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Invented for life



Reduce operating costs

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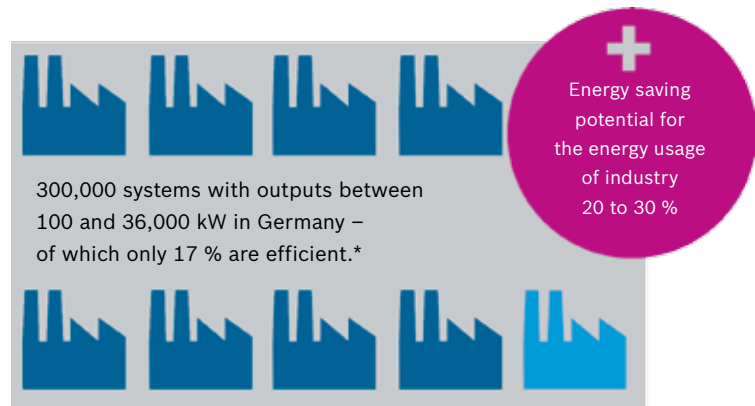
Modernisation of  
boiler systems

# Foreword

For many companies, the efficient use of energy has become a key competitive factor. Energy prices have risen constantly over the past decades and more than doubled in the last 10 years.

According to research by the German Heating Industry Association (BDH), there is a considerable modernisation backlog in the sector of heat and steam generating systems. In Germany, for example, more than 80 % of the existing systems are operated inefficiently. In average the energy efficiency can be increased by 20 to 30 % with common technical measures.

This brochure gives you detailed information about the technical possibilities for the modernisation of these systems and the resulting economic benefit.



\* Source: BDH

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Up to 1,500 large-scale and industrial boiler systems are produced annually at our high-tech production sites in Gunzenhausen, Germany and Bischofshofen, Austria.

# Expertise and quality

Bosch Industriekessel is renowned worldwide as a specialist supplier of boiler systems in all sizes and output categories. A driver of innovation in industrial boiler technology for more than 150 years.

## Expertise – the basis of our quality

We have specialised in industrial boiler construction since our company was founded in 1865. In over 150 years we have developed extensive specialist expertise and a deep understanding of the specific requirements of our customers. Engineering, manufacturing and service – the expertise of our employees is the foundation of our quality.

## Simple and efficient

The basic principle of the horizontal 3-pass boiler, air preheating and modern safety equipment are today's standard in the sector of industrial boilers. They are just some of the many innovations which were initiated by the boiler manufacturer Loos (today Bosch Industriekessel). By continually developing our products we want to live up to our aim of achieving the highest efficiency, maximum reliability and the simplest and safest operation for our systems. The modular design of our products also enables them to be planned and installed efficiently.

## Reliable energy for the whole world

Our highly integrated service network is the largest in the world for industrial boilers. It enables us to achieve the fastest reaction times. Thanks to the optional remote interface, Bosch's experts can connect to the system live at a customer's request. More than 115,000 boiler systems supplied in over 140 countries are a clear testament to the high quality and reliability of our industrial boilers. See for yourself, we will be pleased to give you details of our many references.

## Your specialist – even for older systems

Does modernisation pay off? We know your boiler system and have broad experience and detailed knowledge about the technology and interfaces – even for older systems. This enables us to give you expert



advice about the cost-effectiveness of possible modernisation. Thanks to partially automated production, we can also produce individual components and modules of high quality on a very efficient basis.

## Industrial boilers – internationally certified

State-of-the-art production equipment and specially trained manufacturing staff ensure that our systems have the edge when it comes to quality. This is confirmed by the tests and quality certificates of international notified bodies and certification institutes.

## Achieving the optimum solution together

As the leading manufacturer of innovative boiler technology, we opted early on to sell our products through specialist companies. Thanks to close cooperation with the particular planning and plant engineering companies we are able to offer you the optimum solution that is tailored to your project. Trust and open dealings with our partners are the most important preconditions when implementing projects quickly and reliably to the full satisfaction of our end users.

# Modernisation pays off

The average service life of boiler systems that are used for industrial purposes is between 20 and 40 years. Many measures which previously were not possible or financially justifiable pay off nowadays after a very short period of time.

