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# Newsletter

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Bosch Industriekessel GmbH  
Nuernberger Strasse 73  
91710 Gunzenhausen  
Germany  
Tel. +49 9831 56-0  
Fax +49 9831 56-92957  
E-Mail [info@bosch-industrial.com](mailto:info@bosch-industrial.com)

Bosch KWK Systeme GmbH  
Justus-Killian-Strasse 29-33  
35457 Lollar  
Germany  
Tel. +49 6406 9103-0  
Fax +49 6406 9103-30  
E-Mail [bhkw@de.bosch.com](mailto:bhkw@de.bosch.com)

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## In Focus

From boiler modernisation in the pharma production to highly efficient compressed air generation for an industrial park up to a particularly low-emission heat supply of a residential complex as well as combined power and heat provision in a logistics centre: We offer customer-specific energy solutions for the whole world in the commercial and industrial fields. Find out more about that and all important trade fair highlights of the ISH Energy focusing on digitalisation and connectivity in our latest issue. We hope you enjoy reading all about it!

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## Octapharma modernises steam boiler system

### Smart data evaluation makes future optimisations easy

Octapharma, a specialist in the area of high-quality human proteins made from human plasma and human cell lines, modernised its energy supply at the Vienna site, Austria. A previous Energy Quick Check by Bosch helped to identify the efficiency potentials based on the customer-specific initial situation. Now, modern Bosch technologies supplement the existing steam boiler system from 2007. For maximum efficiency, consistent automation and highest possible reliability.

In the future, Octapharma benefits from the retrofitting of MEC Optimize in particular: The digital efficiency assistant analyses and interprets the boiler system data and informs the operator personnel already beforehand about possible failure risks and opportunities to increase efficiency. The advantages are quite obvious for Octapharma: "We can observe the system data more easily, detect unfavourable

operating states early on and get a detailed monitoring without having to be on site," relates Orestis Almpanis-Lekkas, Head of Utilities. Due to the connection to the remote access MEC Remote the operator is able to retrieve the data of MEC Optimize also from afar and mirror its interface on mobile devices.

As a perfect addition, the retrofitted water analyser from Bosch provides all relevant data from the fully automated water analysis to the control system or MEC Optimize. When exceeding pre-set limit values or even at safety-critical conditions an alarm signal is activated. With the measured values chemicals are dosed as needed and savings generated due to lower desalting losses, reduced fuel use and water demand. Thanks to the continuous monitoring of the water parameters Octapharma not only saves time and money but also benefits from a reliable system protection.



Modern Bosch technologies supplement the existing steam boiler system – for higher efficiency, consistent automation and high reliability.



Orestis Almpanis-Lekkas from Octapharma and Karim Salem, responsible project manager for retrofitting at the Bosch site Bischofshofen, Austria discuss the different menu levels of MEC Optimize.

#### Further modernisation measures:

- ▶ Controls of the latest generation – consisting of BCO (boiler control) and SCO (system control) for easy handling, data transparency and higher automation
- ▶ Secure remote access for operator and Bosch service thanks to MEC Remote
- ▶ Heat recovery modules for vapour steam and desalting water – reduce fuel use of the steam boiler system
- ▶ Reduced losses on the flue gas side due to O<sub>2</sub>/CO controls
- ▶ Silent operation with sound-insulating burner covers

Due to the modernisation the Viennese company increased its energy efficiency and protects environment and resources sustainably. Thanks to their modular construction all system components from Bosch could be retrofitted into the existing system smoothly and effectively – without having to interrupt the steam supply. In the future, the digital efficiency assistant MEC Optimize supports Octapharma to operate their steam boiler system cost-efficient, safe and sustainable on a permanent basis.

You can find more detailed information about the modernisation project at Octapharma in our reference report: [www.bosch-industrial.com/references](http://www.bosch-industrial.com/references)

## Reliable and ecological compressed air for chemical processes in the industry park Düren

With nearly 174,000 employees worldwide, the Veolia Group designs and provides water, waste and energy management solutions that contribute to the sustainable development of communities and industries. In Germany, among others in the industrial parks in Heinsberg and Düren-Niederau in North Rhine-Westphalia. Although both industrial parks are already working efficiently, Dr Stefan Langer, Managing Director responsible for energy and water management, sees more future opportunities to further cut the use of resources and reduce the ecological footprint: "We will exploit all opportunities to operate the industrial parks efficiently for the benefit of our customers and for that also invest in innovation regularly."

The company Veolia Industriepark Deutschland GmbH has taken over the management of the central facilities and networks for supply and disposal. Shortly after the takeover, Veolia began modernising and developing the site and

its energy centre in terms of efficiency and sustainability. This comprises the compressed air generation among other things.

