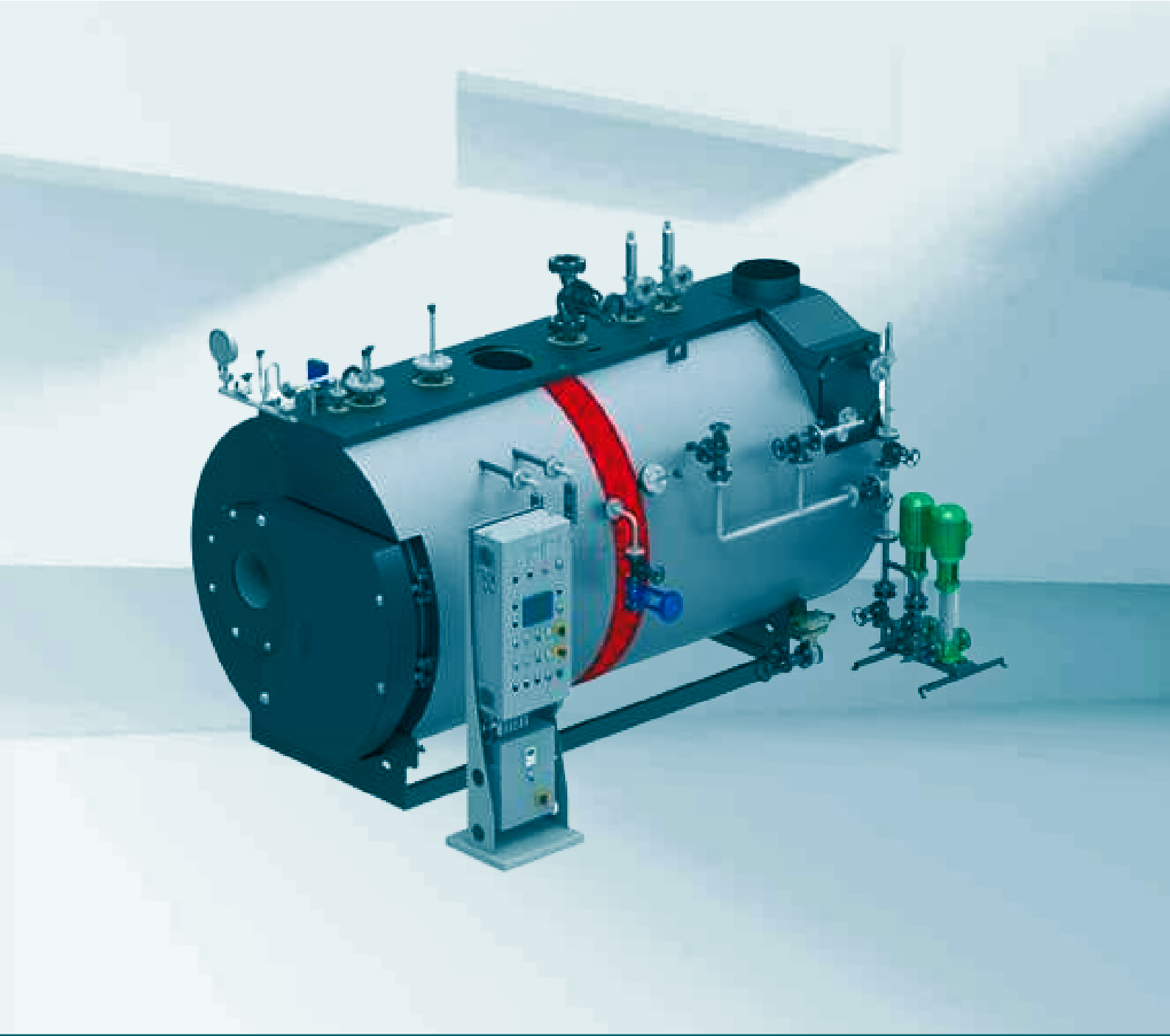


# Efficiency on a large scale
# Steam boilers

www.kalsiindustries.com

KALSI INDUSTRIES



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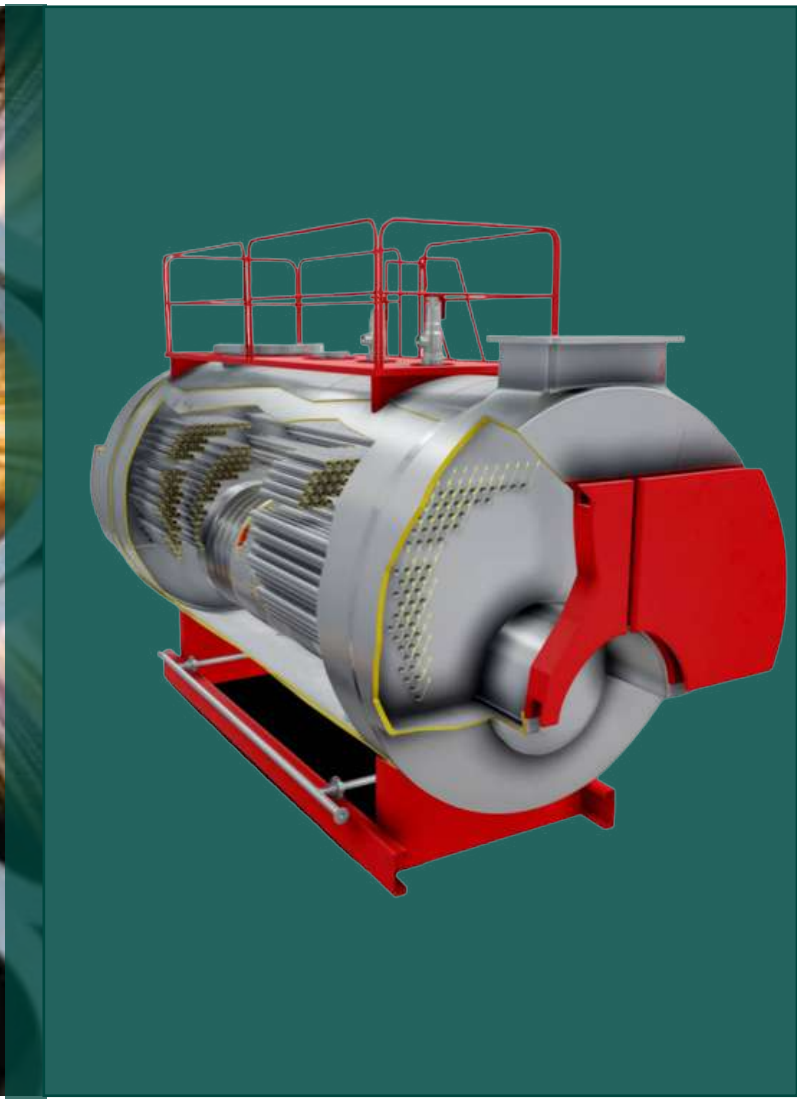
# Foreword

Kalsi Industries offers you shell boiler systems for all applications. Our boilers are not only used successfully in industrial companies, they also offer many advantages to smaller businesses and service companies, as well as in office buildings and residential blocks.

This brochure gives you a detailed overview of our range of products and services for steam boilers. Above all however, the following pages clarify what is particularly important to us at Kalsi Industries : the perfect fulfillment of your individualwishes.



# Expertise and trust

Kalsi Industries is a renowned specialist in boiler systems of all sizes and performance categories. Since 47 years we have been providing innovation in industrial boiler construction.

### Technical pioneering spirit which sets standards

Benefit from experience and the power of innovation: since our founding in 1874 we have specialised in industrial boiler construction and achieved extensive specialist know-how. Strength of innovation, quality awareness and efficiency are the benchmarks for our product range and services.

- Industry and business
- Private and public facilities
- Energy suppliers

# Environment and efficiency

As a responsible and innovative boiler manufacturer, we systematically focus on environmental protection and saving of resources.