## Five good reasons to modernise your energy generating system

### Reduce operating costs

- ▶ Increase in efficiency
- ▶ Change of fuel
- ▶ Increase in the degree of automation
- ▶ Reduction in mandatory supervision

### Security of supply

- ▶ Modern self-diagnosis functions for the system
- ▶ Remote service for optimum operation
- ▶ Spare parts availability

### Structural adjustments

- ▶ Increase or reduction in the installed capacity
- ▶ Integration in production and building management systems
- ▶ Modifications with regard to the available fuel quality

### Sustainability

- ▶ Increase in the service life of the system
- ▶ Reduce emissions

### Laws, directives and requirements

- ▶ Maintaining legal conformity



Although highly innovative for its time, today there are many new possibilities for significantly reducing the operational costs of your boiler.

# Our offer

Services for your project	Project phase
<p><b>Energy Quick Check – free of charge, without obligation, individual</b> Not everything pays off for everyone – the individual setting and load profile are crucial. Our specialists evaluate potential modernisation measures on the basis of your specific situation.</p>	 <p><b>Energy Quick Check</b></p>
<p><b>Quotation and project management</b> A detailed feasibility study based on your data offers you a solid basis for making the decision. Our experts configure the desired modernisation package in high quality.</p>	 <p><b>Project management</b></p>
<p><b>Production and installation</b> The required components and modules are dimensioned precisely to your system and manufactured to fit exactly. Thanks to their modular design, they can be installed quickly – even without interrupting the energy supply if required.</p>	 <p><b>Production and installation</b></p>
<p><b>Commissioning</b> Many modernisation measures require professional commissioning in order to maximise the gain in efficiency. Our service experts also give you advice on the way of operating your system.</p>	 <p><b>Commissioning</b></p>
<p><b>Our service – always there for you – 24 hours a day, 365 days a year</b> Bosch boilers offer you worldwide the highest possible level of system availability. Our large worldwide service network ensures quick response times from our local service experts. Optionally, we offer a secure remote connection to your boiler system. Our customers can thus grant the Bosch service access for optimising parameters. This can help to reduce maintenance costs.</p>	 <p><b>Service</b></p>

# Smart energy saving

Our modular system and components portfolio enables modernising your existing system quick and easy. Outdated components are removed and the boiler pressure vessel is equipped with modern system technology such as heat recovery devices.

## Economizer

- ▶ up to 7 % fuel saving

## Flue gas condenser

- ▶ up to 7 % fuel saving

## Air preheating

- ▶ up to 2 % fuel saving

## Feed water cooling

- ▶ up to 1.8 % fuel saving

## Settings and maintenance

- ▶ up to 3 % fuel saving
- ▶ extended service life
- ▶ process reliability
- ▶ improved operation





**Water treatment**

- ▶ higher water quality
- ▶ improved steam quality
- ▶ lower desalting rate

**Condensate systems**

- ▶ up to 12 % fuel saving
- ▶ make-up/raw water saving
- ▶ waste water reduction
- ▶ up to 90 % savings on chemicals

**Modulating firing**

- ▶ up to 1 % fuel saving
- ▶ wear reduction

**Speed-controlled fan**

- ▶ up to 75 % electrical saving

**O<sub>2</sub>/CO burner control**

- ▶ up to 1 % fuel saving

**Thermal degassing system**

- ▶ up to 80 % savings on chemicals

**Expansion and heat recovery module**

- ▶ up to 1 % fuel saving
- ▶ up to 1 % make-up water saving
- ▶ up to 100 % cooling water saving
- ▶ up to 70 % waste water saving

**Vapour heat exchanger**

- ▶ up to 0.5 % fuel saving

# Modernisation measures in detail

## Save fuel costs through heat recovery ...

### ... from flue gas up to 14 %

The flue gas temperature can be reduced by more than 100 Kelvin through the use of a flue gas heat exchanger (economizer). A downstream condensation heat exchanger extracts further energy from heat and condensation.

### ... from condensate up to 12 %

Condensate is water that has already been treated and that also contains energy. By feeding it back to the water circuit, less cold fresh water has to be treated and heated.

### ... from desalting up to 1 %

Desalting water contains energy in form of pressure and heat that can be recovered. Further, wasting of fresh water to cool down this hot boiler water can be avoided.



A 10 % fuel saving in a system with 10 t/h steam capacity means a saving of up to 150,000 euros per year.



