


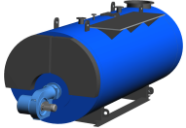
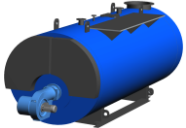



PRODUCT SHEET



PBS INDUSTRY

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	PRODUCT	DESCRIPTION	PARAMETERS
	Steam boilers PB-P PB-PP PB-NP	Moderated-pressure three-pass steam boilers combusting gaseous and liquid fuels in the saturated steam and superheated steam designs. Steam low-pressure three-pass boilers combusting gaseous and liquid fuels.	1 ÷ 30 t/h 6 ÷ 25 bar(g) do 3 t/h do 0,7 bar(g)
	Warm-water boilers PB-V	Three-pass warm-water boilers combusting gaseous and liquid fuels.	0,76 ÷ 25 MW 6 ÷ 25 bar(g) T ≤ 110 °C
	Hot-water boilers PB-H	Three-pass hot-water boilers combusting gaseous and liquid fuels.	0,76 ÷ 25 MW 6 ÷ 25 bar(g) T ≥ 110 °C
	Combined boilers PB-P-K PB-PP-K PB-V-K PB-H-K	Three-pass boilers combusting gaseous and liquid fuels with and autonomous flue gas pass for heat recuperation. Heat transferring media – steam, warm or hot water.	1 ÷ 16 t/h 1 ÷ 10 MW 6 ÷ 25 bar(g)
	Exhaust-heat boilers PB-P-S PB-PP-S PB-V-S PB-H-S	Single or double-pass boilers for heat recuperation from flue gasses. Heat transferring media – steam, warm or hot water.	0,3 ÷ 4 MW 6 ÷ 25 bar(g)
	Thermal-oil boilers PB-T	Three-pass thermal-oil boilers combusting gaseous and liquid fuels.	0,3 ÷ 6 MW ≤ 10 bar(g) ≤ 300 °C
	Accessories for steam and hot-water boiler rooms	Feeding module Condensate module Chemical treatment of water Continual and periodical blow-down expander Steam / hot-water distributor / collector, etc.	

MODERATED- PRESSURE STEAM BOILERS

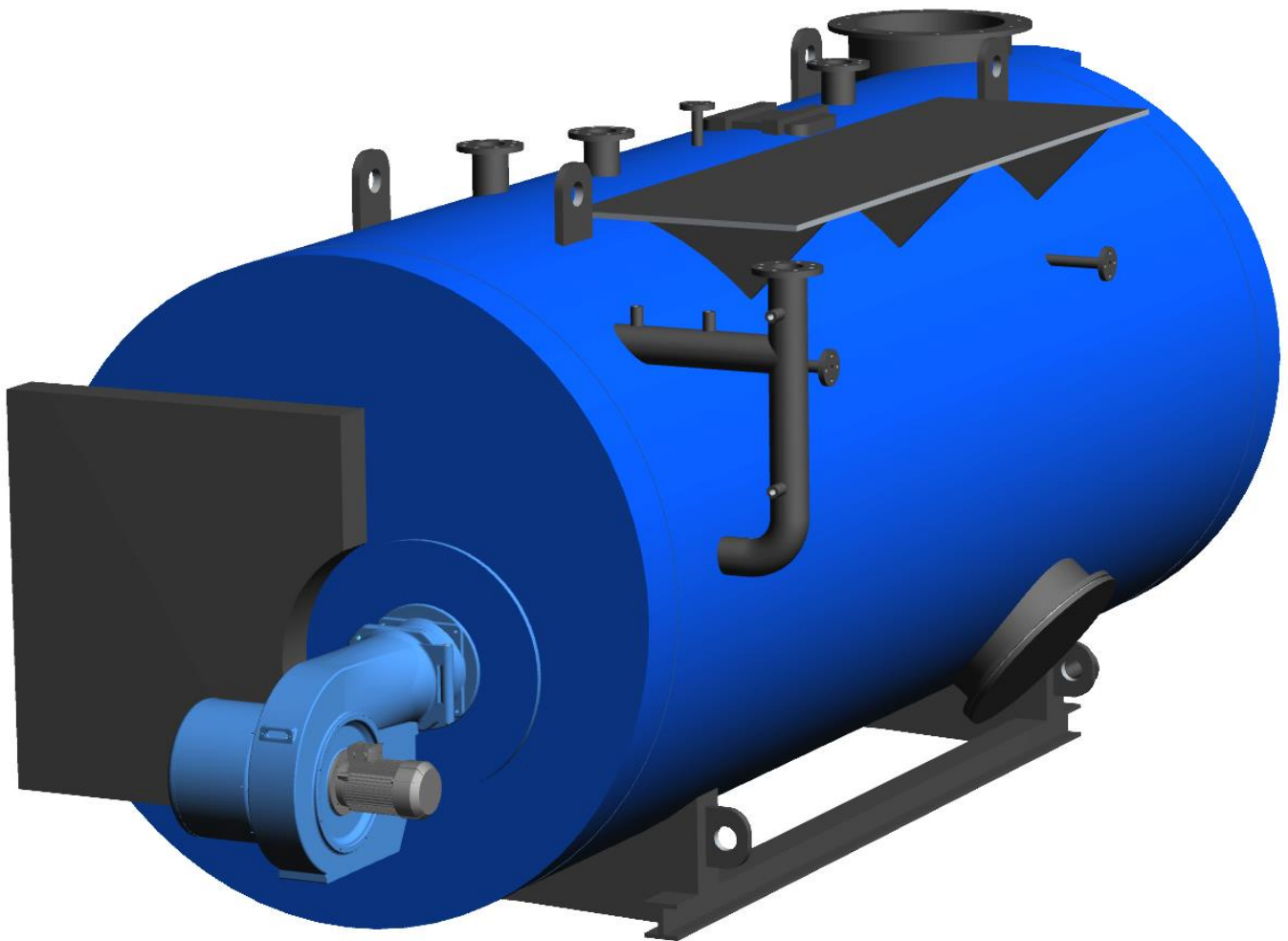
PB-P PB-PP



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PB-P, PB-PP Series

Moderated-pressure three-pass steam boilers combusting gaseous and liquid fuels

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

Design

The boiler body consists of a cylindrical shell, two reinforced bottoms, an asymmetrically bedded boiler flue, a water cooled inflective rear chamber and a nest of stay tubes of the second and the third pass.

The front inflective 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.

Equipment

The boiler body is equipped with an instrument pipe with power supply regulation, a glass gauge, a manometer, a manostat to regulate the burner output and an emergency manostat. The boiler body also includes a neck for steam outlet, a feeding neck, a safety valve, deaeration, continual and periodical blow-down and a neck for level monitoring or the BOSB assembly.

The superheated steam boiler design is additionally equipped with a temperature sensor, an emergency thermostat and a steam superheater relief valve.

A manhole together with inspection holes enables inner revision of the boiler. All the generating surfaces are easily accessible for cleaning assuring thus permanently high efficiency even for a long-term operation with liquid fuels.

Efficiency

The heat contained in flue gasses leaving the boiler can be transferred to feeding water in the exhaust-heat exchanger. Energy gained this way increases the boiler efficiency of up to 5% reducing thus the fuel consumption.

Economizer

It supplements the basic design of the PB-P and PB-PP 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.

Superheater

In case of use of superheated steam, the PB-P boilers can be added with a steam superheater positioned in the front inflective chamber between the second and the third boiler pass.

Modifications

The boilers can be supplied in a design with a preparation for a future change to a warm-water or hot-water operation without interfering into the pressure assembly.

BASIC TECHNICAL SPECIFICATION

- Output 1 000 ÷ 30 000 kg/h
- Operation overpressure 6 ÷ 25 bar(g)
- Heat transfer medium - saturated or superheated steam
- In compliance with technical requirements of ČSN EN 12953

