



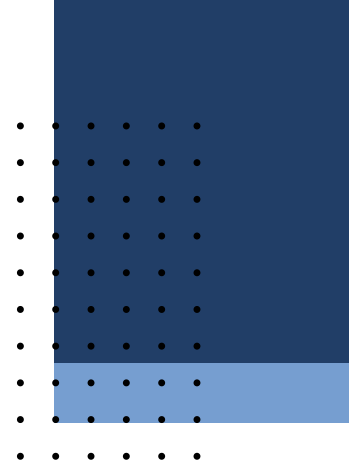
Üniversal
Kazan



INDUSTRIAL BOILERS
www.universalkazan.com



TABLE OF CONTENT



01. Steam Boiler

02. Steam generator

03. Thermal Oil Boiler

04. Hot Water Boiler

05. Deaerator

06. Heat Recovery System

07. Hybrid Type Steam and Hot Water Boiler



COMPANY OVERVIEW

About Us

Founded in 1970 by the esteemed Senior Mechanical Engineer Metin Bilgiç, Üniversal Boilers has built a long-standing reputation for engineering excellence. With over five decades of experience, the company manufactures a diverse range of steam boilers, thermal oil boilers, and other energy systems for heat transfer processes across various industries

01/STEAM BOILER

Definition

A steam boiler is a power generation device that generates steam by applying heat energy to water. It is in the form of a closed vessel made up of steel in which combustion of fuel occurs to produce heat energy. It is also called a steam generator.

A steam boiler is a critical part of a thermal powerplant, therefore, it's important for us to have knowledge about the steam boiler.

Why Steam Boiler

Steam boilers are highly efficient systems for generating heat and power in various industries. They provide consistent, reliable energy for processes such as heating, sterilization, and power generation. Steam boilers offer flexibility in fuel use, enabling businesses to choose between gas, oil, or solid fuel, depending on availability and cost-efficiency.

Additionally, they are environmentally friendly, with modern boilers designed to reduce emissions and optimize fuel usage. With their ability to provide high heat output and adaptability, steam boilers remain a key solution for industrial energy needs.



SCOTCH TYPE 3 PASS FIRE TUBE STEAM BOILER

SB

DESIGN:

The high-pressure, 3-pass, fire-smoke tube Scotch type steam boilers are meticulously designed and manufactured in compliance with internationally recognized standards, including Lloyd's Rules, TRD, DIN, and EN norms (TSE, TRD, DIN, EN, GOST, and ASME). This ensures superior quality and reliability.



SCOTCH TYPE 3 PASS FIRE TUBE STEAM BOILER

SB



MATERIALS:

The cylindrical shell, flue plates, and combustion chamber are constructed from premium-grade HI-HI boiler steel (boiler sheet), which provides exceptional strength and durability. The smoke tubes are made from seamless boiler-grade tubes as per DIN 17155, ensuring long-term performance and reliability.

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HIGH EFFICIENCY:

Engineered for maximum thermal efficiency (88 90%), the boiler's design ensures optimal heat transfer. Flue gases generated from efficient combustion pass through advanced convection surfaces and exit the system without causing low-temperature corrosion. This design maximizes heat recovery, contributing to reduced fuel consumption and operating costs. Rapid response to sudden high steam demand. Equipped with a large evaporation surface and significant steam storage capacity to handle load fluctuations efficiently. Features a generously sized corrugated combustion chamber to improve heat absorption and allow thermal expansion.

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TESTING & MAINTENANCE

Each boiler undergoes a rigorous hydraulic pressure test at 1.5 times its operating pressure to guarantee structural integrity and safety.

The boiler is designed for easy maintenance.

- ☒ The combustion chamber can be easily accessed via the explosion door.
- ☒ Smoke tubes are accessible from the front door.
- ☒ The waterside components are reachable through strategically placed manholes and handholes, facilitating inspections and cleaning.

This robust design ensures long-term efficiency, operational reliability, and ease of maintenance.

CAPACITIE & DIMENSIONS:

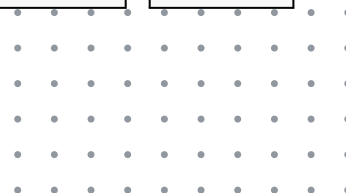
	SB-5	SB-10	SB-15	SB-20	SB-25	SB-30	SB-35	SB-40
Steam Capacity (Kg/h)	150	300	500	750	900	1100	1350	1550
Length (mm)	1950	2100	2330	2490	2625	2745	2860	3010
Width (mm)	1350	1690	1820	1850	1900	2000	2000	2000
Height (mm)	1500	1840	1970	2000	2050	2150	2150	2150
Steam Volume (m ³)	0,21	0,44	0,65	0,71	0,92	1,17	1,23	1,32
Water Volume (lt)	430	1030	1360	1420	1520	1550	1580	1650
Stack Dimension (mm)	200	250	300	300	350	350	350	400
Flue Gas Pressure Drop (mmSS)	15	15	30	30	30	30	30	30
Approximate weight at 6 bar	1100	1750	2250	2600	290	3300	3700	4000
Approximate weight at 10 bar	1300	2000	2450	2900	3200	3900	4300	4600

CAPACITIE & DIMENSIONS:

	SB-50	SB-60	SB-70	SB-80	SB-90	SB-100	SB-125	SB-150
Steam Capacity (Kg/h)	1900	2400	2800	3200	3800	4200	5200	6250
Length (mm)	3200	3375	3530	3680	3820	4150	4525	4820
Width (mm)	2250	2410	2500	2550	2550	2650	2650	2830
Height (mm)	2400	2500	2560	2750	2800	2900	2900	3080
Steam Volume (m ³)	1,55	1,7	1,83	1,97	2,09	2,36	2,99	4,25
Water Volume (lt)	2755	3850	4450	5070	5740	5900	6180	7495
Stack Dimension (mm)	450	500	550	600	600	600	650	700
Flue Gas Pressure Drop (mmSS)	30	30	30	40	50	60	70	70
Approximate weight at 6 bar	5000	5450	6100	7100	7800	9400	10700	13200
Approximate weight at 10 bar	5800	6100	6900	7950	8650	11100	11850	14700

