

EXHAUST-HEAT BOILERS

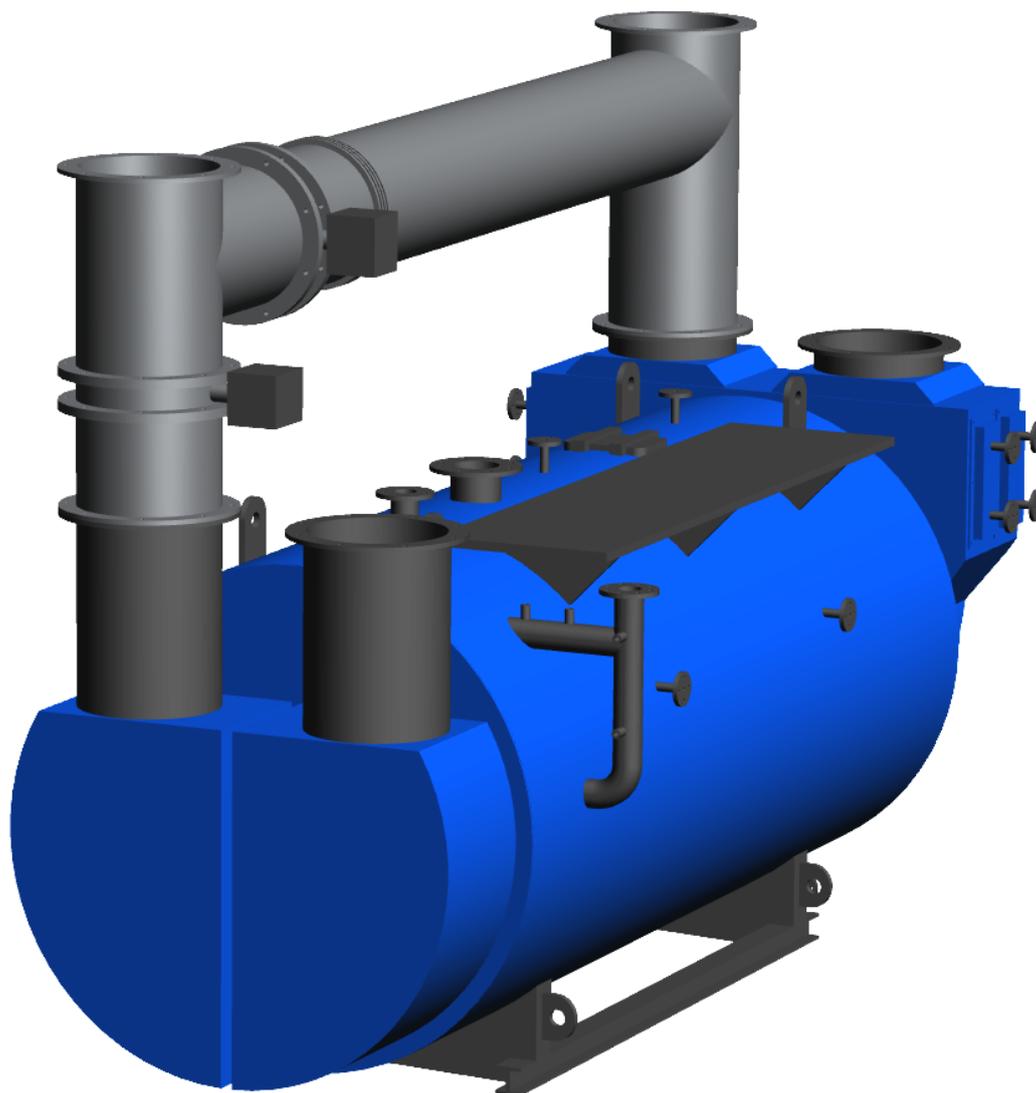
PB-(X)-S



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PB-(X)-S Series

Boilers for heat recuperation from flue gasses

In compliance with the requirements of standard ČSN EN 12 953 and directive EC 97/23

Use of waste heat

Exhaust-heat boilers are typically used together with cogeneration units in a combined operation of energy and heat production or as an addition to an operation with waste heat to make the use of energy more efficient (exhaust gas turbines, biomass combustion, etc.).