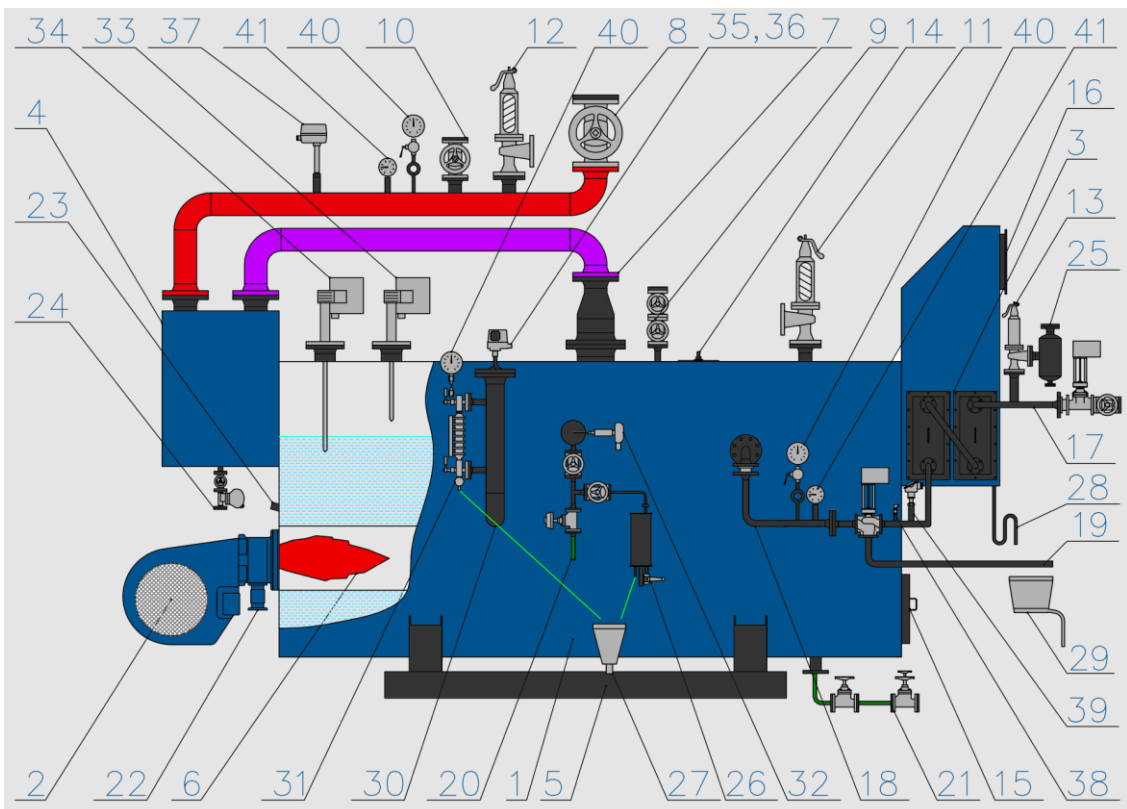
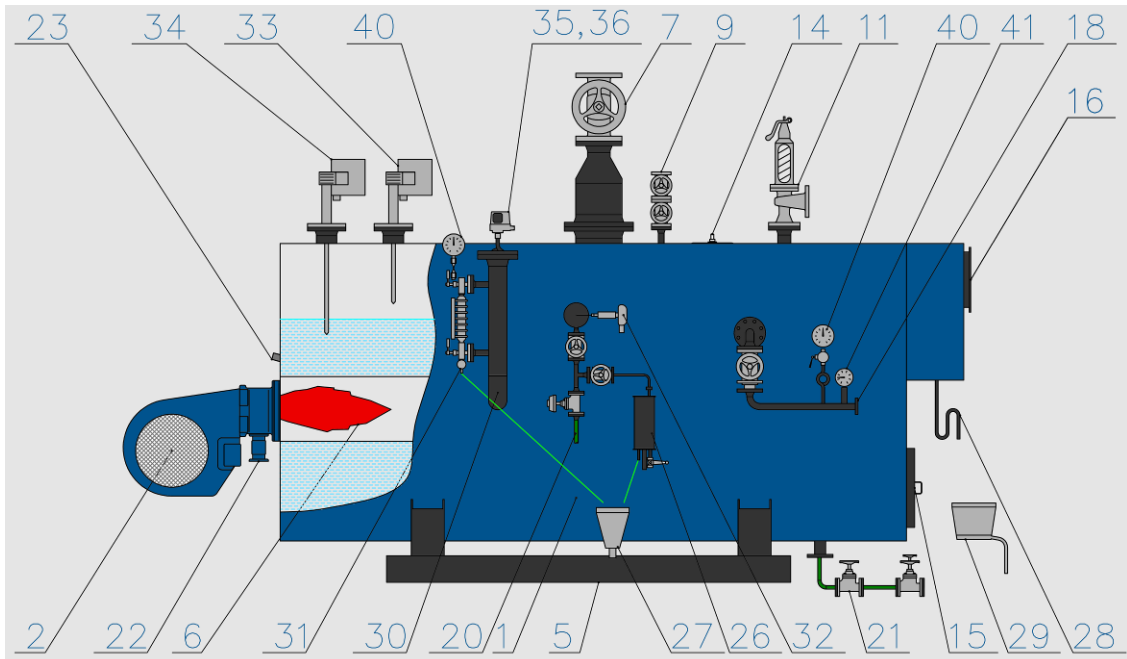
FUEL

- Natural gas
- Propane, propane-butane
- Low calorific power gasses - biogas
- Oil fuels

ADVANTAGES

- High lifetime
- Economical operation
- Combustion of different types of fuel
- Low combustion area load
- Large-capacity boiler
- Design customization
- High-quality warranty and post-warranty service
- Boilers in connection with low-emission burners meet the legal emission limits for gaseous and liquid fuels

BASIC CONNECTION DIAGRAM OF STEAM BOILERS



- | | | | |
|-----------------------------|--|-----------------------------------|--------------------------|
| 1) Boiler | 12) Superheater relief valve | 23) Sight glass into the flue | 34) Level monitoring |
| 2) Burner | 13) Economizer relief valve | 24) Superheater dewatering | 35) Emergency manostat |
| 3) Economizer | 14) Manhole into the boiler | 25) Blow-off damper | 36) Operation manostat |
| 4) Superheater | 15) Manhole into the combustion chamber | 26) Sample cooler | 37) Emergency thermostat |
| 5) Base | 16) Flue gas outlet | 27) Non-pressure waste sunk basin | 38) Pressure sensor |
| 6) Boiler flue | 17) Feeding branch before the economizer | 28) Condensing loop | 39) Temperature sensor |
| 7) Saturated steam outlet | 18) Feeding branch before the boiler | 29) Neutralization box | 40) Manometer |
| 8) Superheated steam outlet | 19) By-pass to the feeding tank | 30) Column with level measurement | 41) Thermometer |
| 9) Deaeration | 20) Continual blown-down | 31) Level gauge | |
| 10) Boiler starting valve | 21) Periodical blown-down | 32) Conductivity probe | |
| 11) Boiler safety valve | 22) Fuel supply | 33) Level regulation | |