CAPACITIE & DIMENSIONS:

	SB-200	SB-250	SB-300	SB-350	SB-400
Steam Capacity (Kg/h)	8350	10500	12500	14600	16700
Length (mm)	5340	5800	6315	6700	7055
Width (mm)	3000	3200	3350	3500	3550
Height (mm)	3250	3450	3600	3750	3800
Steam Volume (m ³)	4,97	5,69	7,16	7,85	8,39
Water Volume (lt)	9390	11570	13740	16865	18600
Stack Dimension (mm)	700	800	1000	1000	1000
Flue Gas Pressure Drop (mmSS)	80	90	100	100	100
Approximate weight at 6 bar	16700	20900	32500	27250	31000
Approximate weight at 10 bar	18750	23900	27900	31000	34700



PRESSURIZED COMBUSTION STEAM BOILER

RB

DESIGN:

This cylindrical, pressurized combustion boiler utilizes a 3-pass system for enhanced efficiency. The first and second passes occur as reverse flames within the large combustion chamber, creating turbulence that promotes an optimal air-fuel mixture and ensures efficient combustion. In the third pass, hot gases travel through the smoke tubes, where their temperature is reduced significantly before being expelled as flue gas. This system achieves a high boiler efficiency of 85-90%





ADVANTAGES

Large Corrugated Combustion Chamber: Designed to enhance heat absorption and allow for thermal expansion, promoting efficient combustion and prolonged boiler life.

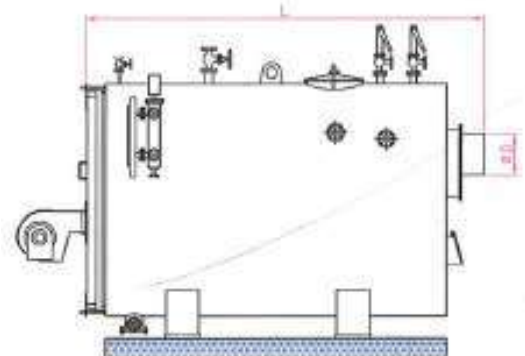
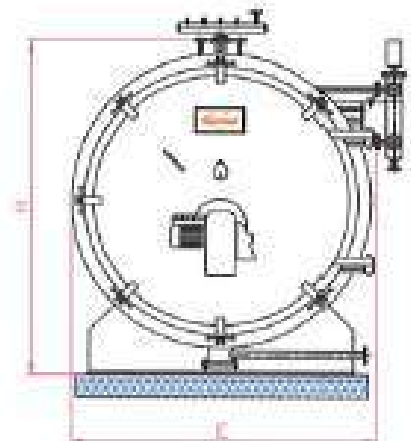
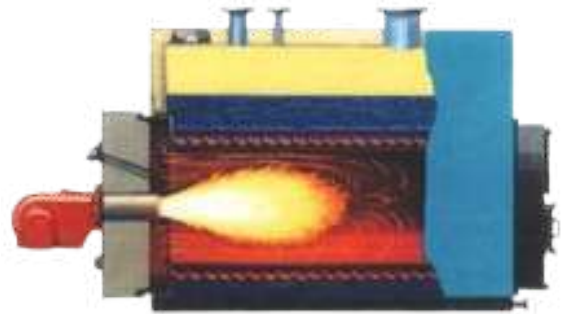
Compact Design: With relatively small dimensions, the boiler requires minimal installation space, making it suitable for facilities with space constraints.

Rapid Steam Production: The design ensures quick response to steam demand, delivering high steam generation rates in a short time.

Optimal Heat Transfer Surface: The boiler is engineered to balance heat load, ensuring no excessive heat concentration, which improves overall efficiency and reliability.

Minimal Heat Loss: The outer surface is designed to minimize heat loss, further improving energy efficiency.

Durability and Efficiency: With proper maintenance, the boiler ensures a long service life while maintaining consistently high performance.



EASY MAINTENANCE

The design allows for easy access to critical components:

The combustion chamber and smoke tubes are accessible through the front door for routine inspection and cleaning.

The waterside components can be reached through manholes and handholes, ensuring straightforward maintenance procedures and efficient upkeep.

This combination of compact design, rapid steam production, and ease of maintenance makes the boiler an efficient, long-lasting solution for various industrial applications.



CAPACITIE & DIMENSIONS:

	RB-250	RB-300	RB-350	RB-400	RB-450	RB-500	RB-600	RB-750	RB-1000	RB-1250
Steam Capacity (Kg/h)	250	300	350	400	450	500	600	750	1000	5000
Length (mm)	1580	1680	1780	1880	1880	2100	2200	2300	2500	4400
Width (mm)	1100	1200	1250	1250	1250	1400	1450	1600	1600	2350
Height (mm)	1250	1350	1400	1400	1400	1550	1600	1750	1750	1850
Steam Volume (m³)	0,21	0,25	0,28	0,3	0,37	0,46	0,51	0,68	0,76	0,89
Water Volume (lt)	410	540	680	715	630	990	1180	1280	1390	2200
Stack Dimension (mm)	200	200	250	250	250	300	350	400	400	400
Flue Gas Pressure Drop (mmSS)	10	10	10	15	15	15	18	20	25	30
Appro weight at 6 bar	600	740	840	900	920	1230	1415	1765	1930	2400
Appro weight at 10 bar	700	850	950	1050	1100	1400	1600	2030	2200	2750

CAPACITIE & DIMENSIONS:

