BOSCH
Invented for life

Perfection and efficiency in modular design

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Boiler house components

Contents

Hot water boilers
Heating boilers

	Uni Condens	UT-L	UT-M	UT-H	UT-HZ
Output MW	0.8–1.2	0.6–19	0.7–19	0.8–18	13–38
Temperature max. °C	110	120	190	210	210
Pressure max. bar	6	16	16	30	30

Steam boilers

	U-ND	U-HD	U-MB	UL-S(X)	ZFR(X)
Output t/h	0.2–3.2	0.2–3.2	0.2–2	1.2–28	18–55
Temperature max. °C	110	204	204	300	300
Pressure max. bar	0.5	16	16	30	30

Efficiency

Heat recovery boiler HRSB	4-pass boiler with burner	3-pass boiler without burner	Recovery and use
Heat recovery steam boiler	Heat recovery boiler steam/hot water		Waste heat

Components

Boiler and system control	Water	Steam/Condensate	Fuel supply
Control cabinet	Modules	Modules	Burner systems

Quality boilers for more than 150 years

Bosch Industriekessel is renowned worldwide as a specialist supplier of boiler systems in all sizes and output categories. For over 150 years we have been providing innovation in industrial boiler construction.

The company, which began in 1865 as a small boiler maker under the Loos family name, has developed in recent decades into a leading global system supplier for industrial boilers. More than 115,000 boiler systems supplied to over 140 countries worldwide confirm the renowned quality, reliability and efficiency of our industrial boilers, which are manufactured in Gunzenhausen (Germany) and Bischofshofen (Austria).

Efficient systems

Our modular boiler systems can reduce operating costs by up to 25 % when compared with conventional boilers. In addition to minimizing fuel consumption, our boiler systems also reduce the consumption of water, chemicals and electric power as well as the work involved in operation and supervision.

Perfectly controlled

Thanks to their intelligent boiler control, the availability and also the efficiency of the systems increase. Automatic control features, such as for example for cold starts or multi-boiler systems, significantly extend the lifespan of the boiler systems.

Whether it is 3D data, technical drawings or documents for tendering and approval, the experts from Bosch offer specialist support at every phase of the project – from conception through to commissioning. Trust and openness between partners ensure that mutual success is achieved. Thanks to the customised dimensioning and equipping of the boiler systems, individual solutions can be created and modules retrofitted easily.

Precision due to welding in ideal position

Thanks to horizontal welding with highly modern welding processes, a more homogeneous structure, a deeper root penetration and notch-free welding surfaces are achieved.

Use of welding robots

Semi-automatic and fully automatic welding robots are used for consistently high quality on highly-stressed welding seams.

Low-stess materials

Modern plasma and laser cutting systems ensure smooth metal processing and cutting. This means that our boilers have higher stress reserves during operation.

In-house manufacture of flame tubes

All smooth and corrugated flame tubes are manufactured in-house and are subject to the most stringent quality requirements. Up to 100 % of the welding seams are X-ray inspected.

Highest level of quality monitoring

Quality has the highest priority with us. Factory inspectors, who are certified by TÜV, together with TÜV's own staff, constantly monitor and document our quality during the entire manufacturing process right up to the acceptance.

Precision and analysis

An in-house laboratory inspects welding seams and analyses materials, so that maximum transparency is maintained. Over 25,000 X-rays of welding seams are evaluated every year in our three X-ray chambers.

Intelligent component manufacturing

Bosch offers individual and perfectly fitting boiler house components in modular design. The individual components are fully assembled and electrically wired in the factory. The ready-to-install modules only have to be connected to the supply lines and linked to each other. Trouble-free commissioning is assured thanks to a complete operating test of our control cabinets.

Efficient installation

Modules, which are perfectly matched to the boiler, do not only increase the efficiency of the system. They also make planning and installation easier – this saves time and reduces risk for our customers during installation and commissioning.

Certified quality

Numerous product and quality management certificates enable us to deliver our boiler systems to more than 140 countries worldwide.

Experts with certified knowledge

Our nearly 200 boiler welders have a total of more than 1,000 welding exam qualifications. This means that welding of the highest level in accordance with internationally recognized standards is achieved.