Design

The boiler body consists of a cylindrical shell, two reinforced bottoms and nests of stay tubes. The inlet chamber is not cooled. It is closed with a door enabling cleaning of the generating surfaces. Boiler venting is provided by a flue gas collector in the rear part of the boiler. Flue gas discharge is realized via a chimney neck with an upper or rear outlet.

The boiler design can be adapted to more sources of flue gas where there it is not possible for them to be combined, e.g. for KGJ. In such a case a design with separated flue gas passed enabling an autonomous operation of each of them is possible.

According to the requirements the boilers can also be designed as double-pass boilers with the flue gas inlet and outlet in the front part of the boiler.

Efficiency

Exhaust-heat boilers increase the operation economy of the existing energy sources. Their own efficiency is limited by the operation overpressure (steam versions) and by the economy of the boiler design. To increase the efficiency an additional flue gas exchanger can be used.

Flue gas exchanger (Economizer)

It supplements the basic design of the PB-(X)-S boilers. It can be integrated into the flue gas collector or autonomously placed at the flue gas outlet.

The economizer provides a highly efficient heat transfer - the counter-flow principle. It consists of nests of finned or plain tubes in the flue gas channel with admission in the water chambers.

Flue gas bypass

The boiler can be added with a flue gas bypass fitted with a couple of flue gas flaps for continuous operation

of the primary flue gas source without the boiler being necessary to operate or as an emergency safety element.

Maintenance

Exhaust-heat boilers are equipped with manholes and inspection holes enabling inner revision of the pressure part. All the generating surfaces are easily accessible for cleaning assuring thus a long service life as well as a high efficiency of heat transfer from flue gasses.

BASIC TECHNICAL SPECIFICATION

- Output 300 ÷ 4 000 kW
- Operation overpressure 6 ÷ 25 bar(g)
- Heat transfer medium - steam, warm or hot water
- In compliance with technical requirements of ČSN EN 12953