Two new Bosch CHA CA 570 NA compressed air and heat systems (CHA) replaced an outdated conventional air compressor. The simple replacement would have brought no improvement in terms of efficiency and the environment, while now the compact CHA modules reduce the ecological footprint tremendously. With a compressed air supply of 9.5 m<sup>3</sup>/min each, the two CHA cover a large part of the base load requirement of the industrial park, using natural gas instead of more expensive electricity. Each CHA runs at full load for around 8,400 operating hours per year. Three conventional compressed air generators cover the additional base load requirement and the peak loads. The compressed air is processed centrally and distributed to the consumers. In the case of lower compressed air demand, continuous regulation of each CHA down to 60 percent of the engine power is possible.

Process-related heat is formed during the generation of compressed air, which is used efficiently by the Bosch CHA. In the Düren industrial park, this total heat output of 270 kilowatts is transferred via heat exchangers to the boiler feed water. This leads to a correspondingly lower gas consumption, since the additionally required heating of the boiler feed water

Instead of using a generator to produce electricity, however, the compressed air and heat system drives a compressor using the entire drive power of the engine. To adapt to the varying need for compressed air, the speed of the gas-powered engine is controlled and can be set to any value from 60 percent power upwards.





is reduced. Through this efficient use of waste heat, the CHA reduce the total heat demand of the energy centre.

In the course of correct consumption billing and a sustainable energy management system, an accurate measurement of compressed air flows and charges is absolutely critical for passing it on to consumers. Therefore, the energy efficiency software EnEffCo® of the company Ökotec – a company of Veolia – was implemented, which precisely monitors the energy and resource flows of the plant.

The operator can monitor the operating data of the CHA by the remote access MEC Remote at any time – of course at the highest level of security through VPN encryption. The Premium Service also allows Bosch KWK service experts access to the CHA data of the system and actively informs the operator in the event of a fault. If an on-site appointment is necessary, the service technician can often make an assessment in advance and bring the corresponding spare parts directly.

The chemical processes within the customer facilities require emergency generators for selected areas for the security of supply. In the event of a power outage, the Bosch CHA now relieve the existing emergency power system enormously, since the required compressed air can be supplied by means of natural gas. After only a few seconds, the CHA are running nearly at full power again, ensuring that no production stops occur due to lack of compressed air.

Volker Duven, Head of Industrial Plant Management at Veolia Industriepark Deutschland GmbH, is satisfied: "The decision to install the recently implemented Bosch compressed air and heat systems was ultimately the right one. The approval, installation and commissioning went absolutely smoothly. After only two commissioning days each, the regular operation could be started safely. The acceptance measurements were all in the assured areas. Availability is very high so far and is only interrupted by regular maintenance."



## Eco-friendly: NO<sub>x</sub> levels below 20 mg

### A new heating system in Hanover's second largest residential complex

#### For a cleaner environment

The Tollenbrink area in Bothfeld, constructed in 1972, is the second largest residential area in Hanover (Germany) with its 482 residential units. With a new Bosch boiler system, the 1,200 residents benefit from not only a reliable and cost-efficient heating and hot water supply, but most especially, from better air quality. The system's nitrogen dioxide emissions are so low that they are significantly below the legal threshold. "It is a great exemplary model and we make an important contribution towards protecting the environment," says Dr Oliver Kiaman, Managing Director of Haus & Grund-eigentum Service, the company which manages the Tollenbrink residential area.

The boiler system comprises two compact UT-L boilers with a heat output of 1,300 kilowatts each. The most unique thing about it: It produces a maximum of 20 mg/m<sup>3</sup> nitrogen dioxide emissions. That is much lower than the upcoming new threshold value of 100 mg/m<sup>3</sup> in Germany. The boilers are powered by a new burner generation made by a German manufacturer. These gas-powered surface burners are the first of their kind in Germany and, in combination with the Bosch boilers and thanks to the geometry of their combustion chambers, they achieve these pioneering values. The combustion temperature is 1,200 degrees, which minimises the formation of thermal





nitrogen dioxide. In comparison, conventional appliances have a combustion temperature of several hundred degrees higher. "We're intentionally ahead of future legislation and have planned and engineered a boiler system that will endure for the coming decades," explains Sven Koss of the executive planning office, Koss Ingenieure. The high modulation range of 1:10 (250 to 2,600 kilowatts) also enables a long burner runtime. The boiler system is able to adapt to the changing heat energy demand without constantly having to power on and off, which would cause increased energy consumption.

