption demand (e.g. zero consumption control).
- External target value setting through a BUS system.
- Reverse temperature ramp: The power

output of the smartblock is controlled in dependence of the reverse temperature.

- Virtual power plant: The target power value of the smartblock is set by a central control computer.



Extensive safety mechanisms

03.09.2013 Short time logger 10:00:33				
Date	Time	Nr.	Description	
y m d	h m s			
2013 09 03	09 00 43	102+	S: User registered with level 3 password	
2013 09 03	08 42 44	102-	S: User registered with level 3 password	
2013 09 03	08 39 14	38	S: Oil inlet - Manual mode	
2013 09 03	08 39 14	38	S: Oil inlet - Manual mode	
2013 09 03	08 39 13	38	S: Oil inlet - Manual mode	
2013 09 03	08 39 12	38	S: Oil inlet - Manual mode	
2013 09 03	08 39 09	38	S: Oil inlet - Manual mode	
2013 09 03	08 39 07	38	S: Oil inlet - Manual mode	
2013 09 03	08 28 23	102+	S: User registered with level 3 password	
2013 09 03	08 20 53	9	S: Grid failure delay active	

Displays

All information important for the operator such as operating values, counters, start and running time counters, analogue value storages, various log books, status messages etc. can be called up on the 5.7 inch display.

03.09.2013 Grid Code 09:33:36				
Date	Time	Description		
y m d	h m s			
2013 08 30	12 25 24	Undervoltage U<		
2013 08 30	12 25 14	Undervoltage U<		
2013 08 30	12 25 01	Undervoltage U<		
2013 00 21	08 05 52	Undervoltage U<		
2000 00 00	00 00 00	x		
Undervoltage U<	0.80	0.100	sec	
Overvoltage U>	1.10	0.100	sec	
Overvoltage U>>	1.16	0.100	sec	
Underfrequency f<	47.50	0.100	sec	
Overfrequency f>	51.50	0.100	sec	

Protection functions

- Complete engine and generator monitoring for 50 different functions
- Grid protection according to VDE-AR-N 4105

03.09.2013 Boiler 09:51:30				
Outlet				
24.0 °C	Boiler on 58.0 °C	Boiler on 56.0 °C		
CHP on 60.0 °C	2.0 min	5.0 min		
CHP off 65.0 °C	Boiler off 61.0 °C	Boiler off 61.0 °C		
23.1 °C	5.0 min	5.0 min		
	<input type="checkbox"/> Release F1	<input type="checkbox"/> Release F3		
	<input type="checkbox"/> Manual F2	<input type="checkbox"/> Manual F4		
	<input type="checkbox"/> activated	<input type="checkbox"/> activated		

Control outputs

Request peak load boiler 1 and 2, emergency cooler, load drop and heating control outputs.

03.09.2013 Heating 09:46:57				
<input type="checkbox"/> F5 Heating on/off	<input checked="" type="checkbox"/> Release heating (clock)			
<input type="checkbox"/> F6 Domestic water on/off	<input type="checkbox"/> Lowering active			
	<input type="checkbox"/> Circulation pump			
Actual value 24.0 °C	Actual value 50.0 °C	1	2	
CHP on 60.0 °C	Pump on 50.0 °C	open	close	
	Pump off 55.0 °C	25.2 °C	22.9 °C	
		<input type="checkbox"/> Release	<input type="checkbox"/> Release	
		<input type="checkbox"/> Manual	<input type="checkbox"/> Manual	
		<input type="checkbox"/> activated	<input type="checkbox"/> activated	

Heating control system

With the heating control module two heating circuits can be controlled in dependence on the outside temperature. The consumption water heating, the switching of the circulation pump, a timer and the night-time lowering are all integrated in the module.

03.09.2013 E-Mail 10:14:31				
E-Mail-Empfänger 1	weigel.konrad@kwenergie.de			
Day info	0			
E-Mail-Empfänger 2	weigel.andreas@kwenergie.de			
Day info	0			
E-Mail-Empfänger 3	0			
Day info	0			
<input type="checkbox"/> active	<input type="checkbox"/> Successful	<input type="checkbox"/> Fault	21	Step
F3: Test	F4: Configuration from USB	F6: Parameter		

Remote controls and monitoring

Through a data telecommunications line the smartblock can be operated and monitored by a computer or smartphone, just as if one was in front of the actual CHP control panel. The regular sending of a status report and alerts in case of faults to up to three recipients by email is also possible.