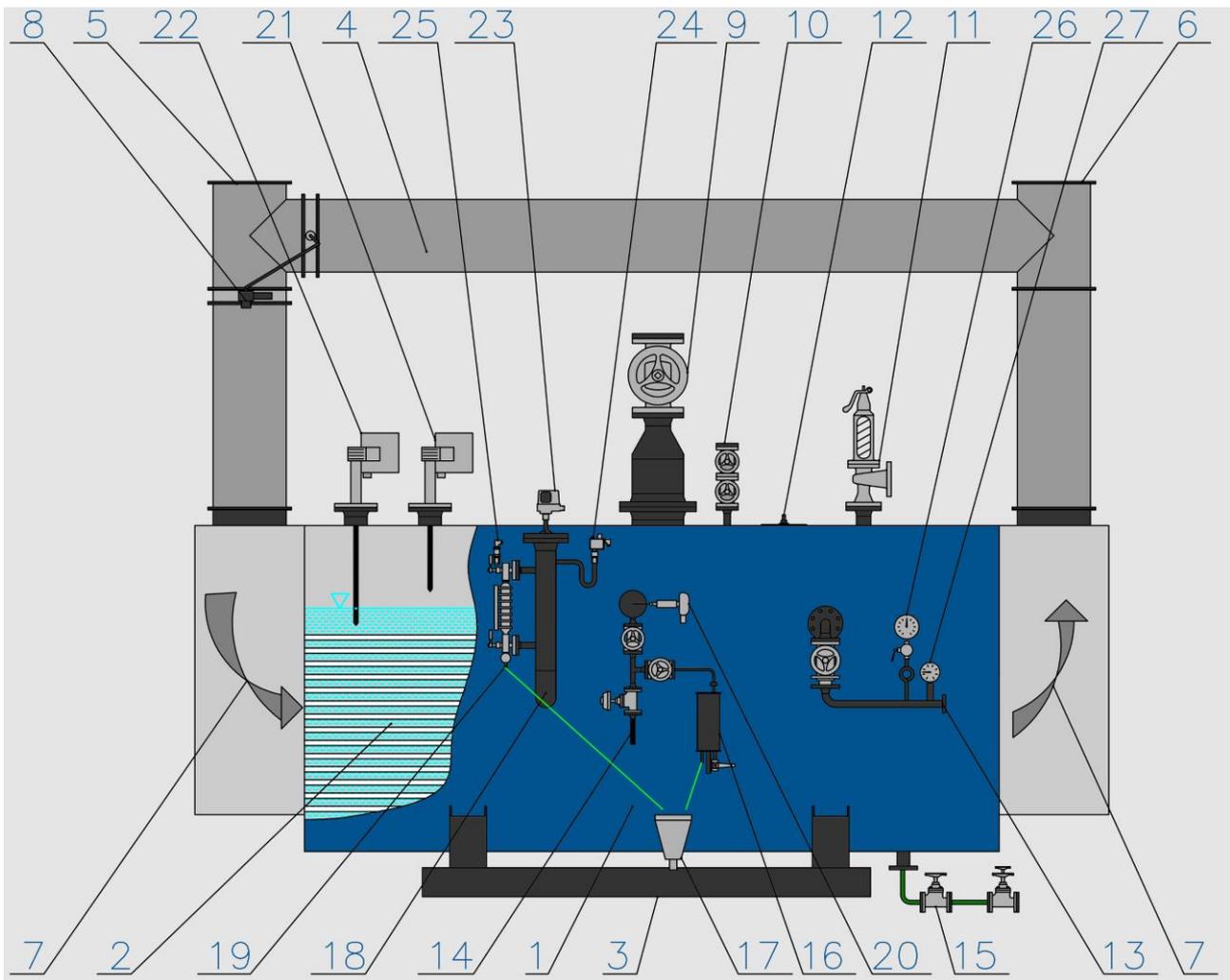
HEAT SOURCE

- Cogeneration units
- Exhaust gas turbines
- Biomass combustion
- Process gas

ADVANTAGES

- Increase of heat production process efficiency or increase of the combustion process efficiency.
- Use of different types of heat sources
- Large-capacity boiler
- Design customization
- High-quality warranty and post-warranty service