	RB-1500	RB-1750	SB-2000	SB-2500	SB-3000	SB-3500	RB-4000	RB-5000	RB-6000
Steam Capacity (Kg/h)	6000	1750	2000	2500	3000	3500	4000	5000	6000
Length (mm)	4700	3100	3200	3400	3700	3850	4100	4400	4700
Width (mm)	2550	1750	1750	1800	2000	2150	2250	2350	2550
Height (mm)	1900	1900	1950	2150	2150	2300	2400	2500	2700
Steam Volume (m ³)	1.18	1.29	1.61	1.73	1.96	2.81	3.18	3.95	4.50
Water Volume (lt)	2240	2590	2860	2930	3920	4730	7350	7500	11050
Stack Dimension (mm)	450	450	500	500	550	600	600	650	700
Flue Gas Pressure Drop (mmSS)	40	50	50	55	60	70	80	90	100
Appro weight at 6 bar	2700	2970	3565	4050	4990	5880	7050	8540	10580
Appro weight at 10 bar	3100	3400	4100	4650	5600	6700	8000	9750	12000



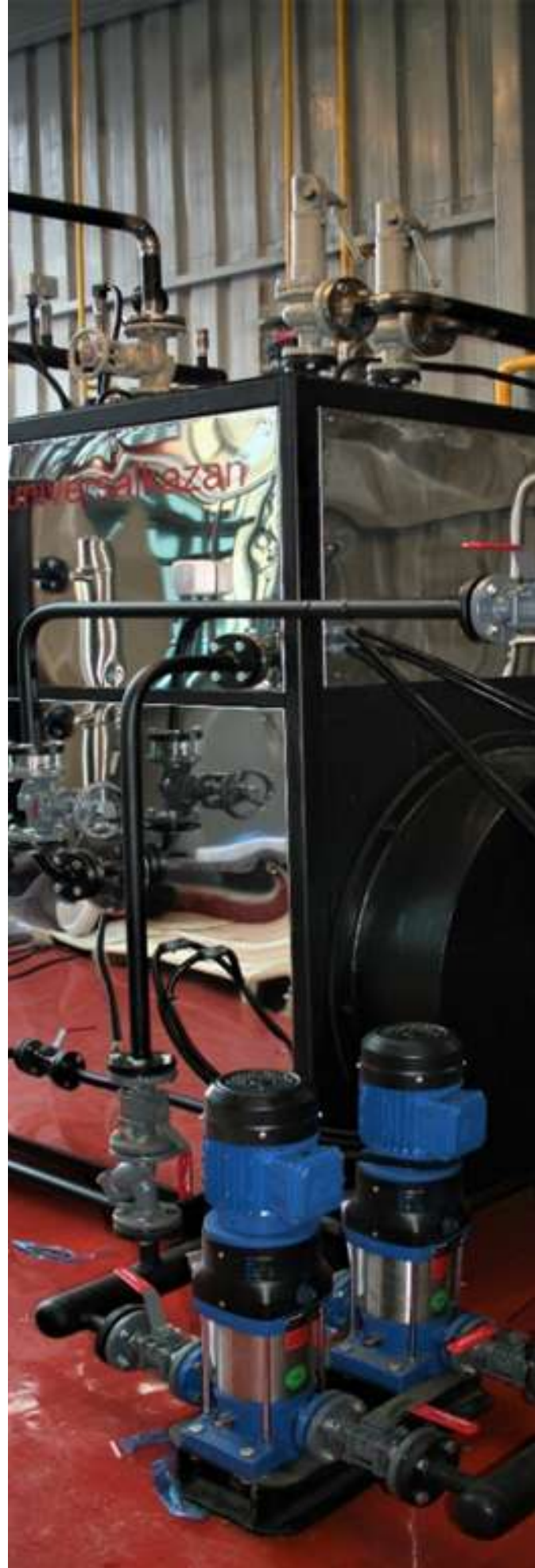
02/STEAM GENERATOR

Definition

A steam generator is a device engineered to convert water into steam through the application of heat. It is designed for various industrial applications, providing a continuous and reliable source of steam for processes such as heating, power generation, or cleaning. Unlike traditional boilers, steam generators are typically more compact, offer quicker startup times, and are highly efficient in producing steam at the required pressure and temperature levels. Their compact design makes them ideal for industries with space constraints or those requiring rapid steam production

Why Steam Generator

The compact design saves valuable space, making them ideal for facilities with limited room. They provide rapid steam production, which ensures quick start-up times and immediate availability of steam, improving operational efficiency. Steam generators are also energy-efficient, consuming less fuel while delivering consistent steam output, which helps lower operational costs. Additionally, their simplified design often results in easier installation and maintenance, further reducing downtime and overall maintenance expenses. These advantages make steam generators a reliable and cost-effective



COMPACTED STEAM GENERATOR

KBJ

DESIGN:

The Universal Compact Steam Generators are designed with efficiency, durability, and ease of use in mind. The compact, space-saving design integrates all critical components such as the burner, feed-water pump, condensate tank, water filter, and an electric control panel into a single, fully-installed unit. This seamless integration minimizes installation time and reduces the overall footprint, making it suitable for facilities with limited space. The system is engineered for easy access to key components, ensuring simple operation and ease of maintenance.



ADVANTAGES

Rapid Steam Production

Delivers steam quickly and efficiently, making it ideal for industries that require a steady supply of steam without delays.

Space Efficiency

The compact design minimizes the space required for installation, making it ideal for businesses with limited space.

Durability

Built to operate under tough conditions, the generator can handle hard and untreated water without compromising its long-term performance.

Fully Automated Operation

Features a full automation system that ensures safe, reliable, and hassle-free operation, reducing the need for constant manual intervention.

Safety Features

Equipped with several safety mechanisms, providing a secure operation environment and preventing potential system failures.





TESTING & MAINTENANCE

The design of the Universal Compact Steam Generators prioritizes user-friendliness, allowing for quick and efficient maintenance of critical components such as the burner, feed-water pump, water filter, and automatic water treatment unit. This ease of access minimizes the time and effort required for routine checks and repairs.

To ensure the optimal performance and longevity of the equipment, comprehensive maintenance guidelines and schedules are provided.