## Save energy costs through the firing ...

### ... of up to 40 % by switching fuel

Energy costs per kWh vary depending on the fuel. Switching to another fuel can often have a payback period of only a few months while generating savings over decades. If multi-fuel firing is retrofitted, peak loads can be covered by a second fuel.

### ... of up to 4 % by optimising the firing

Combustion control balances out changes in operating conditions, such as temperature, pressure and gas quality – for a high level of combustion efficiency. Intelligent system control and a high modulation range reduce unnecessary cold starts and pre-ventilation losses when starting up.

### ... reduce the power consumption of up to 75 % through efficient electrical consumers

Conventional firing fans are operated at 100 % load even when the boiler is at partial load. The excess energy is “destroyed” by throttling the air flow. Speed-controlled motors and burner control not only save you power, your boiler will also be significantly quieter at partial load.



A fuel price difference of 20 % per kWh saves up to 285,000 euros per year on a 10 ton boiler.



Reduced dependence on one fuel thanks to multi-fuel firing.



## Reduced operational costs and increased reliability by automation. Minimising mandatory supervision thanks to automation equipment (EN 12953) ...

### ... with continuous measurement of conductance

Measuring the conductance in the boiler makes it possible to significantly reduce desalting losses. Combined with automatic desalting less fresh water has to be heated and pre-treated.

### ... with automatic desalting and blow-down

Automatic blow-down and desalting increase convenience of operation while reducing fuel and water consumption. High levels of automation also prevent manual errors and therefore increase the operating safety and service life of the system.

### ... with automatic condensate monitoring

The contamination of the condensate, for example with fat, can cause critical damage to the boiler and system. In case of contamination, the automatic monitoring system triggers an alarm and blocks the inflow of the condensate. The boiler system is operated without interruption by substituting the condensate with make-up water.



The times when it was necessary to have a constant presence in the boiler house have long since gone.

## Maximum availability of the system ...

### ... through remote service

On the customer's demand a Bosch service expert can gain direct access to the system via a secure connection to identify e.g. false parameters quickly. In some cases these faults can be eliminated remotely or the service technician is able to avoid a second visit by providing the correct spare part at the first on-site visit.

### ... through preventive condition monitoring

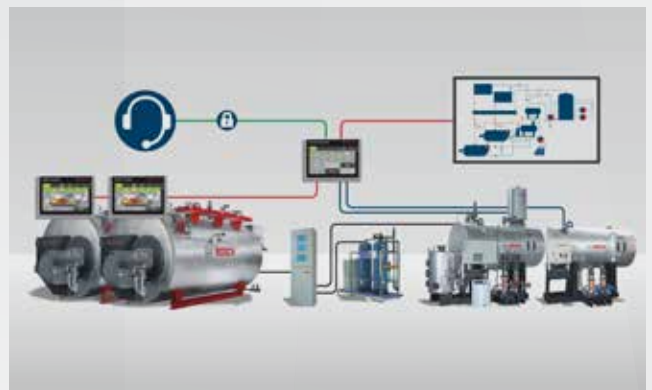
The intelligent boiler control evaluates sensor signals during operation to detect wear or the need of maintenance at an early stage. These notifications enable higher reliability of the system and trouble-free operation.

### ... through automatic functions that reduce wear on materials

Frequent cold starts at high load levels create stress for boilers and their components. Automatic boiler start functions and control algorithms for reducing burner starts increase the service life of the system.

### ... through remote monitoring

An immediate message on a cell phone in the case of a fault makes it possible to react immediately – so that operation remains interruption-free.



99 % of all boiler damages are due to inadequate maintenance. Monitoring and early-detection functions give security.

# MEC Optimize for high efficiency and availability

Optimum system efficiency and a high level of system availability are important factors for industries to reduce production costs and to increase competitiveness. In this field the use of state-of-the-art data acquisition and analysis is very beneficial and gives information about the operating performance and efficiency of energy-generating systems. With MEC Optimize, Bosch offers operators of steam and hot water boiler plants a new, innovative system for energy monitoring and operational safety.



MEC Optimize captures all the operating parameters and messages of the linked system components. Over many years the data are stored locally, which means that the plant operator remains the data owner. The visualisation takes place in the three separate areas of efficiency, operation and service and provides a comprehensive analysis.