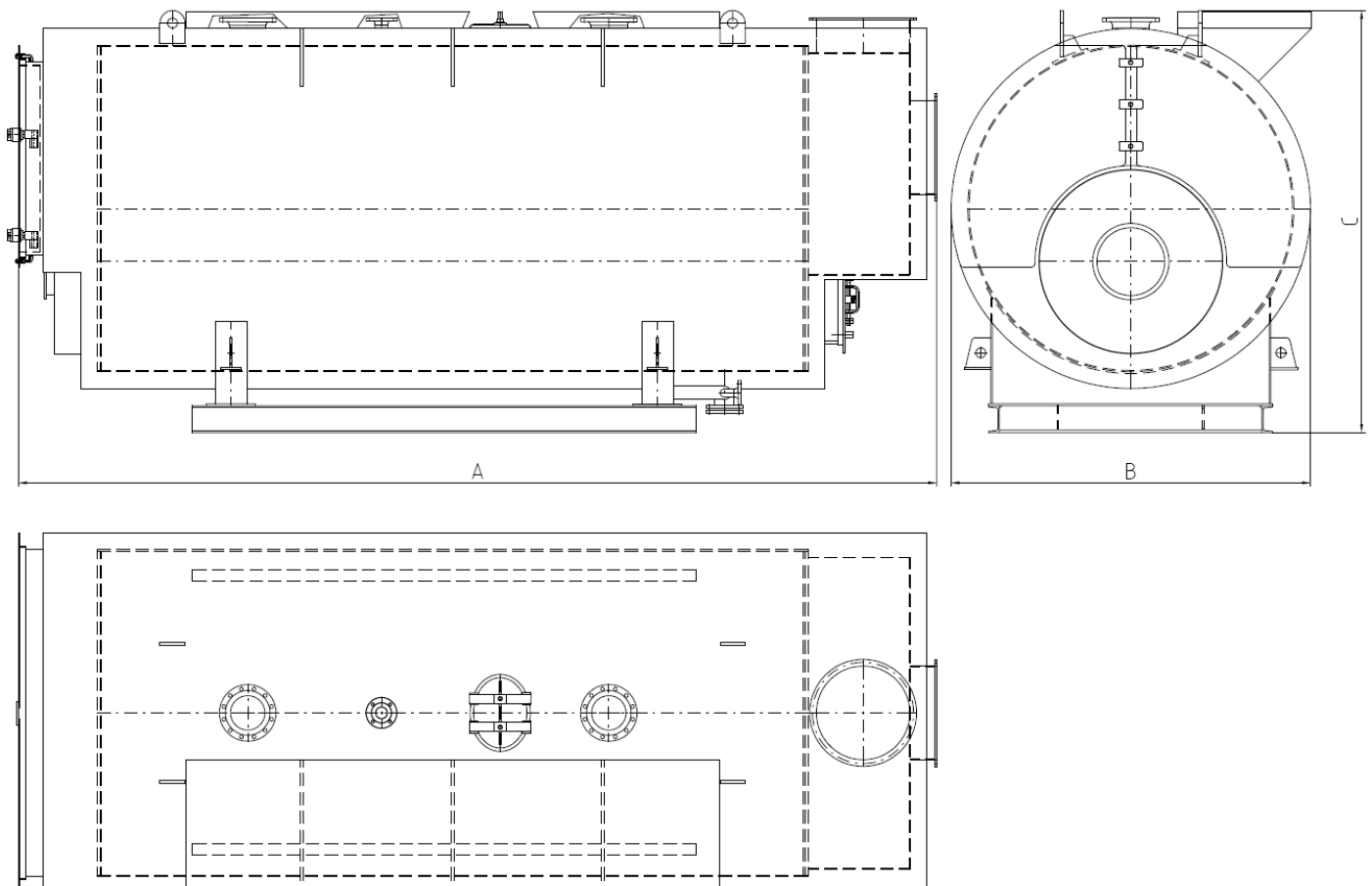
BASIC TECHNICAL DATA

Boiler type	Burner output [kW]	Boiler output [kW]	Boiler steam output [kg/h]	Pressure loss flue gas side [Pa]	Indicative boiler length * (A) [mm]	Indicative boiler width (B) [mm]	Indicative boiler height (C) [mm]	Transport weight (pressure 3bar) [kg]	Service weight (pressure 13bar) [kg]
PB-P1	716	652	1 000	820	3 300	2 030	2 050	4 300	6 700
PB-P1,6	1 146	1 043	1 600	860	3 940	2 210	2 170	5 200	8 800
PB-P2	1 435	1 306	2 000	880	4 875	2 075	2 100	5 950	10 050
PB-P2,5	1 793	1 632	2 500	900	5 310	2 185	2 200	7 520	11 920
PB-P3	2 152	1 958	3 000	910	5 400	2 470	2 400	9 450	14 850
PB-P4	2 869	2 611	4 000	920	5 560	2 605	2 625	9 800	16 600
PB-P5	3 587	3 264	5 000	960	6 380	2 730	2 700	12 650	20 050
PB-P6	4 304	3 917	6 000	980	6 650	2 960	3 010	15 100	25 400
PB-P8	5 738	5 222	8 000	1 080	7 770	3 070	3 230	19 700	34 300
PB-P10	7 174	6 528	10 000	1 150	7 555	3 388	3 520	23 500	41 200
PB-P12	8 608	7 833	12 000	1 450	8 098	3 354	3 507	24 800	46 300
PB-P14	10 043	9 139	14 000	1 650	7 910	3 610	3 780	29 200	58 860
PB-P16	11 477	10 444	16 000	1 800	8 251	3 710	3 820	30 800	63 300
PB-P20	14 346	13 055	20 000	1 450	on request				
PB-P25	17 933	16 319	24 000	1 650	on request				
PB-P30	21 520	19 583	30 000	1 800	on request				

* without burner

Changes reserved!

DIMENSIONAL DRAFT



WARM-WATER AND HOT-WATER BOILERS

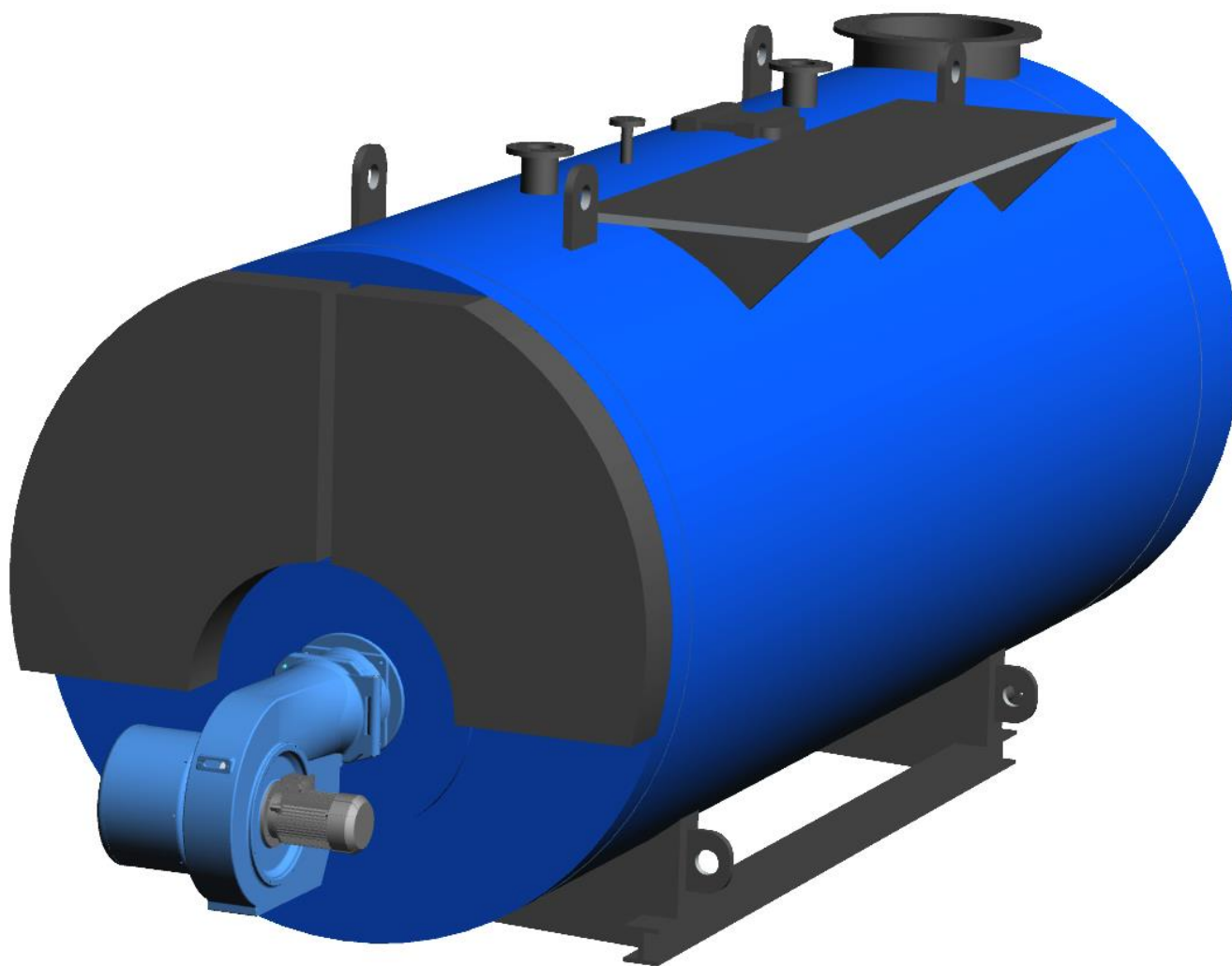
PB-V PB-H



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TPB-V, PB-H Series

Three-pass warm-water and hot-water boilers combusting gaseous and liquid fuels

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

Design

The boiler body consists of a cylindrical shell, two reinforced bottoms, a symmetrically bedded boiler flue, a water cooled inflective chamber and a ring nest of stay tubes of the second and third pass. The front inflective 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.

Equipment

The boiler body is equipped with a relief valve and draining. The outlet and reverse necks are fitted with adaptors with lugs for installation of measurement and regulation instruments. Beneath the return water inlet neck there is an injector increasing the output temperature.

Hot-water boilers are additionally equipped with a pressure limiter. Warm-water boilers are additionally equipped with a temperature limiter, namely up to 110°C.

Manholes together with inspection holes enable inner revision of the boiler.

Efficiency

The heat contained in flue gasses leaving the boiler can be transferred to return water in the exhaust-heat exchanger. Energy gained this way increases the boiler efficiency of up to 7% reducing thus the fuel consumption.

Economizer

It supplements the basic design of the PB-V and PB-H 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 exchanger connection

With regard to the boiler output and the design efficiency two basic types of the exchanger connection are distinguished.

Version with a full flow - all the return water flows through the exchanger, where it is preheated.

Version with a partial flow - only a part of the return water (10 - 30%) flows through the exchanger. Before the boiler inlet the rest of the return water mixes with heated water from the exchanger. This version is mainly used for boilers with a higher flow rate of recirculation water.

Modifications

The design of the boilers enables using an identical construction for both warm-water and hot-water boilers, namely up to pressure of 16 bars.