If a device is accessible through the internet and therefore has an IP address, there is also the risk that it is susceptible to external attacks. Reports in the media have shown that not only computers, but also industrial facilities can be targeted by hackers. This applies also to CHPs accessible through the internet.

This is why we have protected our BR06 control system with a multitude of security functions against unauthorized access. This includes safe passwords, protection against brute force attacks (repeated log

in attempts), various access levels with specific rights and different passwords, and much more.

This way we provide a maximum access protection for the information about our smartblock and its control system, and we protect these effectively against misuse.

Chimney sweep screen

There is a separate menu screen for exhaust gas measurements. In a simple and self-explanatory way a chimney sweep or inspector not familiar with the control system to switch the system into the inspection mode, perform the inspection and, if necessary, correct the lambda setting. It's as simple as that.

Message outputs

Operation message, readiness messages, service requests and alerts.

Inputs

Heating room emergency switch, gas, CO, fire warning devices, external requests, one alert input for a discretionary external channel, Ethernet connection and DSL, RS232 interface for Modbus RTU.

Master-slave function

Through this function up to five smartblocks can be joined to a multi-module power plant, with the possibility to start and stop each smartblock individually as required.



Extensive and thorough testing

At the end of the production process each smartblock goes directly to the test rack. Sophisticated testing technology and highly qualified specialists take each smartblock through its paces in many hours of trial runs to ensure that parts and systems function faultlessly.

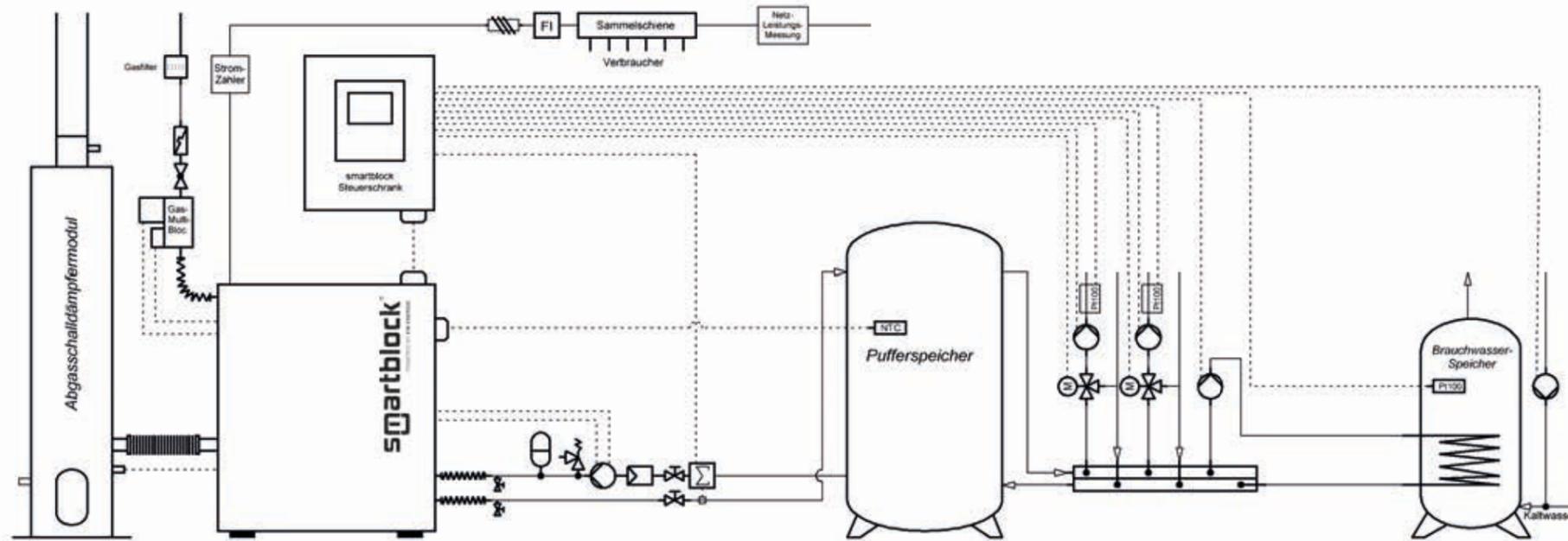
Simulating the installation on site, it is connected to the control cabinet, the exhaust gas muffler module, the gas supply, a test heating system and the electricity grid.