These guidelines include:

- ☒ Regular inspections of the burner and feed-water pump.
- ☒ Routine cleaning of the water filter.
- ☒ Scheduled checks of the automatic water treatment unit.
- ☒ Documentation of maintenance activities to track performance over time.

CAPACITIE & DIMENSIONS:

	KBJ-500	KBJ-600	KBJ-750	KBJ-1000	KBJ-1250	KBJ-1500	KBJ-1750	KBJ-2000
Steam Capacity (Kg/h)	500	600	750	1000	1250	1500	1750	2000
Length (mm)	2600	2600	2600	2950	2950	3200	3500	3500
Width (mm)	1150	1650	1750	1750	1880	1880	1880	2140
Height (mm)	2520	2620	2720	2720	2900	2900	2900	3160
Water Volume (lt)	772	841	953	1101	1344	1482	1626	2400
Stack Dimension (mm)	300	350	400	400	400	400	450	500
Appro weight	2625	2900	3215	3640	4200	4500	4900	6400

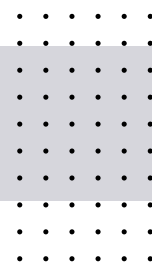


PACKAGE MINI STEAM GENERATOR MBÜ

DESIGN:

One of the standout features of the MBÜ is its space-efficient design. The unit integrates the burner, feed-water pump, condensate tank, water filter, automatic water treatment unit, and electric control panel into a single, compact package. This makes it highly suitable for installations in facilities where floor space is at a premium.





Rapid Steam Production

The MBÜ produces steam quickly, making it ideal for operations needing immediate steam supply, minimizing downtime and maximizing efficiency

Operating Conditions

Like the larger KBJ Type, the MBÜ is built for tough environments, handling hard and untreated water while maintaining performance and long-lasting durability.

Automation

The MBÜ's advanced control system ensures safe, efficient, and fully automated operation, reducing labor needs and providing reliable steam generation with minimal supervision

Efficiency

The MBÜ is energy-efficient, optimizing fuel use for high-performance steam generation, reducing operating costs, and offering a cost-effective solution for smaller industries.

CAPACITIE & DIMENSIONS:

	MBÜ-200	MBÜ-300	MBÜ-400	MBÜ-500
Steam Capacity (Kg/h)	200	300	400	500
Length(mm)	2400	2600	2700	2840
Width (mm)	1380	1530	1530	1580
Height(mm)	1885	2170	2170	2220
Water Volume (lt)	240	430	470	620
Stack Dimension (mm)	200	250	300	300
Approximate weight	1100	1500	1650	1800



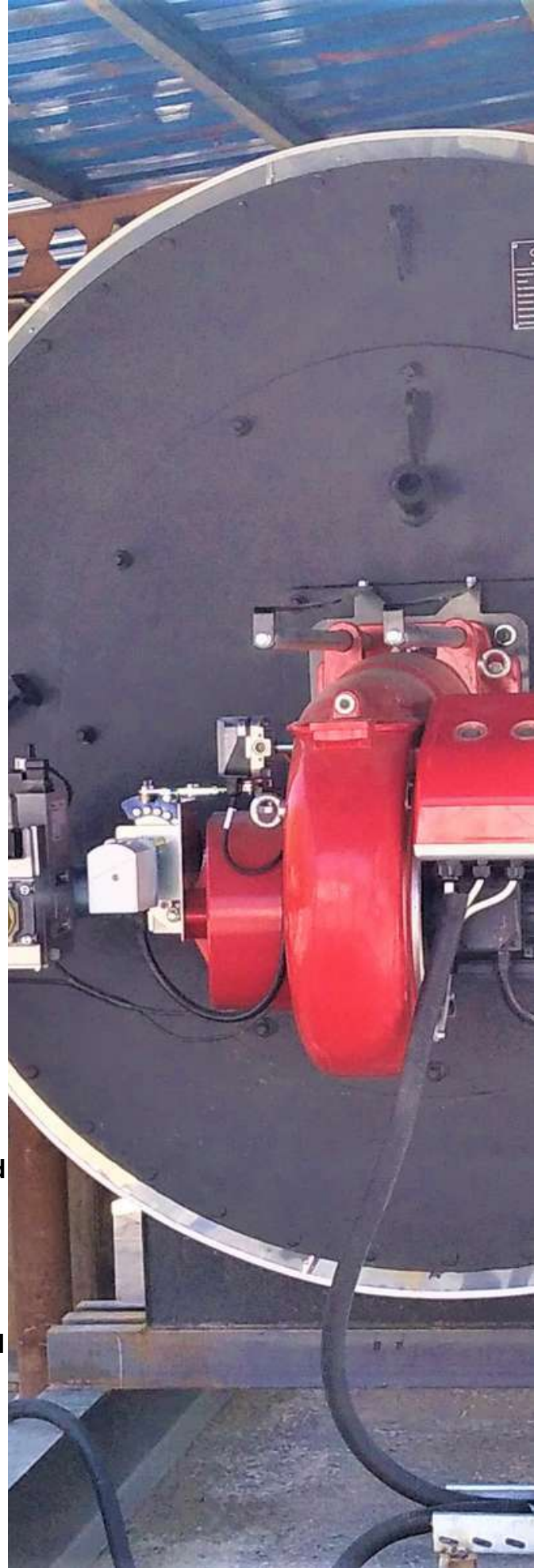
03/THERMAL OIL BOILER

Definition

A thermal oil boiler is a heating system that uses a heat transfer fluid, typically oil, to deliver high-temperature heat to industrial processes. Unlike steam boilers, it operates at lower pressures, allowing for safer operation while achieving precise temperature control. These systems are ideal for applications that require consistent heat over extended periods, such as in chemical, food processing, and manufacturing industries.

Why Thermal Oil Boiler

Thermal oil boilers provides precise temperature control and can operate at high temperatures without the high pressure required by steam systems, enhancing safety. Thermal oil boilers also offer greater energy efficiency, as they reduce heat loss and don't require water treatment. Additionally, they are low-maintenance systems, have longer lifespans, and are ideal for processes requiring continuous, reliable heat, such as in chemical plants, food processing, and manufacturing operations..