BASIC TECHNICAL SPECIFICATION

- Output 760 ÷ 25 000 kW
- Operation overpressure 6 ÷ 25 bar(g)
- Warm-water or hot-water version
- In compliance with technical requirements ČSN EN 12953

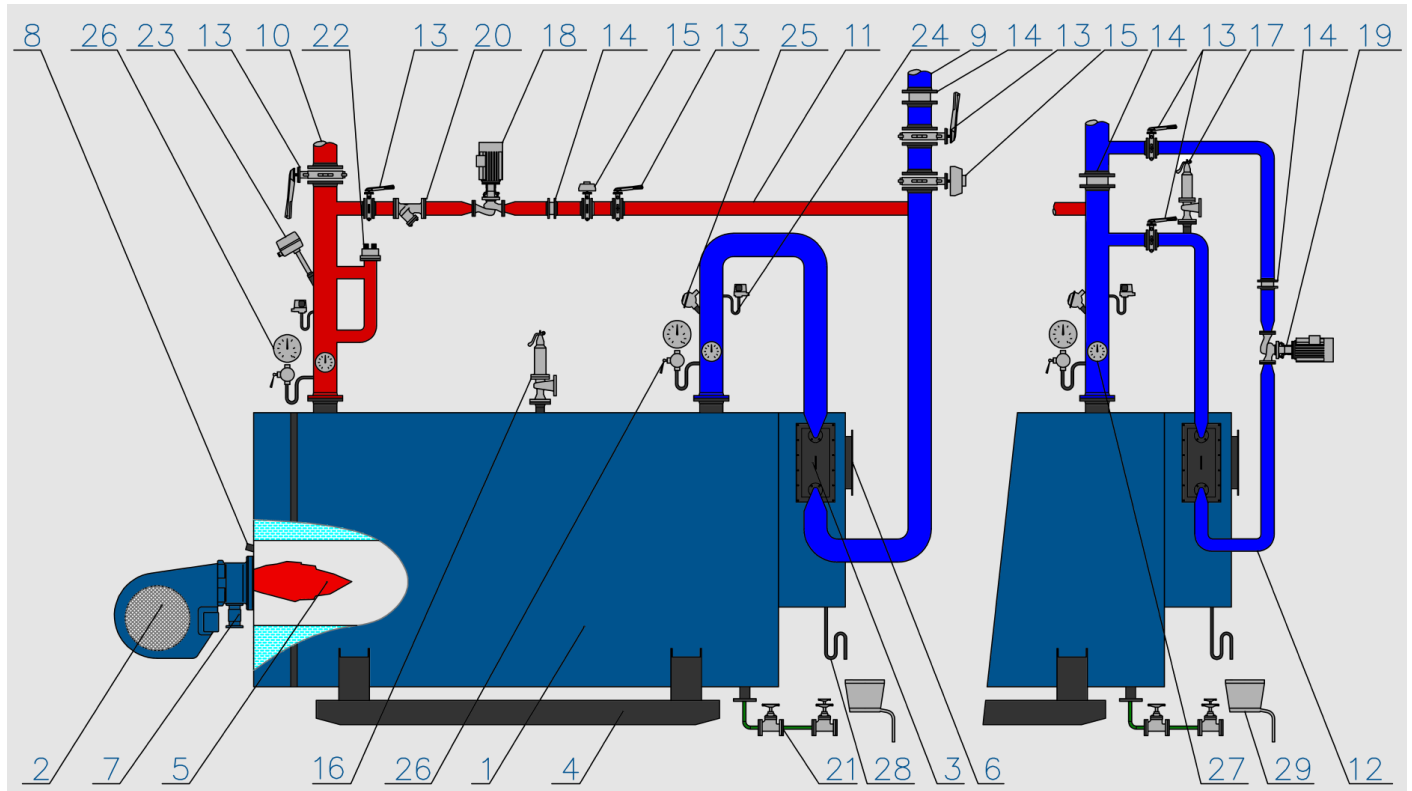
FUEL

- Natural gas
- Propane, propane-butane
- Low calorific power gasses - biogas
- Oil fuels

ADVANTAGES

- High lifetime
- Economical operation
- Combustion of different types of fuel
- Low combustion area load
- Large-capacity boiler
- Design customization
- High-quality warranty and post-warranty service
- Boilers in connection with low-emission burners meet the legal emission limits for gaseous and liquid fuels

BASIC CONNECTION DIAGRAM WITH FULL AND PARTIAL FLOW FOR BOILER TYPES PB-V AND PB-H



- | | |
|---------------------------------|-----------------------------|
| 1) Boiler | 16) Relief valve |
| 2) Burner | 17) Economizer relief valve |
| 3) Economizer | 18) Shorting pump |
| 4) Base | 19) Economizer circuit pump |
| 5) Boiler flue | 20) Filter |
| 6) Flue gas outlet | 21) Draining, blown-down |
| 7) Fuel supply | 22) Water incursion check |
| 8) Sight glass into the flue | 23) Emergency thermostat |
| 9) Return branch | 24) Manostat |
| 10) Output branch | 25) Temperature sensor |
| 11) Shorting circuit | 26) Manometer |
| 12) Partial flow via economizer | 27) Thermometer |
| 13) Shutting flap | 28) Condensing loop |
| 14) Check valve | 29) Neutralization box |
| 15) Damper | |

BASIC TECHNICAL DATA

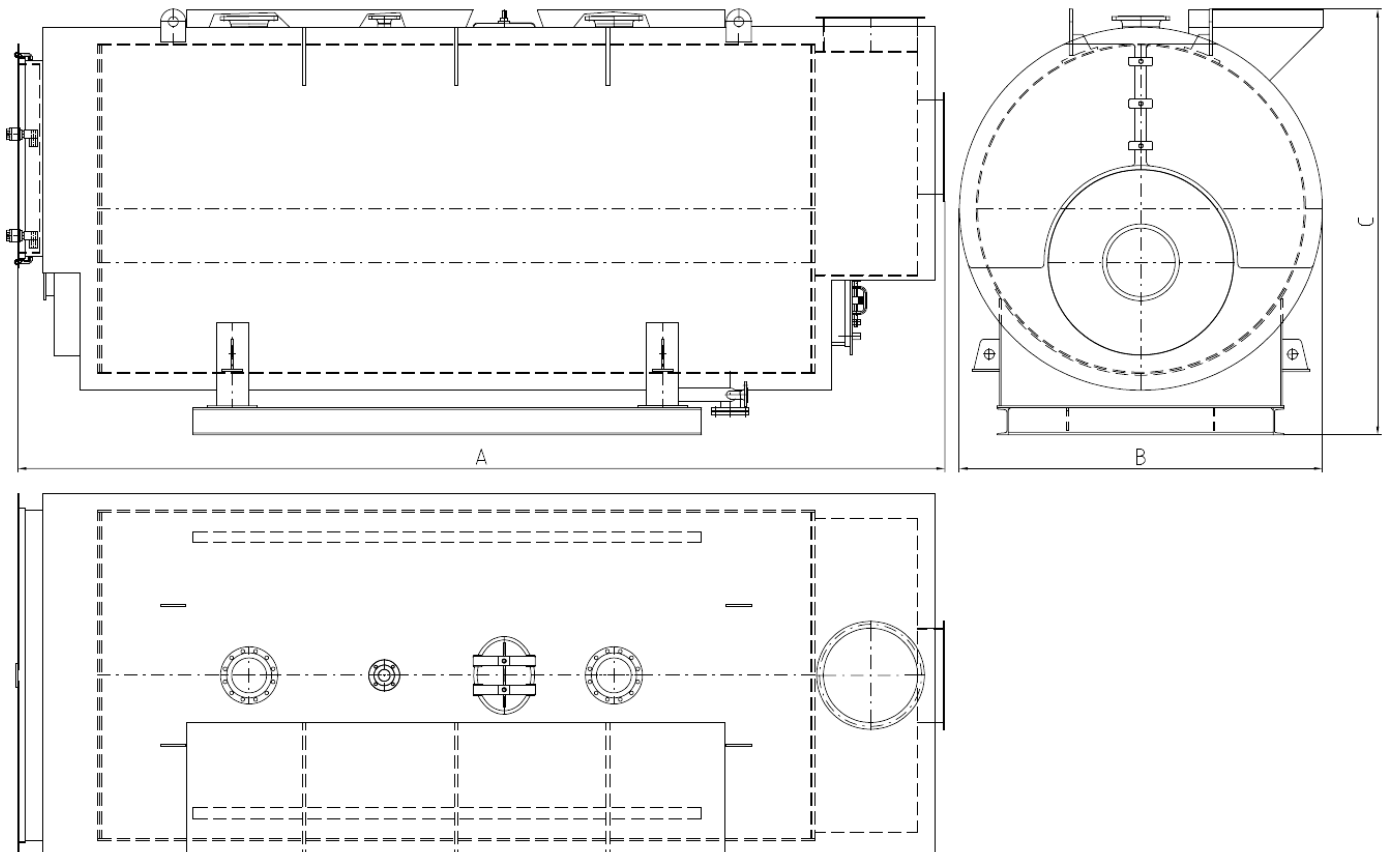
Boiler type	Maximum output [kW]	Pressure loss flue gas side [Pa]	Indicative boiler length * (A) [mm]	Indicative boiler width (B) [mm]	Indicative boiler height (C) [mm]	Boiler weight without water [kg]	Service weight [kg]
PB-V760	760	520	3 300	1 510	1 790	1 960	3 310
PB-V1000	1 000	580	3 860	1 580	1 860	2 600	4 500
PB-V1200	1 200	560	3 960	1 850	1 860	3 250	5 600
PB-V1600	1 600	620	4 070	1 800	2 080	3 866	6 866
PB-V2000	2 000	710	4 370	1 900	2 215	4 743	8 193
PV-V2500	2 500	680	4 570	1 960	2 275	5 600	9 580
PB-V3000	3 000	750	5 010	2 100	2 500	7 100	11 620
PB-V4000	4 000	820	5 400	2 150	2 550	9 900	15 970
PB-V5000	5 000	840	6 150	2 230	2 630	11 100	24 420
PB-V6000	6 000	890	6 550	2 400	2 800	14 230	30 150
PB-V8000	8 000	910	6 950	2 570	2 975	16 426	32 006
PB-V10000	10 000	1 100	7 350	2 750	3 190	17 900	34 200
PB-V12000	12 000	1 250	7 825	2 850	3 260	23100	41 000
PB-V14000	14 000	1 500	on request				
PB-V16000	16 000	1 650	on request				
PB-V20000	20 000	1 800	on request				
PB-V25000	25 000	2 000	on request				

* without burner

** up to the pressure of up to 13 bar(g) the dimensions are identical. Dimensions for higher pressures on request.

Changes reserved!