After an automated data analysis the system indicates any increased energy consumption as well as evaluates the system's operating performance. Based on their load profile components are assessed for wear which enables the plant operator to ensure that system availability is maintained.



Sample data

At every test interval, the boiler attendant can enter the recorded measurement values into the electronic boiler logbook and print these out if required via an export function. The intelligent boiler logbook also checks all entered data, then compares this with the manufacturer's specifications and gives action recommendations if there are any discrepancies.

## Further benefits of MEC Optimize:

- ▶ Easy plant integration in the process control system or visualisation via PC/tablet
- ▶ Digital document storage for operating instructions, data sheets, maintenance and service reports
- ▶ Optional connection to remote service tool MEC Remote: transfers the current system status and reports important information via SMS or e-mail to the plant operator

# Remote access using **MEC Remote for boiler systems**

Using MEC Remote, operators can now gain remote access to their hot water and steam boiler systems conveniently and securely. This means the entire boiler and system control can be visualised using standard Internet-enabled devices.

MEC Remote is the ideal solution for all companies:

- ▶ in which the supervising personnel cannot be on-site constantly
- ▶ operating multi-boiler systems requiring supervision
- ▶ with on-call service, e. g. at the weekends

Using the overview map, multiple systems around the world can all be monitored at once. As an option, MEC Remote can send the operator reports of any abnormalities or faults via SMS or e-mail.

At your request the Bosch experts can also use remote access to perform expanded parameter setting, programming (SPS) and fault analysis directly on your system. If components fail, the service experts can utilise remote analysis to narrow down the cause and ensure they arrive with the appropriate equipment. This optimises service costs and increases system availability.

## At a glance

- ▶ Access to operating data, any time, anywhere
- ▶ Boiler systems at all locations on one overview screen
- ▶ Quick, convenient and cost-effective monitoring of system data
- ▶ Secure transmission thanks to a multi-level security concept
- ▶ Optional remote support from Bosch Industrial Service
- ▶ Notifications via SMS or e-mail for defined events, if required

We provide a sophisticated role concept that controls both access authorisation and approved visualisation levels. The remote access function itself has a multi-level security concept. The external data connection can be turned on or off on the hardware at any time in the boiler house using a key. The operating data from the industrial boilers are only saved locally on the system, not in a cloud.

## Features

- ▶ Visualisation of the local user interface
- ▶ Navigation through the control system
- ▶ Parameter setting and programming by Bosch Service using service access

## Advanced features (only with MEC Optimize)

- ▶ Transfer system status to the portal
- ▶ Alarm management via e-mail or SMS

## MEC Remote + MEC Optimize

Efficiently networked. Optimally monitored.

Combining MEC Remote and MEC Optimize means you can access system data at any time, from any location.

Live support from service experts



Convenient operation on site



Push notifications via SMS or e-mail

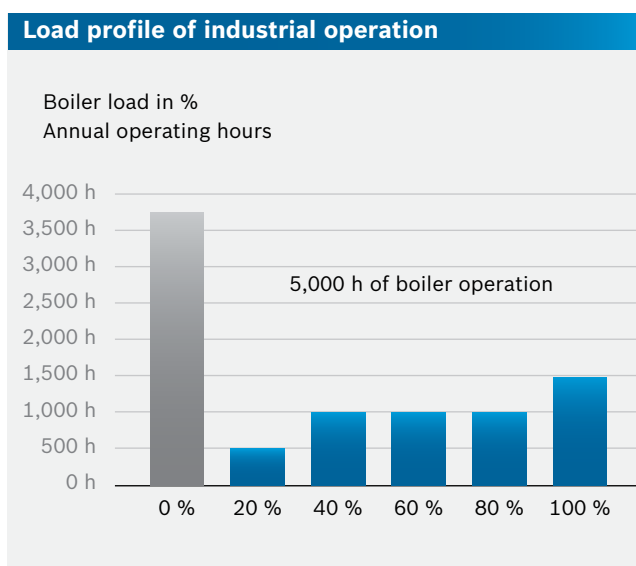


On-call at home



## Example of an application: Switching from oil to gas at a medium-sized German company

A typical medium-sized German company with a 6-day week and double-shift operation is the basis for the following calculation example. The steam boiler is 15 years old and is mostly operated at partial load. Due to the extension of the gas supply network, the company can switch their boiler to natural gas.