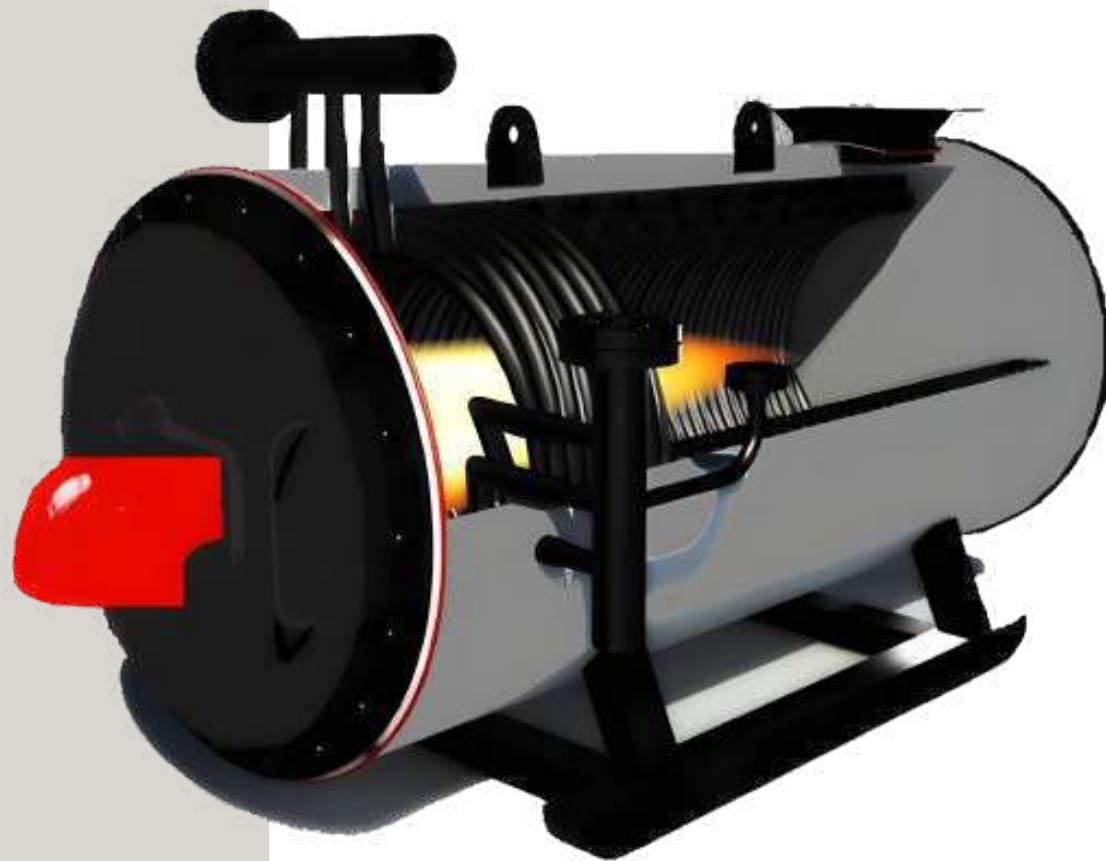


THERMAL OIL BOILER

KYK

Thermal oil systems offer several distinct advantages in industrial applications where high temperatures and operational efficiency are essential. Unlike steam-based systems, thermal oil systems can achieve high temperatures without the need for high pressure, making them safer and more efficient for various heating processes.





Thermal oil systems can reach up to 300°C at atmospheric pressure, eliminating the need for high-pressure components, reducing the risk of failures, and making them safer and easier to maintain than steam boilers.

Thermal oil systems reach up to 300°C at atmospheric pressure, removing the need for high-pressure components and reducing failure risks, making them safer and easier to maintain than steam boilers.



Thermal oil systems reach 300°C at atmospheric pressure, reducing failure risks and making them safer and easier to maintain than steam boilers.

CAPACITIE & DIMENSIONS:

	KYK-100	KYK-125	KYK-150	KYK-200	KYK-250	KYK-300	KYK-400	KYK-500
Heating Capacity (Kcal/h)	100 000	125 000	150 000	200 000	250 000	300 000	400 000	500 000
Oil Outlet Temperature (C°)	280	280	280	280	280	280	280	280
Oil Inlet Temperature (C°)	240	240	240	240	240	240	240	240
Length (mm)	1250	1350	1450	1550	1650	1880	2630	2800
Width (mm)	1150	1200	1200	1330	1300	1330	1430	1525
Height (mm)	1000	1050	1050	1150	1150	1150	1250	1400
Oil Outlet Diameter (DN)	32	32	32	40	40	50	65	65
Oil inlet Diameter (DN)	32	32	32	40	40	50	65	65
Oil Contents (lt)	20	31	36	50	56	68	91	133
Stack Dimension (mm)	150	150	150	200	200	200	250	250
Resistance of oil (mbar)	450	460	500	525	550	600	800	580
Resistance of fuel gas (mbar)	1.0	1.0	1.2	1.5	1.5	1.6	1.8	2.0
Approx weight	920	1025	1100	1360	1440	1875	2065	2065

CAPACITIE & DIMENSIONS:

	KYK-600	KYK-800	KYK-1000	KYK-1250	KYK-1500	KYK-2000	KYK-2500
Heating Capacity (Kcal/h)	600 000	800 000	1000 000	1250 000	1500 000	2000 000	2500 000
Oil Outlet Temperature (C°)	280	280	280	280	280	280	280
Oil Inlet Temperature (C°)	240	240	240	240	240	240	240
Length (mm)	2300	2500	2700	2825	3325	3825	4025
Width (mm)	1750	1900	2000	2000	2250	2600	2700
Height (mm)	1500	1660	1760	1960	2000	2350	2450
Oil Outlet Diameter (DN)	65	80	100	100	125	125	150
Oil inlet Diameter (DN)	65	80	100	100	125	125	150
Oil Contents (lt)	160	252	674	1043	1292	2175	2561
Stack Dimension (mm)	300	300	350	400	450	500	550
Resistance of oil (mbar)	850	870	950	1000	1100	1200	1400
Resistance of fuel gas (mbar)	2.5	3.0	4.0	5.0	5.0	5.5	6.0
Approximate weight	3100	3250	4500	6150	7200	10450	11630