INDICATIVE BOILER ASSEMBLY



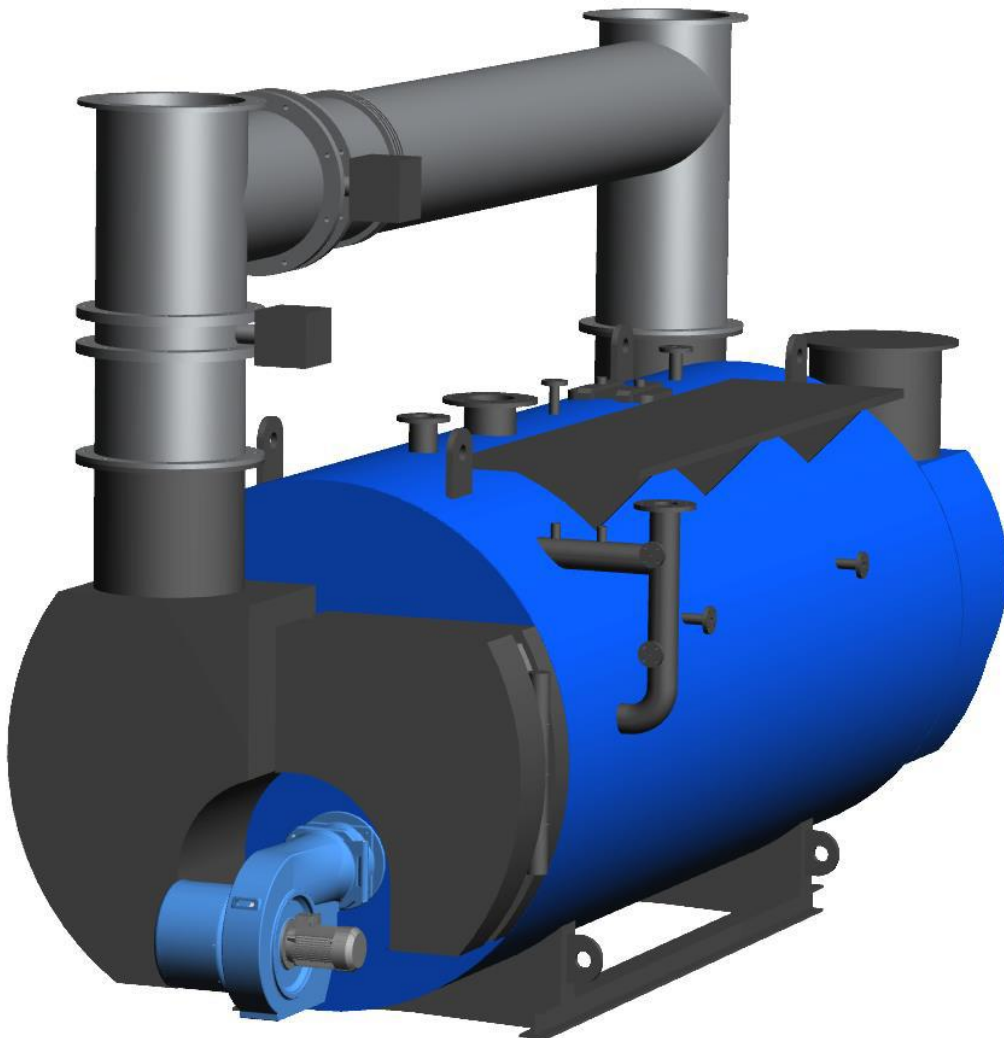
COMBINED BOILERS PB-(X)-K



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PB-(X)-K Series

Three-pass medium-pressure boilers combusting gaseous and liquid fuels with an autonomous flue gas pass for heat recuperation

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

Design

The boiler body consists of a cylindrical shell and two reinforced bottoms. It is divided into a burner and flue gas parts.

The burner part consists of an asymmetrically bedded boiler flue, a water cooled inflective chamber and a nest of stay tubes of the second and third pass. The front inflective 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 flue gas pass consists of a nest of stay tubes - the number of stay tubes nests is in accordance with the number of connected sources and their parameters. The front part of the boiler includes a flue gas chamber with a flue gas inlet; the rear part of the boiler includes a flue gas chamber with an upper or a rear flue gas outlet.

Working principle

The flue gas part of the boiler can be used to increase the operation efficiency for existing energy sources, e.g. cogeneration unit, flue gas turbine, waste flue gas from biomass combustion, etc.

The boiler can be operated in both a mode with a concurrent operation of both parts, i.e. burner and flue gas, and also in a mode with an autonomous operation of one of them.

Efficiency

The heat contained in flue gasses leaving the conventional part of the boiler can be transferred to feed water in the exhaust-heat exchanger. Energy thus gained increases the boiler efficiency of up to 5% reducing thus the fuel consumption.

Economizer

It supplements the basic design of the 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

A manhole together with inspection holes enables the boiler inner inspection. The generating surfaces are easily accessible for cleaning guaranteeing thus a permanently high efficiency.

Versions

The PB-(X)-K boilers can be supplied in steam, hot-water or warm-water versions.

BASIC TECHNICAL SPECIFICATION

- Steam output 1 000 ÷ 16 000 kg/h
- Heat output 1 ÷ 10 MW
- Operation overpressure 6 ÷ 25 bar(g)
- Heat transfer media - steam, warm or hot water
- In compliance with technical requirements ČSN EN 12953

FUEL

- Natural gas
- Propane, propane-butane
- Low calorific power gasses - biogas
- Oil fuels