### Highest level of efficiency

We are manufacturing the flame tube/smoke tube boilers of all sizes with integrated economizers in the factory. The heat contained in the flue gases is recovered and the efficiency increased. Additional energy potential can be used with our modular designed boiler house components. Our condensate high-pressure plants keep return-flow condensate up to pressure and temperature, so that it can be fed back to the boiler circuit without loss of energy. Process-related heat loss, which is contained for example in exhaust vapour or desalting water, can be partially recovered by means of suitable solutions such as our vapour cooler or our expansion and heat recovery modules.

### Lowest emissions

Our boiler systems are suitable for liquid and gaseous fuels. The modern burner systems comply without any problems with the guidelines in all countries regarding the prevention and reduction of emissions. A completely neutral $CO_2$ level can be achieved through the use of bio-oils or bio-gases.

### Perfectly controlled, less consumption

Intelligent control and regulating systems provide further opportunities for energy saving. The incorporation of our innovative water analyzer not only protects the system from damage caused by insufficient water parameters, but it also achieves additional energy savings in the consumption of fuel and fresh water. Speed-controlled burner fans reduce the electrical power consumption enormously in the partial load range. The modern burner systems, controlled by oxygen or carbon monoxide levels, provide for combustion of the highest possible efficiency thanks to minimal excess air levels.

### Investments which pay off

With our highly efficient boiler systems and the appropriate boiler house components it is possible to significantly reduce energy consumption and emissions. Through the reduction in running costs a new boiler system is usually amortised in a very short period of time. You save money and the environment at the same time. Are you already thinking about modernising or replacing your boiler system? We would be pleased to advise you!

Our boiler systems are perfectly matched to your requirements. This saves not only natural, but also your financial resources.

# Modular quality

Reliability and long service life are particular characteristics of KALSI boiler systems. The high quality of our systems is guaranteed by the most modern production machines, strict quality controls and by continuous improvements and innovations.

### Perfectly matched to each other

A boiler system tailored to your requirements is a foundation stone on which you can sustainably ensure the competitiveness of your company. We offer you modular and universal solutions through our complete boiler delivery programme. The sizing and equipment level of the products are designed to individual customer specification with many different options and variants available. The high manufacturing quality guarantees easy and smooth acceptance.

### High performance in a system alliance

Alongside innovative boiler system technology, the ideal energy concept frequently includes additional important components such as combined heat and power, heat pumps or solarthermics. As a company within the KALSI INDUSTRIES we have access to an extensive range of additional system solutions in thermal technology. This enables us to combine different technologies and to implement these for your benefit.

# Energy-saving system technology

High-efficiency boiler plants with optimally-matched boiler house components ensure low energy consumption and low emissions.