Health and safety

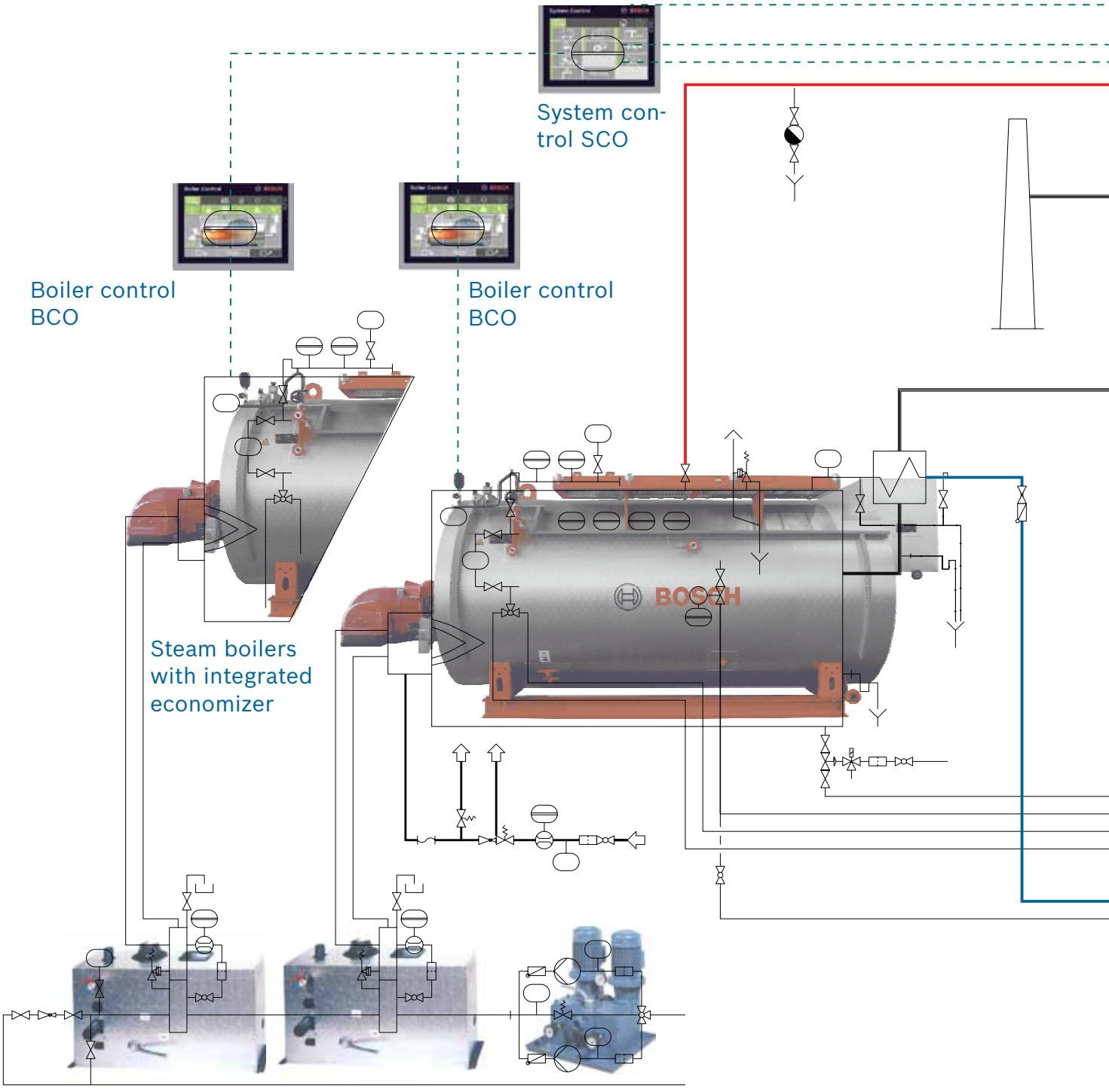
Only happy and focused staff can deliver the highest level of quality. State-of-the-art safety procedures and working equipment are a fundamental part of our entire manufacturing concept.