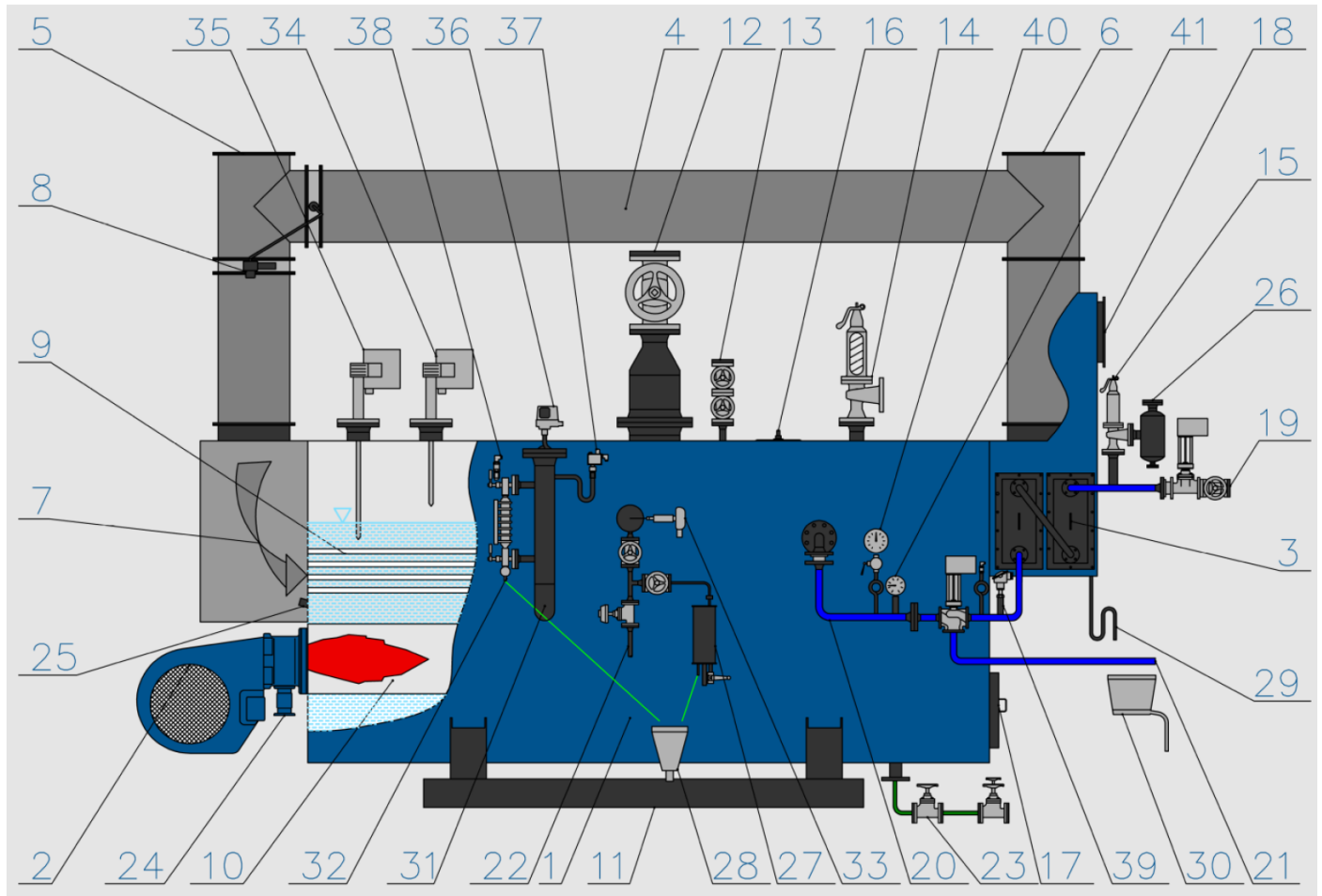
HEAT SOURCES

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

ADVANTAGES

- High lifetime
- Increase of heat production process efficiency or increase of the combustion process efficiency
- Use of different heat sources
- Large-capacity boiler
- Combustion of different types of fuel
- Design customization
- High-quality warranty and post-warranty service
- Boilers in connection with low-emission burners meet the legal emission limits for gaseous and liquid fuels

BASIC CONNECTION DIAGRAM OF A COMBINED BOILER - STEAM VERSION



- | | |
|--|-----------------------------------|
| 1) Boiler | 22) Boiler continual blown-down |
| 2) Burner | 23) Boiler periodical blown-down |
| 3) Economizer | 24) Fuel feed |
| 4) Flue gas bypass | 25) Sight glass into the flue |
| 5) Flue gas inlet | 26) Blow-off damper |
| 6) Flue gas outlet | 27) Sample cooler |
| 7) Flue gas | 28) Non-pressure waste sunk basin |
| 8) Flue gas flap | 29) Condensing loop |
| 9) Utilization part | 30) Neutralization box |
| 10) Boiler flue | 31) Column with level measurement |
| 11) Base | 32) Water-level gauge |
| 12) Saturated steam outlet | 33) Conductivity probe |
| 13) Deaeration | 34) Water level regulation |
| 14) Boiler relief valve | 35) Water level monitoring |
| 15) Economizer relief valve | 36) Emergency manostat |
| 16) Manhole into the boiler | 37) Operation manostat |
| 17) Manhole into the combustion chamber | 38) Pressure sensor |
| 18) Flue gas outlet from the conventional part | 39) Temperature sensor |
| 19) Feeding branch before the economizer | 40) Manometer |
| 20) Feeding branch before the boiler | 41) Thermometer |
| 21) Bypass into the feeding tank | |

EXHAUST-HEAT BOILERS

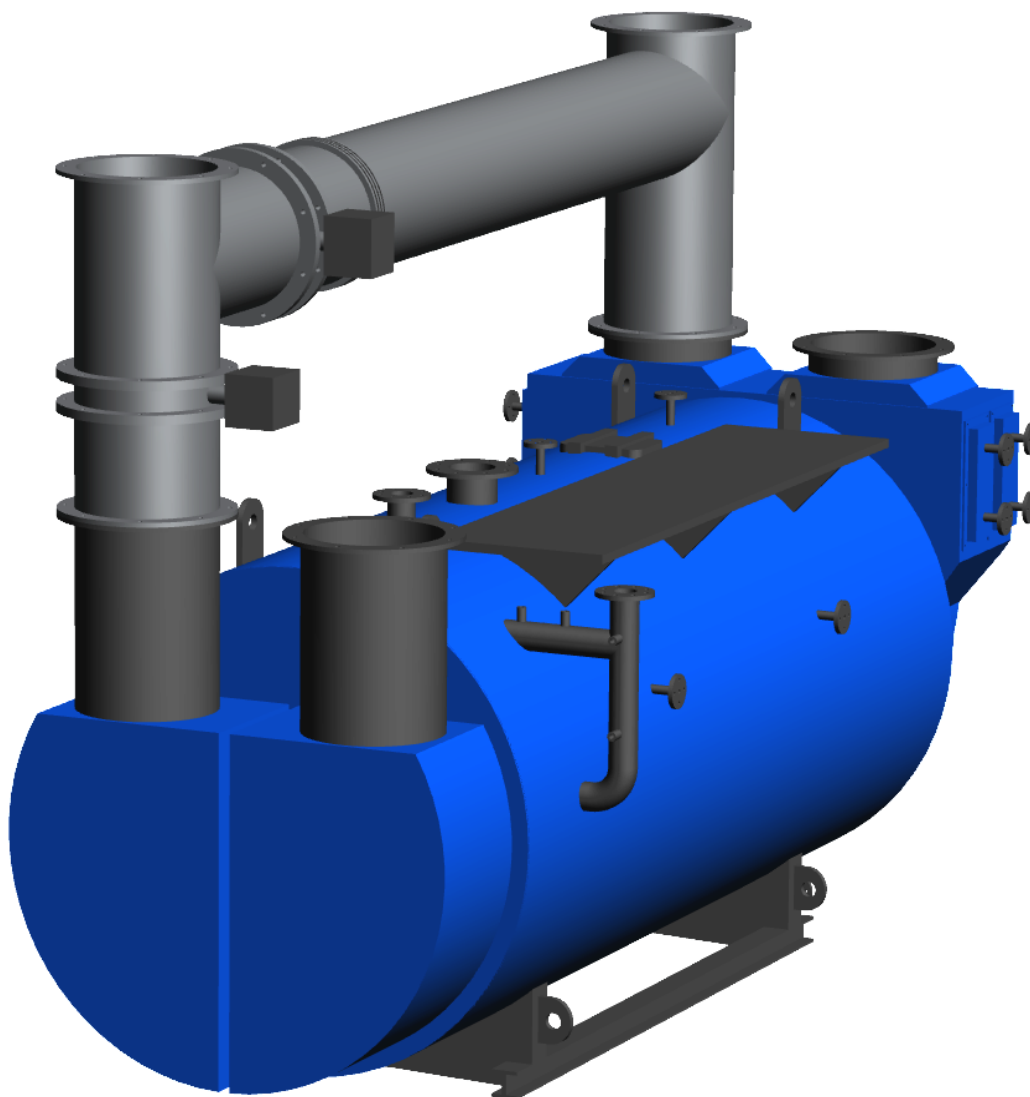
PB-(X)-S



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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