CAPACITIE & DIMENSIONS:

	KYK-3000	KYK-3500	KYK-4000	KYK-5000	KYK-6000	KYK-8000	KYK-10000
Heating Capacity (Kcal/h)	3000 000	3500 000	4000 000	5000 000	6000 000	8000 000	10000 000
Oil Outlet Temperature (C°)	280	280	280	280	280	280	280
Oil Inlet Temperature (C°)	240	240	240	240	240	240	240
Length (mm)	4425	4550	5050	5450	5850	5850	5850
Width (mm)	2850	3000	4075	3425	3715	4180	5350
Height (mm)	2600	2750	2800	3150	3400	3800	4000
Oil Outlet Diameter (DN)	150	150	200	200	200	250	250
Oil inlet Diameter (DN)	150	150	200	200	200	250	250
Oil Contents (lt)	3636	4158	4719	7122	8604	13977	17498
Stack Dimension (mm)	600	650	700	800	900	1000	1150
Resistance of oil (mbar)	2200	2500	2750	3000	3000	3000	3500
Resistance of fuel gas (mbar)	7.0	8.0	9.0	10.0	11.5	12.0	15.0
Approximate weight	14955	17150	19100	24685	31625	42275	54230

04 **HOT WATER BOILER**

Definition

A hot water boiler is a heating system designed to produce hot water for residential, commercial, or industrial use. It operates by heating water using various energy sources, such as natural gas, oil, or electricity, and then distributing the hot water through pipes for heating spaces, providing domestic hot water, or supplying hot water for industrial processes. Hot water boilers are typically designed to operate at lower pressures compared to steam boilers, offering efficient and reliable heat without the risks associated with high-pressure steam systems.

Why Hot water Boiler

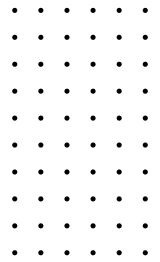
A hot water boiler is known for its efficiency, lower pressure operation, and versatility in applications such as space heating and domestic hot water supply. It heats water quickly, ensuring immediate availability, and generally requires less maintenance than steam boilers, resulting in lower operating costs and a longer lifespan. These features make hot water boilers a reliable choice for various heating needs.



HOT WATER BOILER SSK

This hot water boiler features a 3-pass fire-tube design, ensuring optimal heat transfer and minimal flue gas temperatures. The combustion gases pass through three stages, allowing maximum extraction of heat, reducing fuel consumption, and lowering emissions. The stainless steel exterior enhances durability and provides resistance to corrosion, while the rock wool insulation minimizes heat loss, ensuring energy efficiency.





Advantages

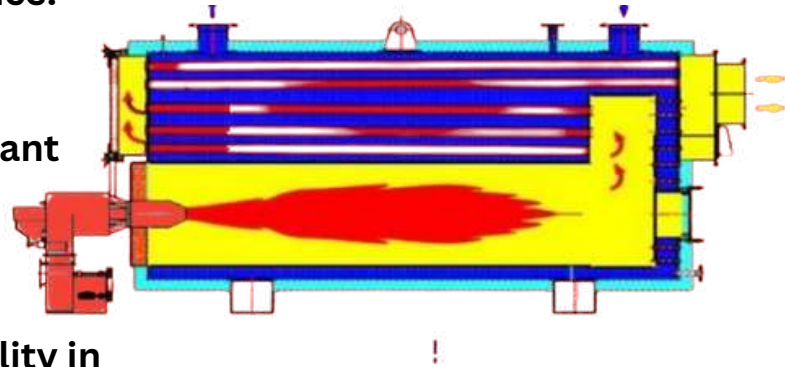
High efficiency of up to 92% reduces operational costs.

Turbulators in smoke tubes enhance heat transfer, improving boiler performance.

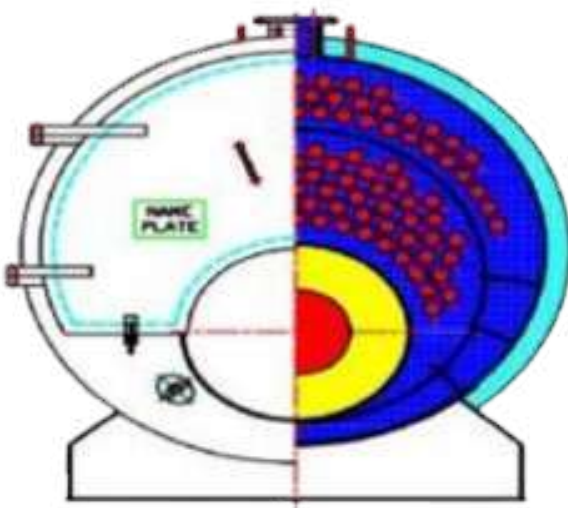
Low NOx emissions, making it environmentally friendly and compliant with emission regulations.

Suitable for use with various fuels, including natural gas, offering flexibility in energy sources.

Long operational life with minimal wear due to advanced design and high-quality materials.



Ease of Maintenance



The hot water boilers are designed for ease of maintenance, with convenient access points for inspection and cleaning. The use of high-quality materials, such as stainless steel exteriors and rock wool insulation, reduces wear and tear, extending the operational life of the boiler. Regular maintenance ensures continued high efficiency, minimal downtime, and lower long-term operational costs.