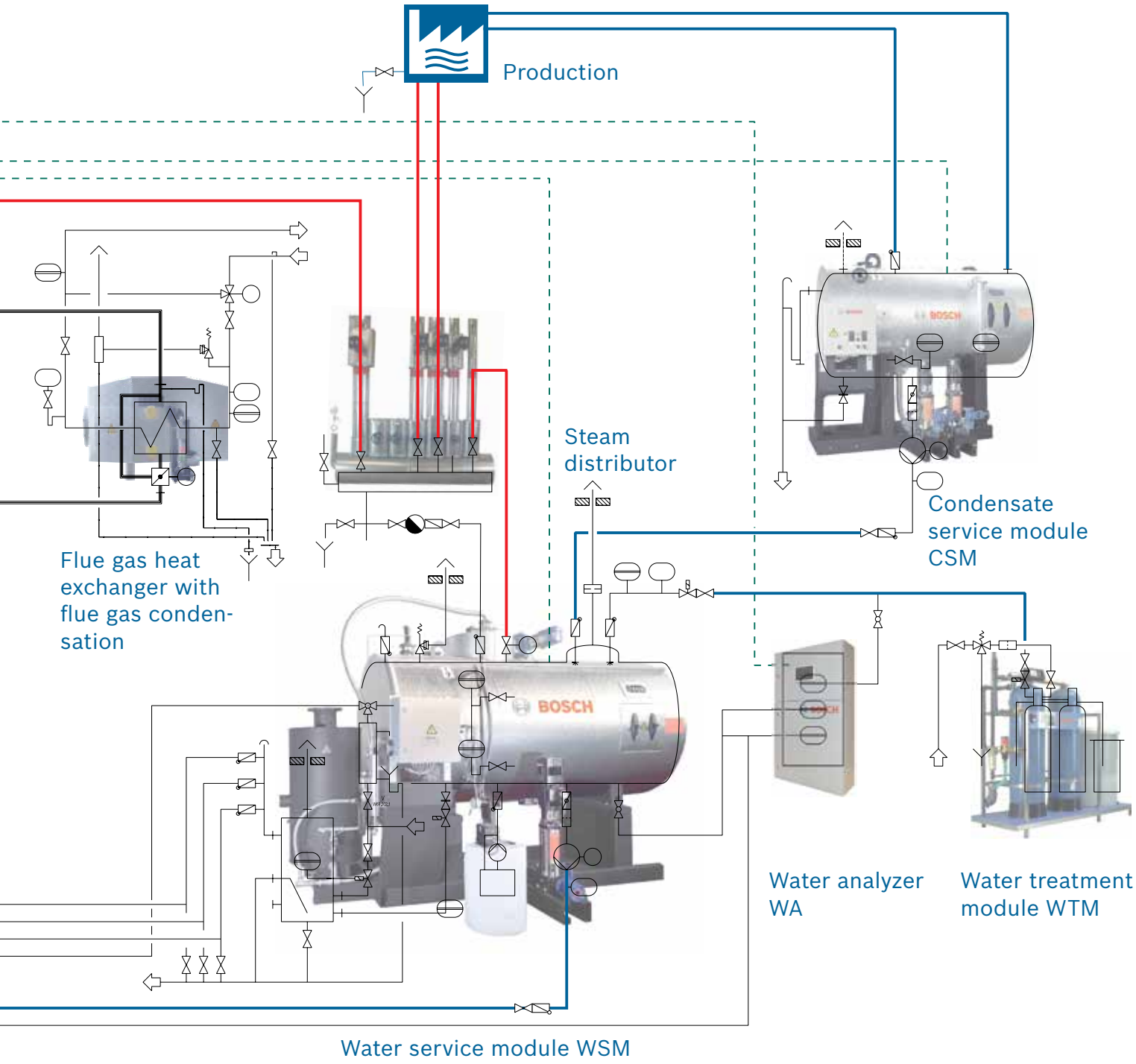
Promoting the next generation

Whether it is boiler welders or engineers, we constantly train and support our future employees from the start. We have our own apprentice workshop and we cooperate with technical colleges, so that our staff quickly acquire practical experience.

Smart energy saving

Highly efficient boiler systems with perfectly matched boiler house components ensure that low levels of energy consumption and emissions are achieved.




Production
Steam distributor
Condensate service module CSM
Flue gas heat exchanger with flue gas condensation
BOSCH
Water analyzer WA
Water treatment module WTM
Water service module WSM

Modules for steam boilers

Our modules for steam boilers allow you to equip your system according to your requirements. They ensure maximum operating safety as well as long service life and a high level of efficiency under the specific operating conditions.

Water service module WSM

The water service module supplies steam boilers with degassed and chemically conditioned feed water and disposes of the desalting and waste water.

- Feed in and storage of condensate and make-up water
- Thermal partial deaeration of the feed water with WSM-T
- Thermal full deaeration of the feed water with WSM-V
- Chemical conditioning of the feed water
- Expansion and cooling of the desalting and waste water
- Cooling of the water samples
- PLC control and visualization of
  - water level in the tank
  - feed water temperature for the WSM-T
  - tank pressure for the WSM-V
  - blow-down temperature
- Control for chemical dosing
- Dry running protection feed pump module
- Overflow protection

Construction

All components are piped, thermally insulated and electrically wired into a multi-functional assembly unit. Complex scaffold constructions are not necessary: The compact module is mounted on a stable support device and designed for installing at ground level. All functions are computer-aided and automatically controlled with a programmable controller PLC with touch panel.

Water service module WSM-V for full deaeration for all steam boilers with outputs ranging from 2,000 to approx. 100,000 kg/h.

Water service module WSM-T for partial deaeration for all steam boilers with outputs of up to 8,000 kg/h.

Equipment level

The module consists of the steam heated feed water tank, the chemical dosing device, the blow-down and expansion tank, a water sample cooler and the associated fittings as well as the control cabinet. Optionally, there are additional components such as a heat recovery facility for desalting water, a second chemical dosing device or feed pump modules available. For the WSM-V is a spray or trickle deaerator mounted on the feed water tank.

Benefits at a glance:

- Fast and easing planning, installation and acceptance
- No need for positive suction head, ground level installation
- Ready for operation with just a few connections
- Easy commissioning, maintenance and operation
- Complete warranty unit
- Reliable spare parts supply
- Easy transportation and relocation
- High degassing efficiency with WSM-T
- The highest degassing efficiency with WSM-V
- Reduced consumption of chemicals with WSM-V

Steam accumulator module SAM

The module is used for storing a defined energy content that is available as expansion steam during pressure reduction. The application area is the covering of peak loads e.g. if the capacity of a steam generator is exceeded briefly. The greater the water content of the accumulator, the greater the re-evaporation heat is.

The steam accumulator is filled 50 % with water and is heated up with steam to the boost pressure. The accumulator is discharged by opening the shut-off devices on the consumer side. Always the exact same steam quantity that was removed previously is fed into the accumulator. As a result, it is generally not necessary to feed additional feed water into the steam accumulator during operation. A float condensate trap is provided to prevent an increasing water level.

Construction

The steam accumulator consists of a horizontal cylindrical tank with a built-in steam nozzle pipe.

Equipment level

The module is thermally insulated and delivered with assembled equipment ready for operation. The module is fitted with a venting, drain shut-off, filling shut-off, steam inlet and outlet valves, an overflow and overpressure protection, a direct temperature display as well as a water level indicator.

Benefits at a glance:

- Balance of brief peak loads
- Reduction of water entrainment and its negative effects
- Reduction of switching frequency of the steam generators
- Reduction of the energy consumption and wear

Condensate service module CSM
Condensate high-pressure plant CHP

Condensate from steam consumers is channeled, collected and temporarily stored in the condensate service module. A condensate pump pumps the condensate back into the feed water deaeration plant if the corresponding need for water arises. Unpressurized condensate service modules are usually installed near the consumer.

With the condensate high-pressure plant the condensate is kept at pressure and temperature so that expansion steam losses are prevented or significantly reduced. The condensate is fed directly to the steam boiler via the condensate pump when required. Deaeration once again of the high-pressure condensate is not necessary. Condensate high-pressure plants should always be used if the discharge into the feed water tank or into unpressurized condensate service modules would be accompanied by high expansion steam losses due to the condensate parameters.

Construction

All components are piped, thermally insulated and electrically wired into a multi-functional assembly unit. The unpressurized condensate service module is mounted on a stable support device and designed for installing at ground level. The condensate high-pressure plant is prepared for open installation and needs a positive suction head of at least 1.5 meters. All functions are computer-aided and automatically controlled with a programmable controller.

Equipment level

The system consists of the components condensate tank, condensate pump module, control cabinet and equipment accessories. The system's piping and thermal insulation is pre-installed ex works.