Economizer

- up to 7 % fuel saving

Flue gas condenser

- up to 7 % fuel saving

Air preheating

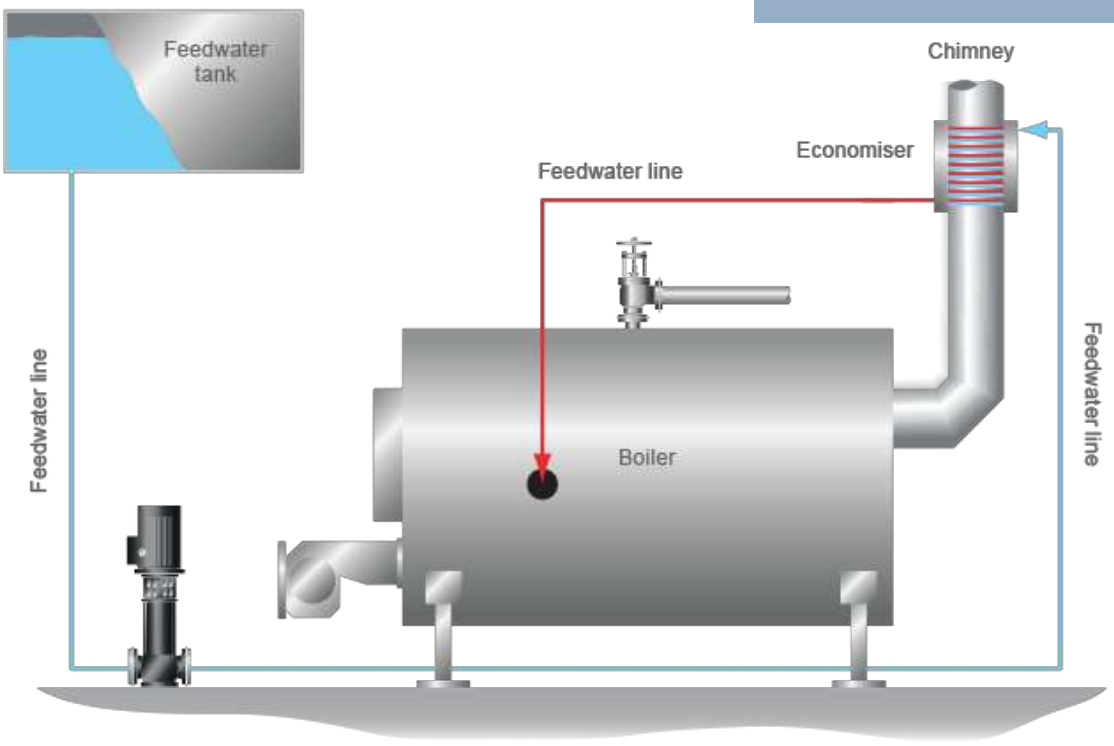
- up to 2 % fuel saving

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




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

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

Speed-controlled fan
- ▶ up to 75 % electrical saving

$O_2$/CO burner control
- ▶ up to 1 % fuel saving

# Oil Fired Steam Boiler

This compact boiler combines the benefits of shell boiler technology with the effectiveness of the flame tube/smoke tube system. This is a boiler on the reverse flame principle.

# Oil Fired Steam Boiler

### As a high-pressure or low-pressure steam boiler

The large volume flame tube and the smoke tube bundle are perfectly matched to each other. The boiler is characterised by a very compact construction. We can offer you the UNIVERSAL steam boiler as well as high-pressure or low-pressure steam boilers.

### Accessories which save energy

For an energy-saving and efficient operating mode the compact boiler can be equipped with an economizer, with continuous feed water control and with many other heat recovery devices. The investment in these energy-saving measures ensures a high degree of efficiency of your boiler system, it saves our environment and reduces your running costs on a sustainable basis.

Benefits at a glance:

- Intuitive boiler automation pannel box
- Effective thermal insulating materials with a high degree of efficiency
- Automatic start-up, standby and shutdown
- Suitable for many burner systems
- Pollutant reduced combustion thanks to the use of highly developed firing systems and careful matching of the best boiler and burner combination
- Easy for maintenance – simple to inspect on both the flue gas side as well as the water side
- Robust, reliable and durable
- All high-pressure boiler systems are certified in accordancet
- Simple extension options thanks to integrated module technology
- Simple commissioning due to pre-parameterised boiler control
- Easy wiring on site thanks to plug-in connections

| Technical data | | |
|---|---|---|
| Heat transfer medium | Low-pressure saturated steam | High-pressure saturated steam |
| Design | Flame tube/smoke tube technology | Flame tube/smoke tube technology |
| Capacity in kg/h | 100 to 1 200 | 100 to 1 200 |
| Safety pressure in bar | up to 0.5 | up to 16 |
| Max. temparature in °C | 110 | 204 |
| Fuel | Oil, Gas | Oil, Gas |

## Construction

The cost-effective steam shell boiler impresses due to its compact construction and technically efficient functionality. The large, centrally located flame tube ensures that there is excellent combustion of the fuels. The smoke tubes arranged concentrically around the flame tube provide for an optimum heat transfer.

By means of the reverse flame principle the smoke gases in the flame tube are diverted to the front, and then deflected in the front reversing chamber to the smoke tube sections. The pivoting boiler front door (right/left) opens up convenient access for boiler and burner inspection. The high quality mineral wool matting insulation over the entire boiler body and the special heat insulation material in the front door cut radiation losses to an insignificant minimum.