All functions and interactions between the mechanical and electrical components are tested, all machine-specific configuration values are set, the efficiency, power, temperature and pressures are checked, and the exhaust system is adjusted. Close attention is paid to each and every item on the test protocol, the machine is tested according to VDE 0113, and finally all measured values are documented.

Each smartblock leaving the test rack has been extensively and thoroughly tested.



Planning, installation & service



Planning

An experienced and technically skilled sales team supports and accompanies the end customers just as it assist the planners in the efficiency analysis, the project-specific layout and the selection of the right smartblock. In addition it provides support in all issues with technical integration, the required registrations and compliance with all regulatory and authority formalities.

devices can be connected by means of customized cable harnesses. The gas connection is easy through the pre-assembled gas supply module. Connecting the smartblock to the heating system by using flexible reinforced hoses is easy and simple..

Connection kit

The connection kit delivered as standard completes the smartblock system. This kit contains all required components and parts for setting up the smartblock and installing the connections to the heating, gas and exhaust lines prepared in the building.

Commissioning

Commissioning of the CHP is performed either by KW Energie technicians or by a partner company, who check the execution of the performed installation work, set the desired operating mode

and power control, conducts a trial run and checks several safety functions. Because each smartblock has already been thoroughly and extensively tested in the factory before being delivered to the installation site, there only elementary safety functions such as the grid monitoring or the emergency stop chain need to be checked. Finally the customer or the operator undergoes a comprehensive introduction and training in the operation of the smartblock.



Installation and assembly of the CHP – with smartblock a top scorer

The compactness of the smartblock really pays when installing the system in the heating room. The stable gas exhaust muffler module has an easy connector to the exhaust line; the small control cabinet is quickly installed connected to the CHP by means of a cable harness, preventing any cabling or connection errors. External

Service tools

Even a smartblock needs regular servicing and maintenance. The service tool kit designed especially for the smartblock series ensures a quick and cost-efficient performance of all required work.

Service aid: Lubricant change module

The lubricant change module designed especially for the maintenance of the smartblock series makes this task so simple that you won't even need to wash your hands afterwards.



The largest product range in the performance segment

The smartblock series with the types smartblock 7.5, smartblock 16, smartblock 22, smartblock 33 and smartblock 50 makes up product range graded to the specific requirements in the performance segment of units up to 50kW.

This wide spectrum makes an application in such diverse environments such as a family home, a wellness resort or community facilities such as indoor swimming pools or business and industrial buildings.

All smartblocks share the extremely compact dimensions, the low noise levels as well as many innovative detail solutions increasing the economic efficiency, facilitate installation and service and optimize the operation of the CHP.



smartblock 7,5

The extremely compact and quiet smartblock 7.5 is the right choice for multi-family homes, businesses and gastronomy, with a per annum energy consumption between 100,000 and 340,000kWh.



smartblock 16

The smartblock 16 with 16 kW electrical and 36.7 kW thermal power already requires larger units to be supplied with a per annum energy consumption between approx. 220,000 and 600,000kWh.



smartblock 22

For complex applications with an energy consumption between 290,000 and 720,000kWh per year the smartblock 22 is the right choice. In this performance class there are many applications such as residential blocks, care homes, hotels, fitness centres, industry and businesses.



smartblock 33

If the smartblock 22 is too small and the smartblock 55 too large for your particular application, then we recommend the smartblock 33 with an electrical power output of 33kW and a heat output of 71.6kW. The entire energy consumption of the system should be in the region between 380,000 and 850,000kWh. Just like all the other smartblocks, there are plenty of installation possibilities.



smartblock 50

Our most powerful smartblock is often found in industrial installations, clinics are very large hotels with a high heat requirement all year round (such as wellness resorts) or in community installations such as indoor swimming pools or district heating systems. With its 50kW of electrical and 94.6kW of heating energy it is the perfect solution for installations with an annual power consumption in the region between 560,000 and 1,050,000kWh.