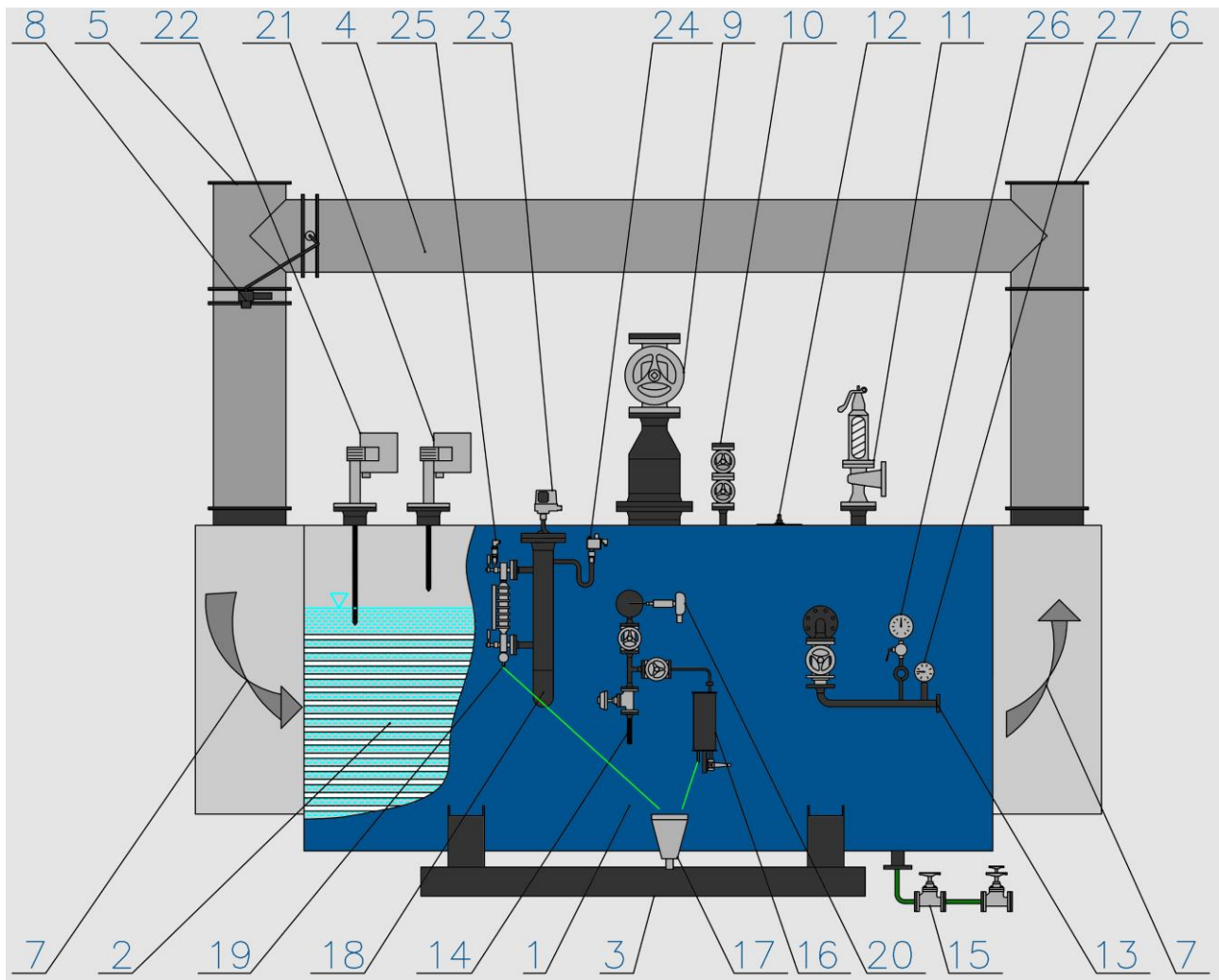
HEAT SOURCE

- 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

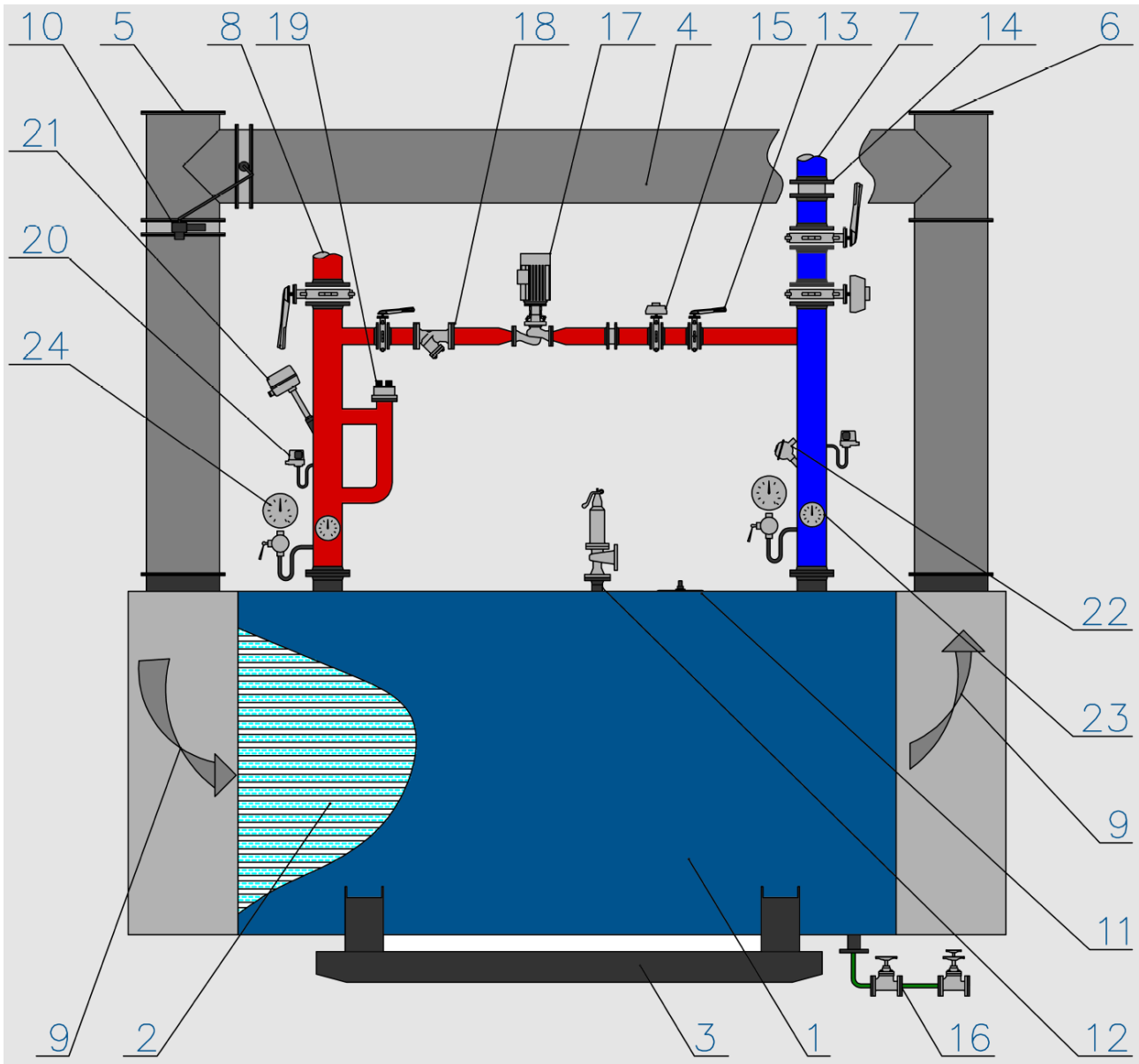
BASIC CONNECTION DIAGRAM OF AN EXHAUST-HEAT STEAM BOILER



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 | |

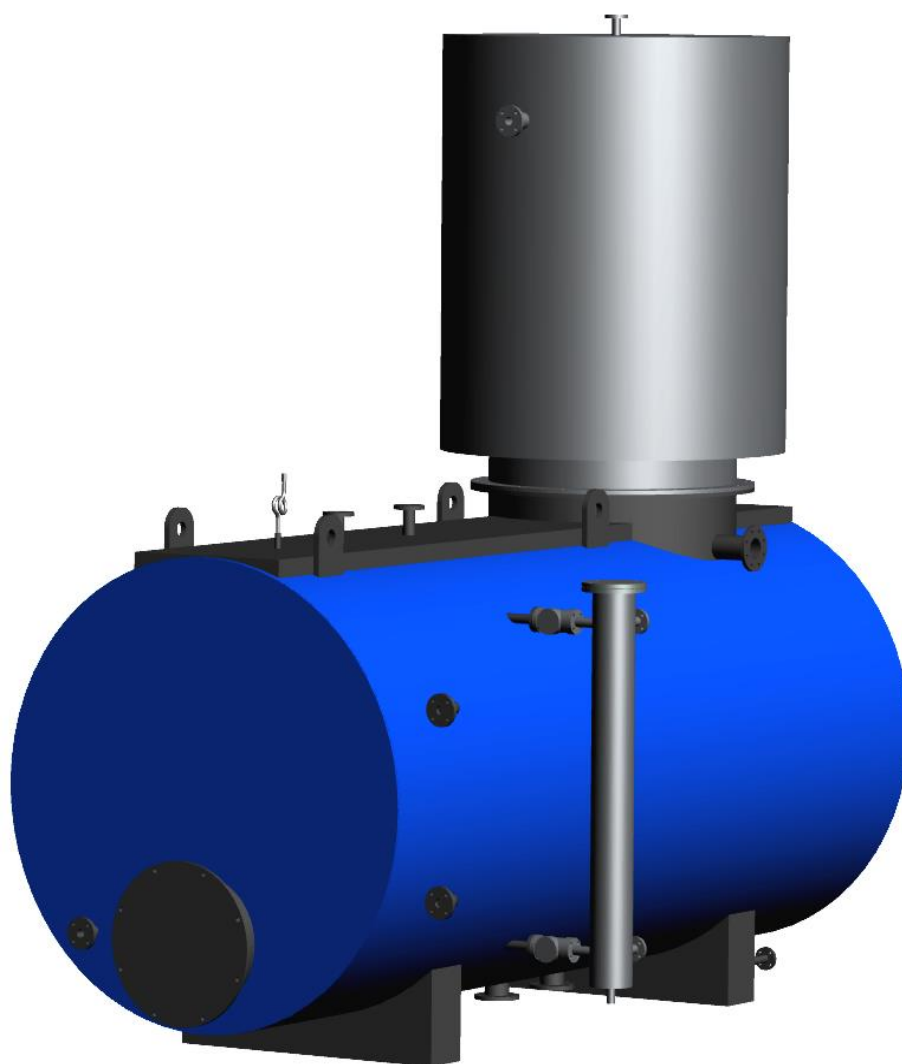
ACCESSORIES FOR STEAM BOILER ROOMS



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Feeding module NM

Condensate module KM

Chemical treatment of water

Continual and periodical blow-down expander

The feeding module is designed to store treated water including the heating and degassing for steam boilers. It is an integral part of a steam boiler room and guarantees a long service life of the boiler.

Feeding module with a cylindrical tank and a thermal degasser

It is a modular system providing full degassing of feed water using thermal degassing with a high degassing effect. It is suitable for higher steam outputs and systems with a low share of condensate return.