### Key data

Steam boiler with an output of 10 t/h and an operational pressure of 10 bar, using light fuel oil and a burner with mechanical linkage, without an economizer and with a condensate rate of 2,000 kg/h: 6 % oxygen-free, 50 % with oxygen, average load 3,900 kg/h, 5,000 operating hours per year following the shown load profile.

### Fuel and power prices

- ▶ Light fuel oil: 0.44 euro per kg (0.375 euro per l)
- ▶ Natural gas H: 0.30 euro per m<sup>3</sup>N
- ▶ Power: 0.16 euro per kWh
- ▶ Water price: 2 euro per m<sup>3</sup>
- ▶ Waste water price: 2 euro per m<sup>3</sup>

### The conclusion

The customer undertakes extensive modernisation of the system, including integration of heat recovery units. The renewal of the burner is amortised in just four months and the entire investment in less than seven months.

There is a total saving of 5 million euros over the predicted remaining lifespan of the boiler of 15 years – a significant contribution to increasing competitiveness and profitability.

Modernisation measure*	Cost saving in euros	CO <sub>2</sub> reduction in tons	Investment in euros	Amortisation time in months
Switching to natural gas	244,000	2,000	80,000	4
Economizer	55,000	370	50,000	11
Condensing heat exchanger	46,000	310	60,000	16
Fan speed control	6,000	20	10,000	19
O <sub>2</sub> and CO control	5,000	30	15,000	40
Heat recovery from desalting	18,000	120	10,000	6
<b>Total</b>	<b>374,000</b>	<b>2,850</b>	<b>225,000</b>	<b>7</b>

\* Depending on load behaviour and condensate parameters, other measures such as air preheaters, feed water coolers, vapour heat exchangers or condensate heat exchangers may be financially justifiable.

## Our service: quick, competent and local

With us you can benefit from a comprehensive portfolio of products and services from a single supplier. In addition to perfectly tailored system solutions, we also offer our customers a wide range of services.

### Always there for you: first-class service

Our service department is there for you around the clock every day of the year. Thanks to our closely knit network of service areas, we can guarantee the shortest possible response times.

Besides maintenance, fault rectification and repairs, we can also offer you assistance with regular inspections of your system. Not sure whether your system is still state-of-the-art and working efficiently? We would be pleased to assist you in analysing your system and modernising it if required.

If you are calling during regular working hours, please contact your local customer service engineer whose contact details can be found on the control cabinet of your boiler system. We focus on personal service and direct contact to save valuable time.

Customers from abroad should please contact our 24-hour service hotline. This also applies if a fault outside regular working hours occurs. If you call via a landline you will be connected directly to the customer advisor who is responsible for your country/region.

Your problem will be identified in the course of professional advice over the phone or alternatively we will coordinate an on-site visit.

Service hotline Germany/International:

+49 180 5667468\*

Service hotline Austria:

+43 810 810300\*\*

### Reliable supply of spare parts

Spare parts are available immediately from our warehouse, even those parts that have been in service for many years. You can contact our spare parts hotline outside business hours, on Sundays and on public holidays.

Spare Parts hotline Germany/International:

+49 180 5010540\*

Further information can be found in our Service brochure and at [www.bosch-industrial.com](http://www.bosch-industrial.com).

\*0.14 euro/min. from the German landline.

Maximum mobile phone price: 0.42 euro/min.

\*\*Max. 0.10 euro/min. from the Austrian landline.

Different charges may apply for calls from mobile phone networks and for international calls.



## Reference: Oettinger Brewery

Oettinger Brewery has modernised its steam generation at its production site North in Oettingen (Bavaria). This has enabled the brewery to save year by year over 650 tons of CO<sub>2</sub> emissions and approximately 20% of its energy costs for process heat.

The steam supply consists of two Loos (today Bosch) 3-pass boilers produced in 1991 and 1993. In the context of a modernisation program, the existing steam generating systems have been brought to the latest standards of efficiency and eco-friendliness. The measures comprised the integration of:

- ▶ flue gas heat exchangers (not present on the existing boilers)
- ▶ speed-controlled burner fans
- ▶ combustion control with O<sub>2</sub> probe
- ▶ boiler and system controls including sequence control for the efficient and optimised operation of the multi-boiler system

The retrofitted economizers reduce the flue gas temperature from approximately 230 °C to almost 115 °C through preheating the feed water. This increases the

boiler efficiency by around 6 % and reduces the fuel usage as well as helping to keep emissions low.