Unequaled flexibility

Another further advantage of the smartblock series is the extreme versatility. All smartblocks are available with an asynchronous or a synchronous generator. This way, they are suitable for a **purely grid parallel operating mode** (asynchronous), or a **grid parallel operation mode with emergency power function** (synchronous). Which version is installed depends entirely on the circumstances or the customer requirements.

A smartblock does not need to be installed in a fixed location. All types can also be delivered in a **mobile CHP** version, with the advantage that the smartblock can be operated in different locations, for example in the summer for heating an open swimming pool and in the winter for energy supply of any municipal building. The smartblock can be perfectly adapted to the sometimes changing requirements on the customer end.

In case the power of a single smartblock is not sufficient, up to five machines, also with different power output, can be linked through the integrated master slave function to a **multi-module power plant**. With this flexible solution even solutions can be found and implemented for situations characterized by high fluctuations in energy consumption and demand or where a high redundancy is required. Whether electricity-controlled or heat-controlled operating mode, the BR06 system can cope with any requirements. The automatic priority switching also ensures that all linked machines run for the same number of operating hours.



Exemplary solutions

Almost 2000 installed CHPs for the most varied applications are proof of the market position of KW Energie. The following examples show how and where KW Energie combined heating power plants can be used in an economical and energy-saving way.



Kurhotel Wittelsbach,
Bad Füssing

Bad Füssing is a thermal spa and resort in the eastern Bavarian spa triangle, near the Austrian and Czech border. The privately owned and run Kurhotel Wittelsbach, located in the middle of the town, convinces its guest with a charming atmosphere of a four star hotel including the internal spa.

It is obvious that the energy requirements of a hotel with an outdoor and indoor swimming pool and a large vitality centre and spa has higher than average energy

requirements, to provide all section with sufficient heat. With a heat demand of approx. 1.6 million kilowatt hours per year it was obvious that a CHP could contribute to lower the energy costs. The solution was a KW Energie 48G-4 SPN, which was installed as part of a contracting solution by the partners ESB and Lackner Energietechnik. At the same time the hotel decided to install a system with grid backup system, so that the energy supply to the hotel was also guaranteed in case



of a power grid failure. The installed CHP 48G-4 SPN with a planning running time of 7,500 hours per year delivers a total of approx. 360,000kWh in electricity and 577,500kWh in heat. The additional heat required in peak times is covered by an additional gas boiler. The annual savings for the hotel amount to approx. 20,000 Euros.



Eurosand GmbH,
Weiden/Oberpfalz

Eurosand GmbH of Weiden in the Bavarian region of the Upper Palatinate is a manufacturer and the world's largest specialist supplier of high-quality decorative strewing articles and litter for florists, table tops, glass and ceramic deco articles and aquarium applications. At the site in Weiden there are 195 employees.

The basis for the installation of a smartblock at Eurosand was the conversion of the energy supply from oil to natural

gas. The conversion was used by our partner Andritzky to install a smartblock 50 and to supplement it with a gas efficiency boiler with a power of 420kW. This solution means that the smartblock 50 provides the basic supply and provides approx. 242.000kWh in electricity and 450,000kWh in heat. In peak times the smartblock is supported by the gas boiler. The electricity is consumed primarily internally and only the excess is fed into the grid. The main reasons to choose

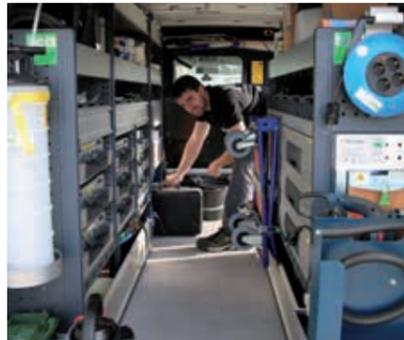
this solution are the markedly improved economic aspects against the previous solution and the short-term amortization through significant savings.