The development and implementation of new ideas is essential to meet the goals for resource conservation and environmental protection in Germany and the rest of Europe. One of the biggest means of leverage is the reduction of emissions in the heating sector. The provision

of room heating is responsible for around two thirds\* of the greenhouse emissions in the building sector. Out-dated heating technology and the harmful emissions released into the atmosphere by such technology have negative effects on the environment. Technological advancements can lead to significant energy savings and the new boiler system at Tollenbrink is an example of this. As well as producing low emissions, the system is also especially efficient and cost-effective. The proven boiler design and the high-quality insulation, together with the integrated flue gas heat exchangers, achieve an efficiency of close to 100 percent, which has a positive effect on both the energy consumption and the emissions. A pioneer for an environmentally friendly future.

\*Source: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety



## Future-proof emissions thanks to SCR catalyst

### Power, heat and cooling for spare parts specialist Winkler

Reliable and fast provision of spare parts for commercial vehicles, buses and agricultural machinery is essential for the customers of Winkler Logistik GmbH. One of Europe's largest central warehouses for commercial vehicle spare parts, spanning an area of around 27,000 m<sup>2</sup>, houses more than 100,000 parts which are available at all times thanks to an efficient storage and logistics concept. When designing the new Himberg site close to Vienna, Austria, preventing CO<sub>2</sub> emissions was a critical aspect for Andreas Mayer, Head of Logistics at Winkler in the headquarters in Ulm, Germany: "At Winkler, we focus on sustainability and climate friendly operations, with these principles being laid down in our company values. This is why, when designing and building our third central warehouse, we placed particular emphasis on high efficiency and climate neutrality. Shorter supply routes now allow us to deliver to our Eastern European sites much more quickly and flexibly."

When analysing the estimated load profiles, it quickly became apparent that the site has a relatively high basic load for heat and power. It has a continuous energy demand for heat for the warehouse and offices. Additionally, power for ventilating and lighting the halls and for the fully automated storage systems in particular is needed. Since heat and power are usually both required at the same time, the economic assessment advised combined heat and power generation using a CHP system.

The system provider K&W Drive Systems – the official partner of Bosch KWK Systeme in Austria – was in charge of planning and implementation of the energy concept drawn up by the customer. Michael Harbich, the project leader for CHP systems and gas generators, became involved in the project back in 2017 at an early stage: "We implemented the customer's energy concept by supplying a natural gas CHP system, a diesel emergency



power system and a cold water absorber with adiabatic recooling alongside the spray water treatment required for this. The system supplied provides power, heating and cooling and ensures an emergency power supply when needed. This allows the customer to be highly self-sufficient in terms of energy and ensures protection in the event of failures, while the system considerably increases the energy efficiency for the customer on the whole."

The Bosch CE 400 NA CHP system used by K&W Drive Systems impresses with a high efficiency of 86.7 percent through utilising the waste heat generated by the gas-powered combustion engine and, in addition to 400 kilowatts of electrical output, also provides 500 kilowatts of thermal output. Since, however, there is virtually no heat demand in the summer months but the operating times of a CHP system should still be kept as high as possible, the heat generated is converted into cold in summer using an absorption cooling machine. Winkler uses the 415 kilowatts of cold converted in this way to cool the site, especially the office area.

Besides economical and environmental aspects, having a self-sufficient power supply was one of the basic conditions Winkler required for the site. The Bosch CHP system, in combination with a diesel emergency power generator, ensures the power supply is maintained in various emergency situations. Furthermore, the higher-level control enables the components to work together seamlessly as part of a system and provides the required protection against power supply failure.

Winkler also considered the issue of environmental protection when it came to flue gases. An innovative SCR catalyst has been implemented in the CHP system to reduce

nitrogen oxides and, as a result, the system remains far below the legal limit values in Vienna of  $250 \text{ mg/m}^3 \text{ NO}_x$ . The system has a value of less than  $100 \text{ mg/m}^3$ , which is extremely low for a CHP system and means that it will be ideally prepared for any situation in which limit values are made more stringent in the future. The design and development of the SCR catalyst is based on the expertise and quality of Bosch products. Jonas Moser, project leader at Bosch KWK, is proud of the new development: "Thanks to interdepartmental collaboration with the specialists from Bosch Mobility Solutions, we were able to develop our own Bosch SCR system specifically for CHP systems. In this system, the entire control and software, as well as the SCR dosing unit and  $\text{NO}_x$  monitoring, come from Bosch. This means that the SCR system is ideally tailored for minimum emissions with maximum catalyst service life."