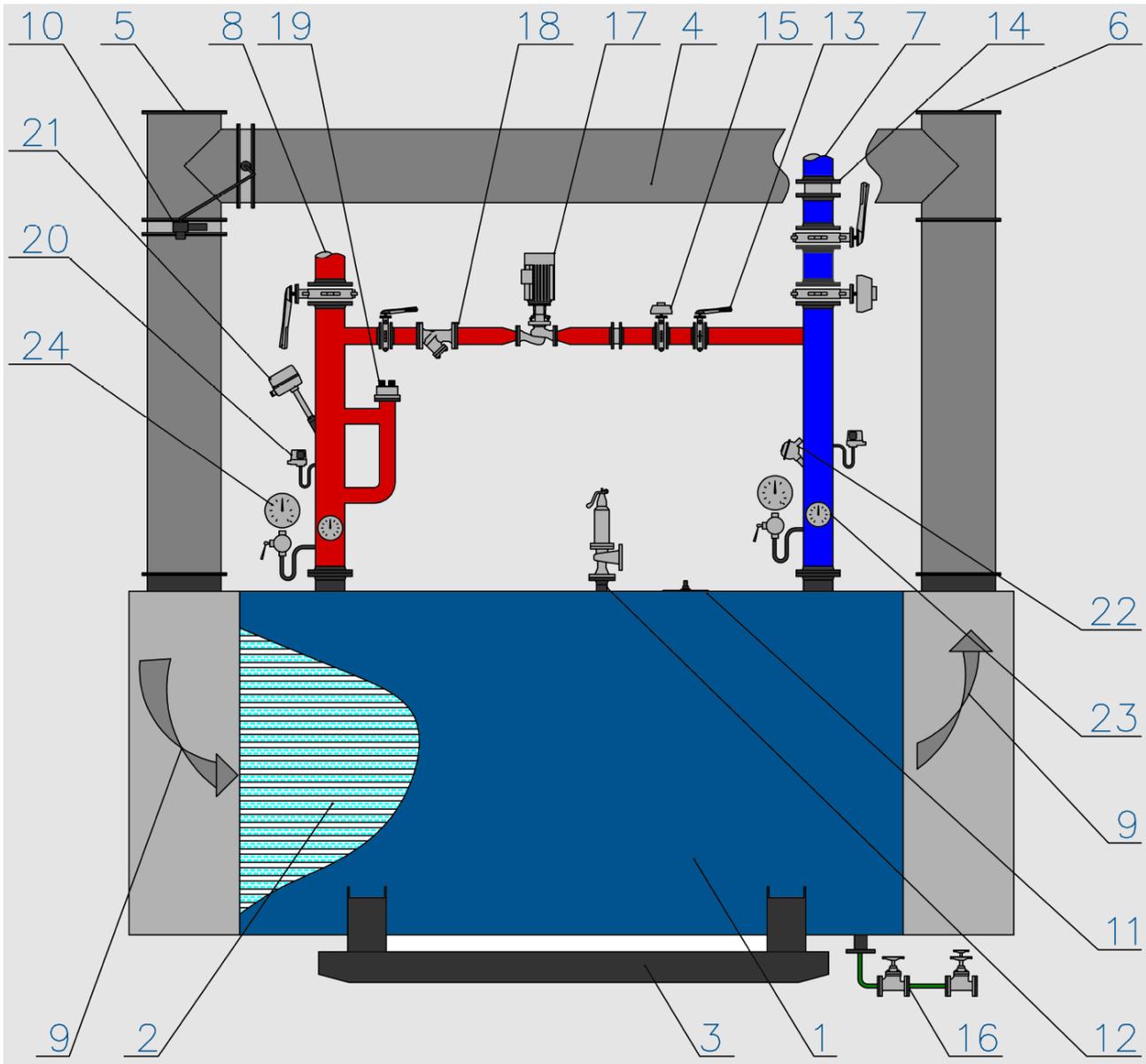
BASIC CONNECTION DIAGRAM OF AN EXHAUST-HEAT STEAM BOILER



KEY

- | | |
|---------------------------|-----------------------------------|
| 1) Boiler | 15) Periodical blown-down |
| 2) Tube nest | 16) Sample cooler |
| 3) base | 17) Non-pressure waste sunk basin |
| 4) Flue gas bypass | 18) Column with level measurement |
| 5) Flue gas inlet | 19) Water-level gauge |
| 6) Flue gas outlet | 20) Conductivity probe |
| 7) Flue gas | 21) Level regulation |
| 8) Flue gas flap | 22) Level monitoring |
| 9) Saturated steam outlet | 23) Emergency manostat |
| 10) Deaeration | 24) Operation manostat |
| 11) Boiler relief valve | 25) Pressure sensor |
| 12) Manhole into boiler | 26) Manometer |
| 13) Boiler supply branch | 27) Thermometer |
| 14) Continual blown-down | |

BASIC CONNECTION DIAGRAM OF AN EXHAUST-HEAT HOT-WATER BOILER



KEY

- | | |
|-----------------------------|---------------------------|
| 1) Boiler | 17) Pump |
| 2) Tube nest | 18) Filter |
| 3) Base | 19) Water incursion check |
| 4) Flue gas bypass | 20) Pressure regulation |
| 5) Flue gas inlet | 21) Water regulation |
| 6) Flue gas outlet | 22) Temperature sensor |
| 7) Return water | 23) Thermometer |
| 8) Input water | 24) Manometer |
| 9) Flue gas | |
| 10) Flue gas flap | |
| 11) Manhole into the boiler | |
| 12) Relief valve | |
| 13) Closing flap | |
| 14) Check valve | |
| 15) Damper | |
| 16) Draining, blown-down | |