CAPACITIE & DIMENSIONS:

	SSK-5	SSK-10	SSK-15	SSK-20	SSK-25	SSK-30	SSK-35
Heating Capacity (Kcal/h)	120 000	240 000	360 000	500 000	600 000	720 000	840 000
Length (mm)	2100	2550	2700	2900	2900	2950	3075
Width (mm)	1200	1350	1450	1550	1700	1800	1800
Height (mm)	1450	1600	1700	1800	1950	2050	2050
Stack Dimension (mm)	200	250	250	300	300	300	350
Water Volume (lt)	660	1070	1420	1900	2270	2740	2820
Fuel gas Pressure Drop (mmSS)	25	30	30	40	40	50	50
Weight	1580	2520	3150	3990	4760	5510	5800



CAPACITIE & DIMENSIONS:

	SSK-50	SSK-60	SSK-70	SSK-80	SSK-90	SSK-100	SSK-125
Heating Capacity (Kcal/h)	1200 000	1440 000	1680 000	1920 000	2160 000	2400 000	3000 000
Length (mm)	3715	3775	4175	4200	4400	4500	4800
Width (mm)	1950	2100	2100	2200	2200	2300	2400
Height (mm)	2200	2350	2350	2450	2450	2550	2650
Stack Dimension (mm)	400	400	450	500	500	550	600
Water Volume (lt)	4150	4850	5490	6070	6310	7470	8490
Fuel gas Pressure Drop (mmSS)	50	60	60	60	60	60	70
Weight	7960	9870	77010	12100	12840	14560	17240



CAPACITIE & DIMENSIONS:

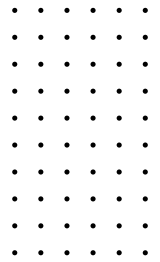
	SSK-150	SSK-175	SSK-200	SSK-250	SSK-300	SSK-350	SSK-400
Heating Capacity (Kcal/h)	3600 000	4200 000	4800 000	6000 000	7200 000	8400 000	9600 000
Length (mm)	5150	5350	5550	6200	6700	5600	5800
Width (mm)	2600	2600	2750	2950	3100	3850	3850
Height (mm)	2850	2850	3050	3250	3400	4150	4150
Stack Dimension (mm)	650	700	750	850	900	950	1000
Water Volume (lt)	11550	11770	13680	18360	21360	29410	30080
Fuel gas Pressure Drop (mmSS)	70	70	70	80	80	90	100
Weight	22070	22950	27360	34660	41040	54730	57030



HOT WATER BOILER ÜRK

The Hot Water Boiler is designed for optimal performance in a compact form. The pressurized combustion chamber enhances heat transfer. This results in higher output while maintaining a small footprint. Additionally, the option for automatic control units gives operators more control over temperature settings, improving ease of use and reducing the need for manual adjustments.





Compact Design:

Features small dimensions, requiring minimal installation space, making it ideal for areas with limited room.

Rapid Start-Up:

Achieves stable operating conditions in a very short time after start-up, providing immediate and consistent heating.

High Efficiency:

Engineered for maximum efficiency, optimizing fuel usage and reducing operational costs while delivering excellent heating output.

Environmentally Friendly:

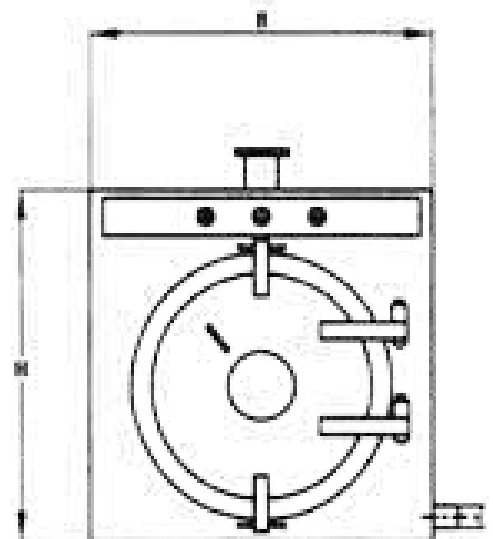
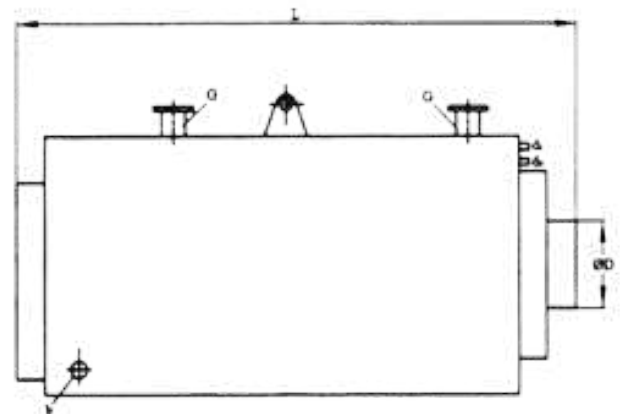
Designed to operate with minimal emissions, ensuring environmental sustainability while meeting high-performance demands.

Advanced Design:

Includes a pressurized combustion chamber and a 3-pass heat exchange system, maximizing heat transfer for better efficiency and performance.

Optional Automation:

Automatic control units and additional elements can be installed upon request, allowing for precise temperature control and ease of operation.