Benefits at a glance:

- Decrease in energy and water consumption by reducing make-up water quantities
- Minimisation of expansion steam losses, desalting and blow-down quantities, less chemical consumption and reduced corrosion potential in the steam condensate system when using condensate high-pressure plants

The unpressurized condensate service module collects the condensate streams and channels them back into the water/steam circuit via the deaeration system.

The amount of fuel, make-up water requirement and use of chemical dosing agents for the water treatment can be reduced drastically by a condensate high-pressure plant.

Blow-down, expansion and cooling module BEM

The purpose of the blow-down, expansion and cooling module BEM is the intake of all hot waste water of a steam boiler system. This waste water is collected, expanded and cooled down to the permitted, set discharge temperature. The module is designed for multi-boiler systems with a max. of three steam boilers.

Construction

A closed, upright container mounted on a supporting structure, with various feed and drain connections. The lower half of the module is filled with water during operation, the upper half is expansion space. The prevailing media temperature is recorded and converted to an electrical signal with the temperature measuring transducer in the lower part of the module. Mixed cooling is achieved by the supply of cold, softened make-up water and the waste water is safely drained off when the permitted discharge temperature is reached. The discharge temperature can be controlled by the control system of the water service module.

Equipment level

The module comprises a vertical cylinder sealed with plates at both ends and a protection against contact. It is offered thermally insulated and fully assembled ex works with all necessary fittings.

Benefits at a glance:

- Quick and easy assembly, ready for immediate operation with few connections
- Exact compliance with official guidelines thanks to automatic operating mode

Expansion and heat recovery module EHM

The module recovers a substantial amount of the heat quantity contained within the hot water (desalting water/condensate) of a boiler system. In the expansion tank the water that is under pressure is expanded. The expansion steam produced thereby supports the heating of the feed water tank. In the downstream heat exchanger the make-up water of the boiler system is preheated and the desalting water/condensate is cooled to a temperature of approx. 35 °C.

Construction

The module comprises an expansion tank, an integrated heat exchanger for heat recovery, the supporting structure and the necessary equipment.

Equipment level

The module is offered thermally insulated and fully assembled ex works with all necessary fittings.

Benefits at a glance:

- Quick and easy assembly, ready for immediate operation with few connections
- Increase in efficiency of the system
- Reduction of the fuel, cooling water and waste water costs

Expansion, heat recovery and blow-down module EHB

The module comprises the combination of the expansion and heat recovery module EHM with the blow-down, expansion and cooling module BEM. Its purpose is therefore the recovery of the energy contained within the hot water (desalting water/ condensate) and the discharge of waste water taking into account the permitted discharge temperature.

Construction

The module consists of an expansion tank as well as a waste water and cooling tank. A heat exchanger with associated fittings is integrated for heat recovery.

Equipment level

Two cylinders one above the other sealed with plates at both ends, a collecting station, all necessary fittings, the internal piping and thermal insulation are included in the scope of delivery and are offered ex works fully assembled.

Benefits at a glance:

- Quick and easy assembly, ready for immediate operation with few connections
- Exact compliance with official guidelines thanks to automatic operating mode
- Increase in efficiency of the system
- Reduced fuel, cooling water and waste water costs

Vapour cooler VC

In thermal full deaeration systems, exhaust vapour accumulates inherently. Without a vapour cooler, exhaust vapour would be dissipated into the open air. In the vapour cooler, however, the exhaust vapour condenses by means of a heat exchanger. The accumulated thermal energy generated during the cooling of the exhaust vapour is used to heat up the make-up water.

Construction

Plate-type heat exchanger with threaded connections, wetted parts are made of stainless steel.

Equipment level

The module comprises a heat exchanger with associated fittings.

Benefits at a glance:

- Heat recovery and thus efficiency improvement
- Useable energy for additional heating or for transfer to separate water circuit

Pump module PM

The module is used for pumping the feed water from the feed water tank into the shell boiler or for pumping the condensate from the condensate tank into the deaeration plant. The pump module can optionally have a motor with a frequency converter for infinitely variable, demand-related water quantity control.

Construction

The supplied pumps are vertical multi-stage high-pressure centrifugal pumps with a fully enclosed, fan-cooled motor. They are designed especially for use in shell boilers.

Equipment level

The pump module is delivered fully assembled ex works on a console with pressure indicator, shut-off, filter and non-return valves.

Benefits at a glance:

- Pre-assembled for quick installation
- Speed-controlled version for increasing the efficiency of the flue gas heat exchanger
- Reduction in power consumption and increase in operating convenience

Feed water regulation module RM

If no speed-controlled feed pump is available, continuous regulation with the feed water regulation module RM is recommended as an alternative for all boilers fitted with modulating burners and flue gas heat exchangers. The module ensures longer flow-through times of the flue gas heat exchanger and thus optimum heat recovery from the boiler flue gases. At the same time, the minimum quantity required for the feed pump cooling is ensured via the feed water regulation module.

The prefabricated module is used at a suitable location in the feed water pressure line. It is switched as supply flow control.

Equipment level

The feed water regulation module for infinitely variable control consists of a feed water control valve, discharge device, dirt trap device and two shut-off valves as well as a bypass device.

Benefits at a glance:

- Increase in efficiency of the flue gas heat exchanger
- Reduction of the pump switches
- Constant boiler water level
- Reliable minimum flow rate for cooling the feed pump

Flue gas heat exchanger ECO stand-alone

The flue gas heat exchanger is designed to save energy through lowering the flue gas temperature by heating the mains return flow water.