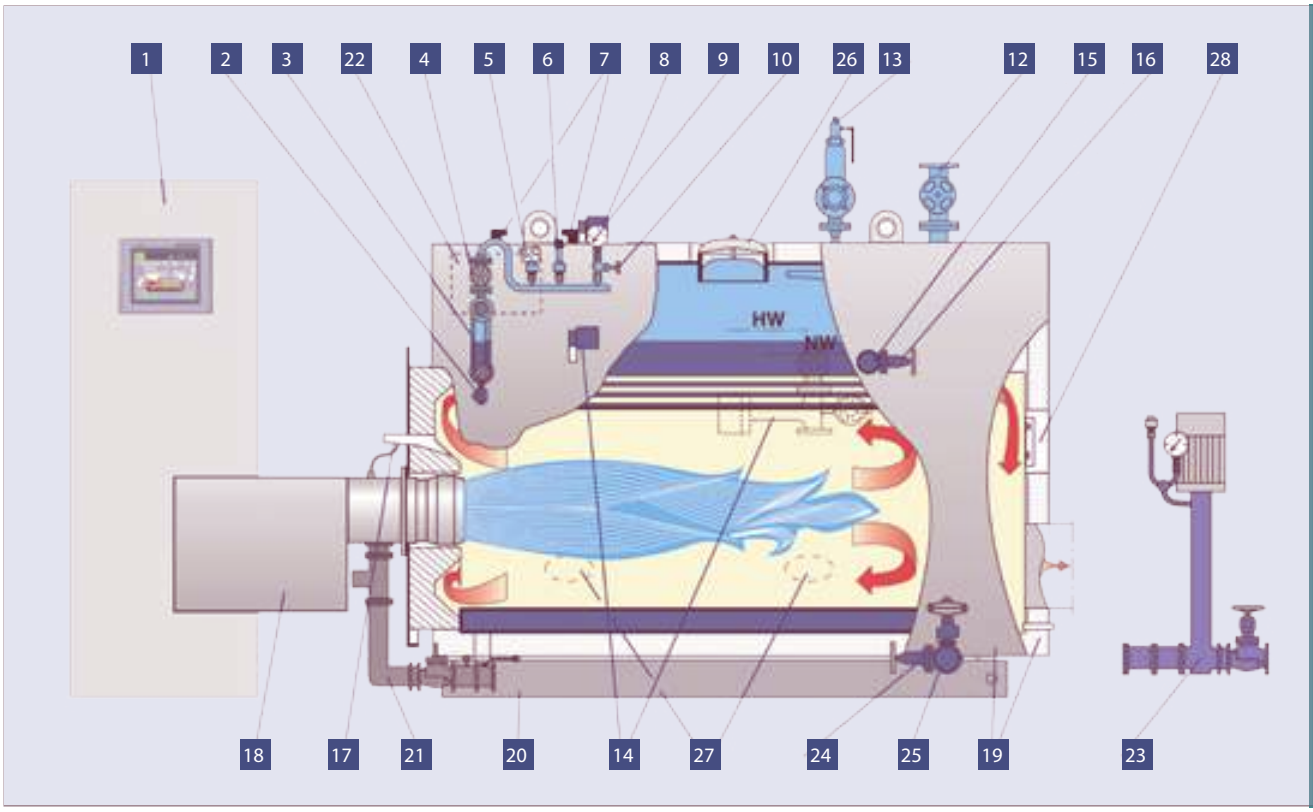
### Associated boiler house components:

- Water treatment module WTM
- Water service module WSM
- Condensate service module CSM
- Blow-down, expansion and cooling module BEM
- Expansion and heat recovery module EHM
- Expansion, heat recovery and blow-down module EHB
- Pump module PM
- Flue gas heat exchanger ECO 3, stand-alone
- Vapour cooler VC
- Gas regulation module GRM
- Oil circulation module OCM
- Oil supply module OSM
- System control SCO

## Equipment level

Our shell boilers are supplied inclusive of all equipment* and are therefore fully functional as a unit. The high quality basic equipment level includes the boiler pressure vessel, the control and safety technology, the burner unit, a pump module, a terminal box and the control switchgear cabinet including the easily operated boiler control BCO.