The replacement of the existing combi-burners with modern, modulating natural gas burners resulted in a further increase in efficiency. Thanks to the use of a burner fan control, the motor speed is reduced depending on the boiler's output. The electrical power consumption in the partial load range is therefore considerably lower – and at the same time there is also a significant reduction in the sound level. Even the oxygen content in the flue gas is now also continually measured. If this is too high, making combustion ineffective, the amount of combustion air is reduced. This optimises the efficiency of the burner system and reduces CO<sub>2</sub> emissions as well as energy costs.



The modernised steam boilers with oxygen- and speed-controlled natural gas burners at Oettinger Brewery.

In order to ensure the optimum water quality in the boiler at any time, equipment for automatic desalting and blow-down were retrofitted. The installed feed water regulating modules also ensure that there is a constant water level in the boiler. In addition to increasing the level of automation these measures provide a more steady operation with less material stress and ensure that energy losses are reduced.

Thanks to the integration of a BCO boiler control, all control functions and parameters can be visualised or altered on the touchscreen display. With the integrated “Condition Monitoring” software installed, the operating company benefits from a consistently high level of efficiency and availability from its boiler system. A wide range of data, such as for example flue gas temperature, desalting quantity or boiler load, are analysed and evaluated by the preventive monitoring system. The data are depicted clearly for the operating personnel by means of a traffic light model. The remote service link offers additional support. On demand the brewery can grant the Bosch service access for optimising parameters.

The consulting engineers Harald Moroschan from Muhr am See were entrusted with the planning of the modernisation project. The plant construction company Sell Haustechnik GmbH from Helmbrechts installed the equipment. The project was a full success and saves annually energy costs while significantly reducing CO<sub>2</sub> emissions.



Using waste heat for preheating feed water saves fuel and protects the environment.



BCO boiler control with a preventive monitoring system ensures that there is a high level of transparency and simple boiler operation.

## Reference: Fleischwaren Sutter GmbH

In the course of a continuous plant optimisation Sutter decided to introduce an energy management system in its main production facility in Gau-Bickelheim. The resulting tax and cost advantages are used to compensate the increase in energy costs over the past years. In addition, many tons of CO<sub>2</sub> emissions are avoided.

Upon request of the Energy Manager of Sutter, Christian Böhme, the savings potentials had been analysed and evaluated economically. The process heat supply with three oil-fired steam boilers was quickly identified as one of the biggest energy consumers of the plant. "Prior to the modernisation we had been supplied with around 30,000 l of light fuel oil – every week at another price. The switch to natural gas has improved our reliability of our energy cost planning. This is an advantage that we can pass on to our customers in the form of stable prices," explains Christian Böhme.

In the course of the modernisation the dual fuel burners had been retrofitted while the existing light fuel oil supply was maintained as backup. In case of supply shortages in winter times the natural gas supplier can request the short-term operation with light fuel oil.

In return, the natural gas supplier waived a building cost subsidy for the laying of the gas pipeline. In comparison with the previous fuel oil burners with mechanic combined group the new electronically controlled burners are able to modulate down to 350 kW and thus facilitate a significantly quieter and more efficient part-load operation. In addition, by using a combustion control with oxygen sensor the losses on the flue gas side could be reduced from 6 % to 5 %.

The availability of spare parts for the boiler control based on Siemens Simatic C7 components will foreseeably become more and more difficult in the coming years. Therefore a state-of-the-art boiler control system consisting of BCO and SCO was integrated. Besides the automated water treatment, the SCO includes the adaptive boiler cascade control in order to avoid



Sutter's process heat supply works with greater efficiency after the successful modernisation.



standstill damages in the backup boiler. Furthermore, it automatically reports abnormalities during operation of a boiler to the superordinate control system. As a precaution it switches to the backup boiler.