Flue gases contain significant heat potential at high temperature. Economizer modules with their highly-efficient heat recovery surfaces utilise this heat potential and thus increase the boiler efficiency of new or existing steam boiler systems significantly. The flue gas heat exchanger is installed downstream of the boiler and is used for "dry" operation for heating up feed water. To use the condensing heat, the flue gas condensation can take place in an additional downstream flue gas heat exchanger module and make-up water can be heated up. The subsequent installation in existing single-flame tube steam boiler systems can be carried out very easily by these modules.

Construction

In the lower part, the flue gases are collected and flow through the integrated heat exchanger in the upper part for heat recovery.

Equipment level

The module is mounted on a stable base frame and has rails at the back for transportation. Servo drive, piping of the connections, flue gas control and drain shut-off valves are fully assembled and included in the scope of delivery as well as the thermal insulation ex works.

Benefits at a glance:

- Increase of the boiler efficiency
- Reduction of the fuel consumption
- Easy retrofitting of existing systems

Steam distributor SD

In the distributor, the generated steam mass flow is distributed to the consumer and residual moisture is separated and drained.

Construction

A collecting pipe with an order-related number of pipe outlets is fully assembled with flange connections and all necessary fittings into a module unit.

Equipment level

The distributors are fitted with pressure indicators, shut-off, non-return and condensate drain valves and will be delivered thermally insulated.

Benefits at a glance:

- Reduction of network losses by centralised distribution for systems with complex consumer structures
- Savings thanks to centralised operation and maintenance

Air preheating system APH

By means of this system the combustion air is pre-heated and the flue gas temperature is reduced. The efficiency is increased.

When installing a new steam boiler system with economizer, air preheating is the ideal solution for increasing efficiency, particularly in cases where the integration of a flue gas condenser is impractical for process reasons. The Bosch air preheating system is available for single-flame or double-flame tube boilers with duoblock burners. The system is economically viable from a boiler capacity of around five tonnes of steam per hour. The fan can be installed on the top of the boiler, this means that the compact system requires little space for installation. Return-on-investment (ROI) is generally achieved after 1.5 to 2 years.

Construction

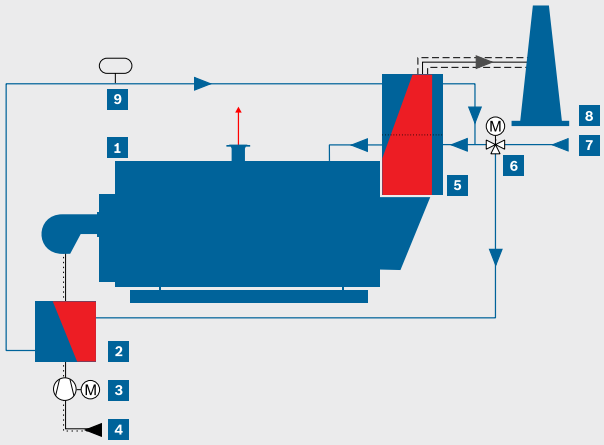
In the Bosch system, a part of the heated feed water flow is utilised for increasing the temperature of the combustion air. The hereby cooled feed water increases efficiency by further reducing the flue gas temperature in the downstream, combined economizer.

Equipment level

The air preheating system consists of a three-way valve, a combined flue gas heat exchanger and an air-side heat exchanger. In comparison with conventional two-circuit systems, it is now possible to omit the circulation pump, the expansion vessel and various electronic safety and control systems. This reduces not only investment costs, but also the recurrent costs for maintenance and replacement parts.

Benfits at a glance:

- Increased system efficiency
- Reduced fuel consumption
- Reduced emissions
- Lower investment costs in comparison with conventional solutions
- Lower maintenance and servicing costs
- Shorter period of amortisation
- Superior quality standardised system from Bosch



Water/Condensate
Steam
Flue gas

1 Steam boiler
2 Combustion air heat exchanger
3 Fan
4 Combustion air
5 Combined flue gas heat exchanger
6 3-way valve
7 Feed water
8 Chimney
9 Temperature controller

Extremely simplified diagram

Feed water cooling module FWM

The flue gas temperature is an important criterion for assessing the efficiency of a steam boiler system. Older and smaller systems have often relatively high flue gas temperatures, which is accompanied by unnecessary high fuel costs. For systems with medium to high operating hours technical solutions for reducing the flue gas losses such as condensing heat exchangers or air preheating systems pays off quickly. However, the feed water cooling module is the most cost-effective alternative for systems with lower operating hours. It is easy to retrofit and particularly suitable for:

- Boilers with low to medium condensate recirculation
- Systems without modules for fresh water preheating
- In the case of continual hot water demand, e.g. for office buildings or industrial processes
- Boiler systems with economizers but without downstream condensing heat exchangers
- Boilers with low operating hours, e.g. production with single-shift operation
- Boilers with an output < 10 t/h

Construction

Cold make-up water is heated up in the feed water cooling module by using the warm feed water in a heat exchanger. As a result of the feed water cooling down, there is a larger temperature difference between the water and flue gas in the economizer. The flue gas outlet temperature decreases due to the better heat transfer in the economizer. The firing efficiency is thus enhanced by up to 1.8 %. The control of the module ensures that the temperatures and flow rates are always within the permitted range. It thereby prevents:

- Thermal stresses caused by too cold feed water flowing into the boiler
- Corrosion caused by unwanted condensation of the flue gas when it is cooled down too much

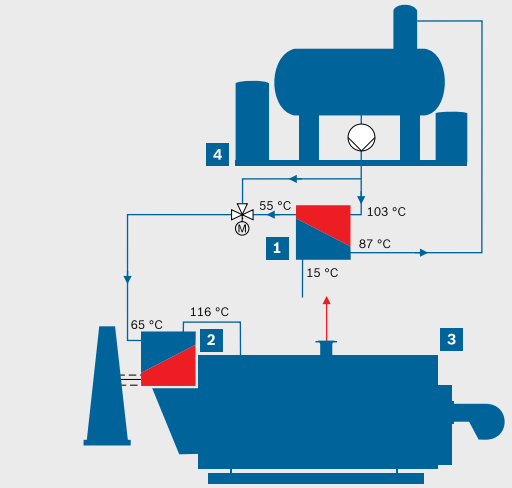
The feed water cooling module FWM is an effective and reliable method of reducing energy costs.