All the sensors and actuators of the boiler are already wired into the integrated terminal box. Pre-assembled, plug-in and coded cable bundles simplify the electrical wiring installation between the boiler control cabinet and the terminal box. The free-standing or wall-mounted switchgear cabinet can be adapted and set up to best suit the requirements on site.




1 Control switchgear cabinet with boiler control BCO
2 Blow-off tap
3 Reflective water level indicator
4 Manostat tube shut-off valve, maintenance-free
5 Pressure limiter
6 Pressure transducer (4-20 mA)
7 Low-level limiter electrode
8 Pressure gauge
9 Level transducer (4-20 mA)
10 Pressure gauge shut-off valve with testing flange
12 Steam removal valve
13 Full-lift safety valve
14 Fully automatic conductivity measurement and desalting
15 Feed water non-return valve
16 Feed water shut-off valve, maintenance-free
17 Sight hole
18 Burner
19 Insulation with protective shell
20 Base frame
21 Gas regulation module
22 Terminal box
23 Pump module
24 Drain shut-off valve, maintenance-free
25 Quick shut-off blow-down valve
26 Inspection opening, steam side
27 Inspection opening, water side
28 Inspection opening, flue gas side

* the equipment level is variable and can be freely configured to customer requirements

# Oil Fired steam boiler

### Flexibility from a modular system

The appropriate elements of the boiler are configured with the focus on low emissions, high steam quality and optimum energy efficiency. Thanks to modular construction with systematic use of design elements and the same parts from other type series, you benefit from a particularly attractive price-performance ratio.

### Diversity with system

The three-pass steam boiler can be used universally for all applications. Naturally it can be combined with all the other available system components from our modular range for fuel and water supply, waste water disposal, water analysis and heat recovery.

Benefits at a glance:

- Cost-effective despite shell boiler and three-pass technology
- High level of efficiency due to the integrated economizer
- Comprehensive series-wide basic equipment
- Intuitive touchscreen operation and PLC control
- Small space requirement due to its compact base area
- Simple commissioning due to pre-parameterised boiler control
- Easy wiring on site thanks to plug-in connections
- Automatic start-up, standby and shutdown control SUC
- Simple installation thanks to supply as a unit – the equipment, firing system and economizer have already been fitted in the factory

| Technical data | |
|---|---|
| Heat transfer medium | High-pressure saturated steam |
| Design | Three-pass flame tube/ smoke tube technology |
| Capacity in kg/h | 50 up to 1300 |
| Safety pressure in bar | up to 16 |
| Max. temperature in °C | 204 |
| Fuel | Oil, gas |

## Wood Fired Steam Boiler

## Construction

The cost-effective steam shell boiler impresses due to its compact construction and technically efficient functionality. The large, centrally located flame tube ensures that there is excellent combustion of the fuels. The smoke tubes arranged concentrically around the flame tube provide for an optimum heat transfer.

By means of the reverse flame principle the smoke gases in the flame tube are diverted to the front, and then deflected in the front reversing chamber to the smoke tube sections. The pivoting boiler front door (right/left) opens up convenient access for boiler and burner inspection. The high quality mineral wool matting insulation over the entire boiler body and the special heat insulation material in the front door cut radiation losses to an insignificant minimum.


Associated boiler house components:

- Water treatment module WTM
- Water service module WSM
- Condensate service module CSM
- Blow-down, expansion and cooling module BEM
- Expansion and heat recovery module EHM
- Expansion, heat recovery and blow-down module EHB
- Pump module PM
- Flue gas heat exchanger ECO 3, stand-alone
- Vapour cooler VC
- Gas regulation module GRM
- Oil circulation module OCM
- Oil supply module OSM
- System control SCO
- Capacity 500kg to 1500kg

# Gallery


UNIT 1 : 21 Joy Town Industrial Area Four Field Opposite
New Amritsar (143001) Punjab India.

UNIT 2 : 3B Industrial Area Opposite New Amritsar
(143001) Punjab India.

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