Further application possibilities

- 01 Alpine huts
- 02 Breweries
- 03 Spa and leisure
- 04 Hospitals and care homes
- 05 Schools and playschools
- 06 Housing
- 07 Municipal utilities
- 08 Industry
- 09 Sport and fitness centers
- 10 Sewage plants
- 11 Agriculture

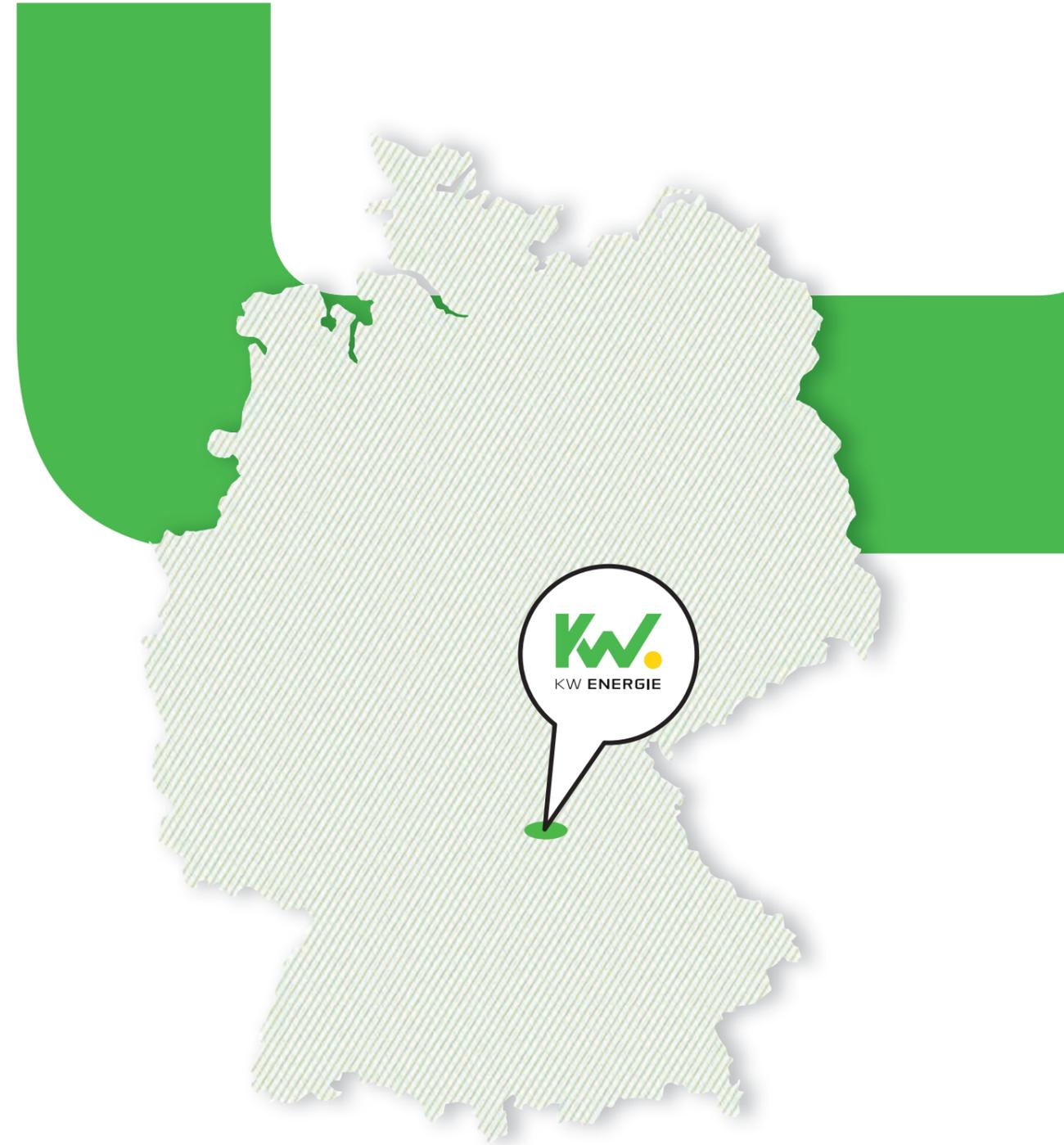


So far and yet so near



Our **service team** is always there for you whenever you need assistance. A strong team made up of specialists will answer your questions and provides telephone support. For maintenance and service tasks our service teams are available for on-site support all over Germany.

Our competent **partner companies** near you can also dispatch trained service staff ensuring quick and reliable assistance for our customers.





smartblock[®]
POWERED BY KW ENERGIE

KW Energie GmbH & Co. KG

Neumarkter Straße 157
D - 92342 Freystadt

T +49 (0) 9179 96434 - 0

F +49 (0) 9179 96434 - 29

M info@kwenergie.de

W www.kwenergie.de