Equipment level

The feed water cooling module consists of an insulated plate-type heat exchanger, valves, pipe connection pieces and temperature sensors. It is delivered installation-ready on a base frame. The dimensioning of the module and the parameterisation of the control are made specifically to order – based on the system's mode of operation.

Benefits at a glance:

- Up to 1.8 % fuel cost saving
- Easy retrofitting to older systems thanks to a small space requirement and simple piping
- Matched control for safe operation of the boiler and components
- Quick amortisation, even on systems with few operating hours
- Ready for operation with just a few connections
- Simple commissioning, operation and maintenance



Water/Condensate
Steam
Flue gas

1 Feed water cooling module
2 Economizer
3 Steam boiler
4 Water service module

Extremely simplified diagram

Water analyzer WA

Reliable boiler operation is dependent on good water quality. The water analyzer continuously measures and monitors:

- pH value of the boiler water
- pH value, oxygen content and conductivity of the boiler feed water
- pH value and conductivity of the condensate or steam accumulator water content

All data is transmitted to the system control SCO via the bus system. This means that all the key water parameters, including the conductivity of the boiler water and that of the individual condensate flows, are therefore available in the system control SCO. Demand-based control and monitoring tasks can be performed fully automatically. If specified limit values are exceeded, all parameters are transferred to the fault message memory of the system control SCO. Continuous logging of the data is also possible. The data can be transferred via the bus system to a higher-level control centre, where it can be further processed.

Functions of the water analyzer are:

- Infinitely variable control of the dosing system for oxygen binding agents
- Infinitely variable control of the dosing system for alkalisation
- Control of the exhaust vapour valve incl. visualization of the exhaust vapour energy saved in kWh

Construction

The water analyzer consists of an analysis component and an electronic component, both of which are housed at the factory in two interconnected, wall-mounted casings.

Equipment level

The analysis component contains the measuring modules:

- pH control for measuring the pH value of the boiler feed water and of the boiler water content for a maximum of three boilers
- O_2 control for measuring the O_2 content of the boiler feed water
- Conductivity sensor for measuring the conductivity value of the boiler feed water
- For sample preparation, flow coolers for boiler water and boiler feed water, as well as control valves for switching and distributing each individual medium
- Flow rate indicator for visual inspection

The electronic component consists of:

- Control unit including touch panel
- Power supply
- Electronics for the measuring modules
- Communication processors for data exchange between the water analyzer WA and system control SCO

Benefits at a glance:

- Increase in operating safety thanks to continuous monitoring of the water values
- Automated monitoring with constant measurement of the pH value, oxygen content and conductivity
- Savings on chemicals thanks to needs-based dosing of additives
- Increased system efficiency through reduced desalting losses and saving of exhaust vapour energy
- A water analyzer can monitor up to three boilers
- All the measured values can be transmitted via Ethernet to the system control SCO or to the customer's control centre, where they can be fully visualized

Modules for hot water boilers

Our modules for hot water boilers facilitate installation and ensure safe operation of your system. They are pre-assembled ready to be installed and optimally suitable for retrofitting.

Supply flow adapter piece SP

A flange adapter including safety equipment for closed systems.

Construction

A tube with flange connections for the supply line with mounting of the safety equipment.

Equipment level

The supply flow adapter piece is fitted with a built-on level limiter, maximum pressure limiter, pressure indicator, manostat tube with shut-off valve, shut-off valves (emptying, test function) and shut-off valve with test connection.

Benefits at a glance:

- Pre-assembled for quick installation
- Exact compliance with official guidelines

Return flow adapter piece RP

Flange adapter for installation at the return flow nozzle.

Construction

A T-tube with various flange connections and a connection for the temperature monitoring.

Equipment level

On this return flow adapter piece a flange connection for the expansion line as well as a connection for a thermometer or temperature sensor is already provided.

Benefits at a glance:

- Pre-assembled for quick installation

Return flow temperature safeguard RTS

The return flow temperature safeguard of a hot water generator can be realised by means of temperature maintaining or temperature boosting.

Construction

All individual accessory parts such as supply flow adapter piece with safety equipment, return flow adapter piece, supply and return flow fittings, circulation pump and motor three-way valve are pre-assembled into the ready-to-install RTS module.

Equipment level

The return flow temperature maintenance consists of:

- Boiler circulation pump
- Three-way control valve
- Return temperature control
- Shut-off valves supply flow/return flow

The return flow temperature boosting consists of:

- Admixing pump
- Shut-off valve, suction side
- Shut-off valve, pressure side
- Non-return valve, pressure side
- Motor shut-off valve boiler return flow
- Shut-off valve boiler supply flow

Benefits at a glance:

- Short assembly time of just a few hours
- Problem-free compliance with operating conditions

Flue gas heat exchanger ECO stand-alone

For further reduction of the flue gas temperature different flue gas heat exchangers are provided for hot water boilers. There are stand-alone retrofit models without bypass for heating boilers with gas firing as well as with bypass and flue gas control damper for hot water boilers with oil/gas dual-firings.

To use the condensing technology, the flue gas condensation can take place in an additional downstream flue gas heat exchanger module made of stainless steel.