During the introduction of a certified energy management system the consumption figures need to be recorded on a regular basis to enable the analysis of energy saving potentials. Sutter opted for the superordinate control system MEC from Bosch. Thanks to this system the energy manager and the technical managers can view the status of the system at any time from their working places and can easily evaluate the recorded data. Each user can intuitively configure the view in order to maintain an overview of the data relevant for him. "I think it's great how good the system has proved itself in operation. Some days after the commissioning I found out through small differences in

energy data that the setting of one of the older valves in the automatic desalting system could be optimised. This would not have been noticed so quickly with a conventional system," explains the responsible customer service engineer from Bosch, Torsten Fischborn, during his first service appointment after the modernisation.

The Energy Manager Christian Böhme shows his satisfaction: "Despite the recently decreased prices for light fuel oil we will save 250,000 euros annually. The investment will be amortised after approximately three years – a worthwhile project and a considerable contribution to reducing our CO<sub>2</sub> emissions."

Sutter's process heat supply works with greater efficiency after the successful modernisation.



The system control from Bosch consists of:

- ▶ controls of the individual boilers and their safety chains
- ▶ sequential control and water treatment of the multi-boiler system
- ▶ superordinate control system for the visualisation, recording and evaluation of operating data
- ▶ interface for direct messages to the technical manager

## Reference: Bechtel private dairy

Two new steam boilers with a system output of some 30 t/h supply the Bechtel private dairy now with more steam, compared to the two 1994 Loos-boilers with 16 t/h, but also provide an advanced boiler system as regards energy efficiency, operating safety and flexibility. Remote access with MEC Remote and the digital efficiency assistant MEC Optimize complement the existing energy management system perfectly.

While increasing their production capacity, the Bechtel private dairy (“Privatmolkerei Bechtel”) from Germany also modernised their process heat supply. The new boiler system, with nearly 30 tons of steam capacity per hour, is one of the first worldwide with MEC Optimize. Based on the operating mode of the system, this digital efficiency assistant from Bosch predicts the service life of individual components, suggests measures to increase efficiency, and instructs the user in implementing them. All electrical sensors and actuators of the boiler system are connected to an analysis tool like the ones used with a famous particle accelerator or for controlling the underground in a global metropolis.

The Bechtel dairy processes more than one million kilograms of milk per day. Complex production structures and energy-intensive processes require a comprehensive data analysis. This is the basis of

competitive production costs – decisive factors include preventing system failures and minimising energy consumption. As far back as 2012, Bechtel had already introduced an energy management system. Since 2017, the company has also been using the digital efficiency assistant MEC Optimize from Bosch, which now enables predictive maintenance.

MEC Optimize is integrated in the boiler control cabinet and records all data from the steam boiler, water treatment, heat recovery facilities and other connected plant components. The operating data is stored locally for many years and evaluated via trend analyses. If the fuel consumption increases, for example, due to excessive desalting rates or soiling in the boiler, the efficiency assistant reports possible causes. At Bechtel, this is done through the company network of connected PCs or via a WiFi hotspot in the boiler room to the tablet of the boiler attendant. As an





The boiler controls ensure a high degree of automation and deliver relevant operating data to MEC Optimize.

option, it is possible to send notifications for defined cases directly to the operator's mobile phone via the remote connection MEC Remote.

Another important optimisation aspect is the maximisation of the boiler lifetime. The most important influence factors here are the water characteristics and the operating mode – both are often neglected in practice. MEC Optimize not only serves as a digital boiler logbook but interprets the entered values and helps the operator to identify and correct conditions that promote corrosion or are even safety-critical. In addition, the operating mode is analysed for incorrect start-up, inefficient control of multi-boiler systems and too frequent burner cycles. MEC Optimize also helps to avoid production losses due to interrupted process heat: The permissible loads and switching cycles are stored for all important components. Based on the operating mode, the efficiency assistant determines the state of the component, predicts the probable remaining lifetime and supports in maintenance planning.

The other plant equipment from Bosch for feed water deaeration, heat recovery and automation rounds off the overall system and ensures low energy consumption. The steam boiler system was realised by Karl Lausser from Pilgramsberg, Germany – without interrupting the steam supply. In coordination with the dairy's operating processes, the boilers were put into operation by Bosch Industrial Service on a staggered basis.



Efficiency and availability in view: MEC Optimize stores, evaluates and visualises the data of all linked system components.

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\*\* max. EUR 0.10/min from Austrian landline.

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