It consists of a feed tank heated by steam, a thermal cascade degasser, a block of feed pumps and instrument equipment.

Design

The feed tank consists of a cylindrical shell on saddle supports and two arched bottoms. The thermal degasser is of a cylindrical shape and it is bedded on a feed tank flange.

Equipment

The feeding module is standardly equipped with a set of accessories (water inlet, overflow and tank drainage, additional steam heating and steam regulation), a relief valve, vacuum trap, a block of feed pumps, chemicals dosing, sampling, water-level regulation and a level gauge.

Feeding module with a cylindrical tank and bubbling

It is a modular system for partial degassing of feed water using bubbling in the feed tank. It is suitable for small steam outputs with a higher share of condensate return.

The module consists of a cylindrical feed tank heated by steam using bubbling.

Design

The feed tank consists of a cylindrical shell bedded on saddle supports and two arched bottoms.

Equipment

Standard equipment consists of an armature set (water inlet, condensate, overflow and tank draining and steam heating), a relief valve, a vacuum trap, a block of pumps, water-level regulation and a level gauge.

BASIC TECHNICAL DATA

- Operation pressure < 0,5 bar(g)
- Possible use of saturated and superheated steam
- Full thermal degassing of feeding water with an output range of 2 ÷ 40 t/h
- Partial thermal degassing of feeding water with an output range of 0,5÷ 2 t/h
- Parameters according to ČSN EN 12953-10

ADVANTAGES

- Low share of residual oxygen
- Water-level regulation
- Dosing chemicals into feed water at the point of controlled flow
- Feeding of more boilers
- Feeding module design according to real operation characteristics

Condensate module

It is a condensate tank to collect the condensate and return it to the steam circuit technology.

Design

A non-pressure condensate tank consisting of a cylindrical shell on saddle supports and two arched bottoms.

Equipment

The condensate module is standardly equipped with a set of accessories (water inlet, condensate inlet, overflow and tank drainage), a block of condensate pumps, water-level monitoring and a level gauge.

Continual and periodical blow-down expander

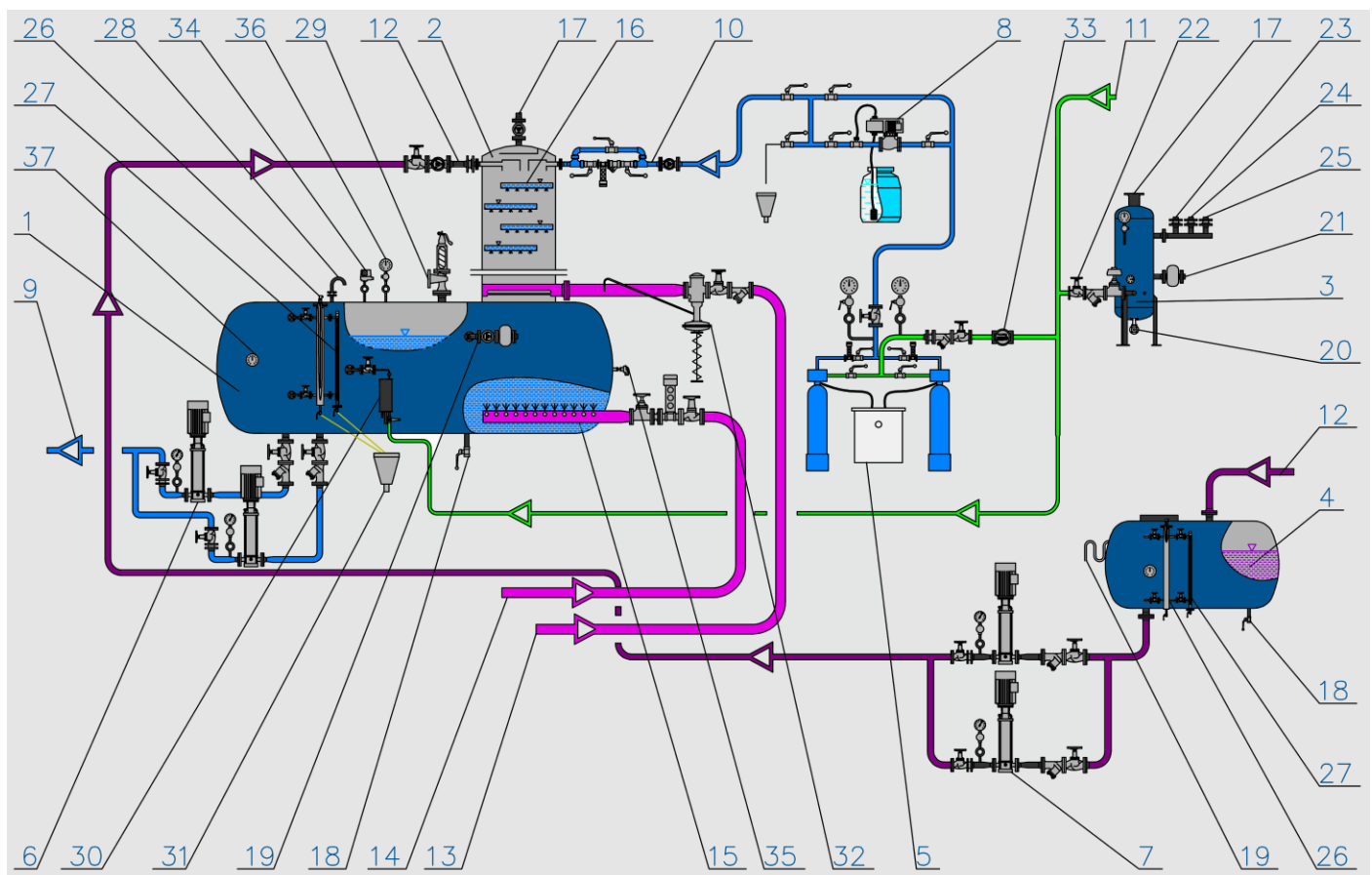
The continual and periodical blow-down expander is used for collecting and cooling of waste water from a steam boiler.

It is an upright cylindrical vessel with arched bottoms on vertical supports.

Chemical treatment of water

Chemical treatment of water and dosing of chemicals using a dosing pump. The system is used for correction of water pH, hardness, etc.

BASIC CONNECTION DIAGRAM OF A FEEDING MODULE



- | | | | |
|--|-------------------------|--------------------------------|------------------------------|
| 1) Feed tank | 10) Treated water | 19) Tank overflow | 29) Tank relief valve |
| 2) Thermal degasser | 11) Raw water | 20) Expander draining | 30) sample cooler |
| 3) Continual and periodical blow-down expander | 12) Condensate | 21) Expander overflow | 31) Discharge funnel |
| 4) Condensate tank | 13) Steam for degassing | 22) Cooling water refill | 32) Steam pressure regulator |
| 5) Chemical treatment of water | 14) Steam for bubbling | 23) Continual blow-down inlet | 33) Flow-meter |
| 6) Block of feed pump | 15) Bubbling | 24) Periodical blow-down inlet | 34) Pressure sensor |
| 7) Block condensate pumps | 16) Cascade | 25) Spare neck | 35) Temperature sensor |
| 8) Dosing of chemicals | 17) Condensed water | 26) Water-level regulation | 36) Manometer |
| 9) Feeding water | 18) Tank draining | 27) Magnetic level gauge | 37) Thermometer |

BASIC TECHNICAL DATA

Tank type	Maximum output [kg/h]	Tank volume [litres]	Tank length (A) [mm]	Tank width (B) [mm]	Tank height * (C) [mm]	Tank weight without water * [kg]	Service weight [kg]
NM 2	2 000	2 000	2 705	1 220	2 930	920	2 220
NM 3	3 000	3 000	3 080	1 420	3 340	1 485	3 375
NM 4	4 000	4 000	3 280	1 650	3 530	1 720	4 310
NM 5	5 000	5 000	3 860	1 650	3 580	1 855	5 105
NM 6	6 000	6 000	3 645	1 820	3 780	2 080	5 980
NM 8	8 000	8 000	4 960	1 820	3 820	2 630	7 830
NM 1	10 000	10 000	4 545	2 160	3 860	3 015	9 515
NM 12	12 000	12 000	5 160	2 020	4 100	3 690	11 490
NM 14	14 000	14 000	5 980	2 020	4 380	4 340	13 440
NM 16	16 000	16 000	5 480	2 220	4 560	6 465	16 865
NM 18	18 000	18 000	6 265	2 265	4 720	7 905	19 605
NM 20	20 000	20 000	7 065	2 265	4 720	8 790	21 790
NM 25	25 000	25 000	6 570	2 465	5 460	10 880	27 130
NM 30	30 000	30 000	8 370	2 465	5 460	12 760	32 260
NM 35	35 000	35 000	8 370	2 665	5 590	16 840	39 590
NM 40	40 000	40 000	9 280	2 665	5 650	18 410	44 410

Changes reserved!

*The tank height and weight are calculated for a tank and with a degasser with 50% condensate refill.

BASIC DIMENSIONS OF A FEED TANK WITH A DEGASSER