Construction

Heat exchanger in welded construction for installation downstream of the boiler, with connecting pieces for water inlet, water outlet and drainage, and including inspection openings on the flue gas side. With the bypass version, the hot flue gases are controlled by means of control dampers.

Equipment level

The module is fully assembled. Lifting lugs, feet or transport rails and a flue gas control valve are included in the scope of delivery ex works as well as the thermal insulation.

Benefits at a glance:

- Improvement of utilisation level
- Fuel savings
- Easy retrofitting of existing systems

Modules for supplies to the boiler

You can configure the operation of hot water and steam boilers according to your needs with our ready-to-install modules for supplies to the boiler. At the same time, our technology enables you to optimise your system control and to protect the system from harmful operating influences.

Water treatment module WTM

To avoid boiler scale, it is only permissible to operate boiler systems with softened feed water. In the guidelines on water characteristics, the permitted total hardness for different types of boilers and operational modes is limited. For softening water, raw water is filtered and make-up water is generated by means of the ion exchange process. The hardening components calcium and magnesium ions are replaced by sodium ions.

Fully automatic versions simplify operation, prevent operating errors, enable continuous operation and ensure increased utilisation of capacity when using the same raw water hardness.

Construction

On a support structure, all elements of the water softening plant are clearly and functionally arranged fully assembled. The WTM is suitable for all boiler sizes.

Equipment level

The WTM consists of the water softening system and a salt-softening receptacle. A drainage water connection, sampling device, pressure indicator as well as control fittings, shut-off and filter valves complete the module.

Benefits at a glance:

- Constant softened feed water for preventing calcification of the boiler heating surfaces
- Good heat transfer, high efficiency and long service life of the boiler
- High degree of operational reliability
- Quality-controlled version allows external hardness monitoring to be dispensed with – e.g. for improved utilization of capacity and without the need for permanent supervision of operation even in the case of varying raw water hardness

Gas regulation module GRM

The module regulates the constant gas pressure upstream of the burner – irrespective of the level of the input pressure and gas flow rate. Ensures against inadmissible gauge pressure and inadmissible gas flow rate.

Construction

All elements included in the scope of delivery are arranged in the necessary order and delivered fully assembled on a support structure.

Equipment level

The gas regulation module GRM includes all fittings such as filter, ball valve, shut-off valve etc., which are necessary for the gas-side fuel supply of the burner.

Benefits at a glance:

- Pre-assembled for quick installation
- Exact compliance with official guidelines
- Increase of operating safety

Oil circulation module OCM

The oil circulation module prepares liquid fuels and records the throughput. As a ready to connect extraction module per burner for easy installation in ring lines with an upstream pressure of at least 1.5 bar. The two-chamber oil collector vessel is designed for light and heavy fuel oil pressure atomizing burners with a spill back atomizer system.

Construction

The oil circulation module is combined into a fully assembled compact unit on a carrier plate and is delivered with a protective cover.

Equipment level

The module includes a two-chamber collector vessel, a filter valve, the oil quantity indicator, a shut-off valve, pressure safeguard valve, vent shut-off valve and two drain plugs. For heavy fuel oil operation there is also a heater cartridge for the filter and vessel.

Benefits at a glance:

- Pre-assembled for quick installation
- Reliable recording of the oil throughput

Oil supply module OSM

The oil supply module is used for pumping and filtering fossil fuels in ring lines for supplying one or more burners.

Construction

It is pre-assembled in an oil collection tray as a single or double station with all fittings for easy installation in the ring line.

Equipment level

Double stations enable filter cleaning without interruption of operations and offer 100 % reserve. The heavy fuel oil pump module is fitted with electric or combination heating for steam or hot water.

Benefits at a glance:

- Can be used for all Bosch boiler systems with oil firing and ring line supply
- Pre-assembled for quick installation

Stand-alone flue gas heat exchanger with flue gas condensation

Using condensing technology, this flue gas heat exchanger recovers energy from the residual heat of the boiler flue gas.

The operating mode is the same as a normal economizer. The flue gas heat exchanger recovers heat from the hot boiler flue gas, while cool water flows through the heat exchanger tubes and reduces the flue gas temperature. The energy gained through flue gas condensation gives a higher level of boiler efficiency and therefore reduces fuel consumption and flue gas emissions.

Construction

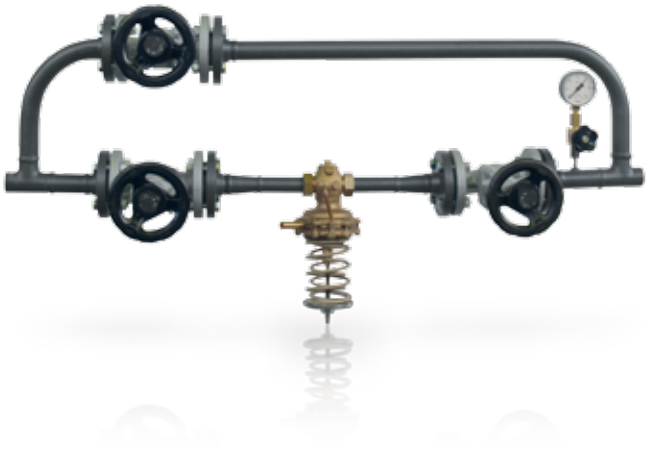
Stainless steel heat exchanger in welded construction for installation downstream of the boiler, with connection pieces for water inlet, water outlet and drainage, and including inspection openings on the flue gas side. For the model with bypass, the hot flue gases are controlled by means of control dampers.

Equipment level

The module is fully fitted with lifting lugs and feet as well as a flue gas control valve and heat insulation.