## Enter a digital networked future with Bosch

### Energy solutions for commercial and industrial applications

**Frankfurt** – At ISH Energy, the world's leading trade fair for sanitary, building, energy, air conditioning technology and renewable energies, Bosch is continuing to promote digitalisation and networking in the commercial and industrial sectors. Fast, simple, unbureaucratic and agile – customers in project business have high expectations for reaction times, flexibility and planning support. Bosch therefore relies on smart tools and uses intelligent configurators. One brand new example is the automatic preparation of project-specific 3D data and P&I diagrams. Being available in very early stages of projects this makes work simpler for planners and plant engineers. It enables them to perform more precise calculations and avoid later changes.

Further, Bosch is launching their new planning guide for steam boiler systems as an

interactive digital version. The fundamental idea: Make planning of complex process heat systems easier and make expert knowledge comprehensively available. With programmed calculation tools, checklists and practical error prevention information, the new interactive document is more than a typical planning handbook. "It doesn't just provide beginners with the information they need – it also serves as an efficient working tool for experienced planners," emphasises Daniel Gosse, Head of Marketing and Academy at Bosch Industrial.

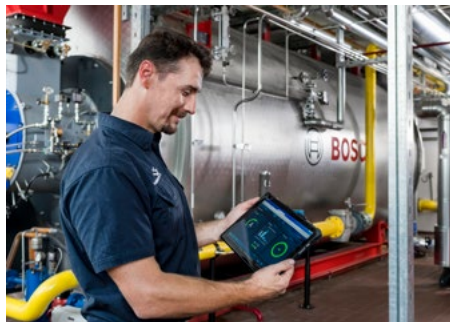
#### **Smart control technology and AI assistants for Industry 4.0 applications**

Preventing production downtimes and reducing energy costs to a minimum are key drivers for businesses and industries. The energy management solutions from Bosch Energy and Building Solutions enable overall optimisations



including energy generation, distribution and whole production lines. The Energy Platform at the trade fair booth gives you a live view of selected Bosch production sites. Recorded energy and process data is transformed into significant figures in order to increase energy and resource efficiency. What's more, Bosch Rexroth is presenting control solutions for this type of future-proof automation system for buildings and factories.

With artificial intelligence specifically designed for industrial boilers, the digital efficiency assistant MEC Optimize really stands out from the crowd. Predictive maintenance features monitor and present operating data. Additionally, the smart algorithms interpret the data and inform users in advance about potential downtime risks. With individually determined information and recommended actions, system operators are assisted in maximising their system availability and minimise their energy costs.



Artificial intelligence in boiler operation: The MEC Optimize digital assistant ensures maximum system availability and reduces energy costs.

### **Product innovations for steam, heat, power and compressed air**

Highly efficient, compact and easy to operate – at the ISH trade fair, Bosch will present the new Universal steam boiler CSB (compact steam boiler), which is available in a power range from 300 to 5,200 kilograms of steam per hour. The CSB steam boiler will be presented as a complete boiler system with low-NO<sub>x</sub>

Image on the left  
Digital and networked: Bosch presents smart services and efficient energy solutions for the commercial and industrial sectors at the ISH Energy 2019 trade fair.

Image on the right  
Efficient and extremely compact: The new CSB steam boiler produces up to 5,200 kilograms of steam per hour.





burner, modules for waste heat recovery and the compact steam control CSC mounted on the boiler. The boiler achieves a high efficiency of more than 95 percent and enables sustainably low emissions. Its innovative design additionally provides easy accessibility for servicing and maintenance work.

At the ISH 2019 the Bosch booth features the largest boiler of the entire trade fair. The ZFR double-flame tube boiler generates up to 55 tons of steam or up to 38 megawatts of hot water. Visitors can actually step inside the boiler or even go upstairs to the VIP lounge on its top floor. Besides the process heat systems, Bosch will also present innovative combined heat and power systems. In this sector, the customer focus is also on digitalisation through control technology or remote access in order to optimise reliability and operating costs. Bosch will show a combined heat and power unit from the latest motor generation. It is optimised to provide particularly high overall efficiency and future-proof low emissions. The compressed



Future-proof production: Save money thanks to automation solutions and intelligent processing of energy and process data.

air and heat system is another highlight. It produces compressed air using a natural gas motor and simultaneously provides waste heat for additional processes and heating applications. This enables CO<sub>2</sub> emissions savings of up to 50 percent and lowers operating costs.

### International industry solutions

Bosch offers reliable energy solutions in more than 140 countries worldwide. Typical applications include the food and beverage industry, production industry, energy suppliers and large buildings or public facilities. Availability, efficiency and seamless integration into the customer's processes are essential. Bosch demonstrates these qualities at the ISH trade fair at different information points. Additionally, visitors can see real boiler houses and energy centres from a range of industries using a 360° virtual reality headset.



Combined generation of power and heat: Bosch combined heat and power units offer low energy costs and emissions.