Benefits at a glance:

- Improvement in level of utilisation
- Fuel savings
- Easy retrofitting to existing systems
- Can be used with both steam and hot water systems



Oil pressure regulation module ORM

Pressure controlling device for maintaining the pressure in the oil ring line.

Construction

The oil pressure control module consists of a controller, including connection parts such as manometer, manometer valve and a bypass valve.

Benefits at a glance:

- Pre-assembled for quick installation
- Increase of operating safety

Oil preheater module OPM

The oil preheater module preheats the pumpable heavy fuel oil to the atomizer temperature of the respective burner.

Construction

A cylindrical heat exchanger is combined into a compact unit assembled with fittings and delivered on a stable support structure.

Equipment level

The heat exchanger with an extendible tube bundle can optionally be fitted with steam or steam/electrical heating. The module, including the heating control, thermal insulation and all fittings, is pre-assembled ready to connect.

Benefits at a glance:

- Can be used for all Bosch boiler systems with oil firing and ring line supply
- Increase of operating safety

MEC Remote

The new Bosch remote maintenance system MEC Remote (Master Energy Control) replaces the former Teleservice for industrial boilers. In the past, this service offered access for the Bosch service experts only. With the new MEC Remote also operators can now access their steam and hot water boilers convenient and safely from a distance. This enables visualizing the boiler and system control via the browser of all common internet-connected devices.

MEC Remote is thus the ideal solution for all companies:

- where the operator cannot be on site all the time
- that operate multi-boiler systems with mandatory supervision
- with on-call duty e.g. on weekends

Bosch's boiler controls are compatible with all common automation systems. MEC Remote can also be used for boilers that are not connected to building or production automation systems.

Thanks to an overview map several boilers in different sites all around the world can be monitored at the same time. The optional SMS module sends out defined push notifications whenever an error occurs. This reduces the effort for supervision of plants with especially high reliability requirements, e.g. in 24/7 operation.

Another advantage for operators is the optional remote support by the Bosch Industrial Service. The experts can perform extended parametrization, programming (PLC) and failure analysis directly via MEC Remote. In case of malfunction of components the root cause can be analyzed and the service technician can prepare for the specific situation. Boiler down times and service costs thus can be reduced to a minimum.

Highest safety is one of the most crucial requirements to a remote system. The role-based access control concept determines the allowed actions for each user. The remote connection itself is secured mainly by three safety measures: The hardware connection can be activated or terminated at any time via a switch in the boiler house that requires a key. In addition to the login with username and password via a secure connection (https) a mobileTAN system is used. It sends out an one-time access code to the operator, similar to the standards used for online banking.

For privacy reasons, the boiler's operation data is stored locally in the boiler house instead of in a data cloud. The security concept for MEC Remote was established by ESCRYPT. To maintain the high level of security, regular audits are performed by the external company Cirosec.

System control SCO

The SCO combines the controls of steam boilers and/or hot water boilers as well as individual module controls into a overall management system and opens up a multitude of new possibilities. The communication between the individual boiler controls BCO, other possible controls and the SCO takes place via a powerful bus system. Elaborate wiring work and signal separations are therefore rendered unnecessary. Connection to higher-level visualization and control systems is possible by means of a Profibus DP interface.

Construction

Programmable, powerful control with an operator screen as TFT colour display with touch-sensitive surface.

Equipment level

- Sequence control of multi-boiler systems
- Integration of water analyses
- Integration of deaeration systems
- Integration of condensate systems
- Integration of foreign matter monitoring systems
- Integration of oil supply facilities
- Several pressure and temperature controls
- Return flow temperature maintenance (only hot water)
- Weather-driven boiler control (only hot water)

Benefits at a glance:

- Easy connection to higher-level visualization and control systems
- Integrated monitoring and protection functions against faulty operation
- Extensive storage of operating parameters and operating signals
- Preparation for remote maintenance system MEC Remote: The operating parameters and operating signals can be accessed via an optional VPN router
- Intuitive operation through the use of graphical symbols and visualization on modern touchscreen displays

Service competence: fast, professional 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 customer service is there for you around the clock every day of the year. Thanks to our closely knit network of service areas, we can ensure the shortest possible response times.

Beside maintenance services, fault tracing and repairs, we also offer you support with the regular inspection of your system. Not sure whether your system is still state of the art and working efficiently? Here too we will be pleased to assist you, we will analyse your system and modernise it if required.

During normal working hours, please contact your local customer service engineer. The contact details can be found on the control cabinet of your boiler system. We place great value on personal service, direct contact also saves valuable time.

Customers from abroad should please contact our 24 hour Service Hotline. That also applies if a fault occurs outside normal working hours. If you call via a landline, you will be connected to the customer advisor, who is responsible for your country/region. Your problem will be located in the course of professional advice over the phone, or alternatively we will coordinate an on-site visit.

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For further information see our brochure on 'Services' and under www.bosch-industrial.com

*EUR 0.14/min from German landline;
maximum mobile phone price: 0.42 Euro/min
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Robert Bosch d.o.o.
Zagreb

Bosch Industriekessel GmbH

Nuernberger Strasse 73
91710 Gunzenhausen
Germany
Tel. +49 9831 56253
Fax +49 9831 5692253
sales@bosch-industrial.com
Service Hotline +49 180 5667468*
Spare Parts Hotline +49 180 5010540*

Bosch Industriekessel Austria GmbH

Haldenweg 7
5500 Bischofshofen
Austria
Tel. +43 6462 2527300
Fax +43 6462 252766300
sales-at@bosch-industrial.com
Service Hotline +43 810 810300**
Spare Parts Hotline +49 180 5010540*

info@bosch-industrial.com
www.bosch-industrial.com
www.bosch-industrial.com/YouTube

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