CAPACITIE & DIMENSIONS:

	ÜRK-40	ÜRK-50	ÜRK-60	ÜRK-80	ÜRK-100	ÜRK-125	ÜRK-150	ÜRK-175	ÜRK-200
Heating Capacity (Kcal/h)	40000	50000	60000	80000	100000	125000	150000	175000	200000
Length (mm)	1250	1350	1450	1550	1550	1550	1750	1850	1850
Width (mm)	800	800	800	800	900	900	900	900	1010
Height (mm)	1150	1150	1150	1150	1250	1250	1250	1250	1360
Stack Dimension (mm)	200	200	200	200	200	200	200	200	200
Water Inlet-Outlet (DN)	40	40	40	50	50	50	65	65	65
Expansion Connection (inc)	1"	1"	1"	1"	1 1/4"	1 1/4"	1 1/4"	1 1/2"	1 1/2"
Drain (inc)	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	3/4"
Pressure Drop (mmSS)	3	3	4	4	5	7	10	10	10
Water Volume (lt)	189	190	211	231	285	285	334	358	444



CAPACITIE & DIMENSIONS:

	ÜRK-250	ÜRK-300	ÜRK-350	ÜRK-400	ÜRK-450	ÜRK-500	ÜRK-600	ÜRK-700	ÜRK-800
Heating Capacity (Kcal/h)	250 000	300 000	350 000	400 000	450 000	500 000	600 000	700 000	800 000
Length (mm)	2150	2150	2250	2500	2560	2660	2760	3000	3000
Width (mm)	1010	1100	1100	1200	1200	1200	1200	1200	1300
Height (mm)	1360	1450	1450	1550	1550	1550	1550	1550	1650
Stack Dimension (mm)	250	300	300	350	350	350	350	350	350
Water Inlet-Outlet (DN)	65	65	65	80	80	80	100	100	125
Expansion Connection (inc)	1 1/2"	1 1/2"	2"	2"	2"	2"	2"	2 1/2"	2 1/2"
Drain (inc)	3/4"	3/4"	1"	1"	1"	1"	1"	1"	1"
Pressure Drop (mmSS)	15	15	15	18	20	25	25	28	30
Water Volume (lt)	534	738	781	1015	1015	1030	1135	1256	1414

CAPACITIE & DIMENSIONS:

	ÜRK-900	ÜRK-1000	ÜRK-1250	ÜRK-1500	ÜRK-1750	ÜRK-2000	ÜRK-2500	ÜRK-3000
Heating Capacity (Kcal/h)	900 000	1000 000	1250 000	1500 000	1750 000	2000 000	2500 000	3000 000
Length (mm)	3250	3250	3550	3750	3950	4150	4550	4950
Width (mm)	1300	1400	1530	1530	1630	1770	1880	2030
Height (mm)	1650	1750	1880	1880	1980	2125	2230	2380
Stack Dimension (mm)	350	350	450	450	500	500	550	600
Water Inlet-Outlet (DN)	125	125	150	200	200	200	250	250
Expansion Connection (inc)	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3"	3"	3"	3"
Drain (inc)	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
Pressure Drop (mmSS)	40	50	50	60	60	60	60	60
Water Volume (lt)	1548	1723	2700	2878	3336	3935	4739	4749

05/DEAERATOR

Definition

A deaerator is a mechanical device used to remove dissolved gases, primarily oxygen and carbon dioxide, from water, typically in steam generation systems. By heating the water and creating a vacuum or using steam, the deaerator reduces the concentration of these gases, which can cause corrosion and other issues in boilers and piping systems. This process enhances the efficiency and longevity of the steam system by ensuring the water quality is optimal for operation. Deaerators are commonly used in power plants, industrial facilities, and heating systems.

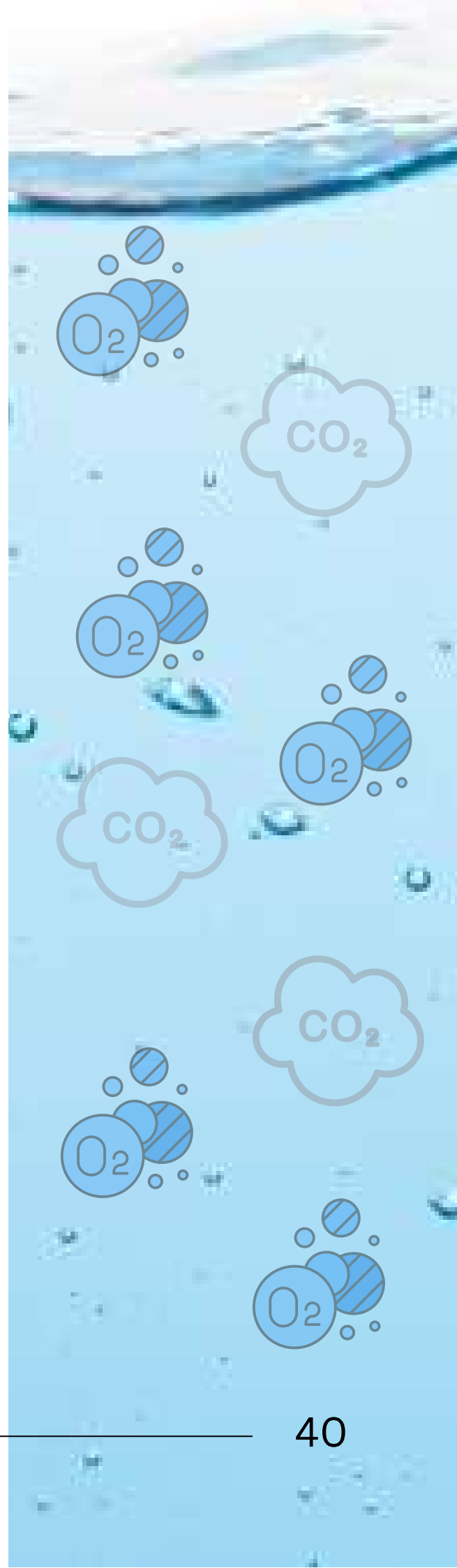
Why deaerator

In steam boiler systems, maintaining the integrity and efficiency of equipment is crucial for long-term operation and cost-effectiveness. One of the most critical factors in ensuring optimal performance is the removal of dissolved gases, such as oxygen (O_2) and carbon dioxide (CO_2), from the feed water.

If not properly treated, these gases can lead to corrosion, compromising the structural integrity of the boiler and steam lines, and significantly reducing the system's lifespan.

Effective deaeration is, therefore, essential to prevent this damage and maintain operational efficiency.

To address this, feed water is atomized and heated using steam, causing CO_2 and O_2 to dissolve at $60^\circ C$ and $100^\circ C$. The atomization process is typically performed with a sprinkler system in conventional deaerators

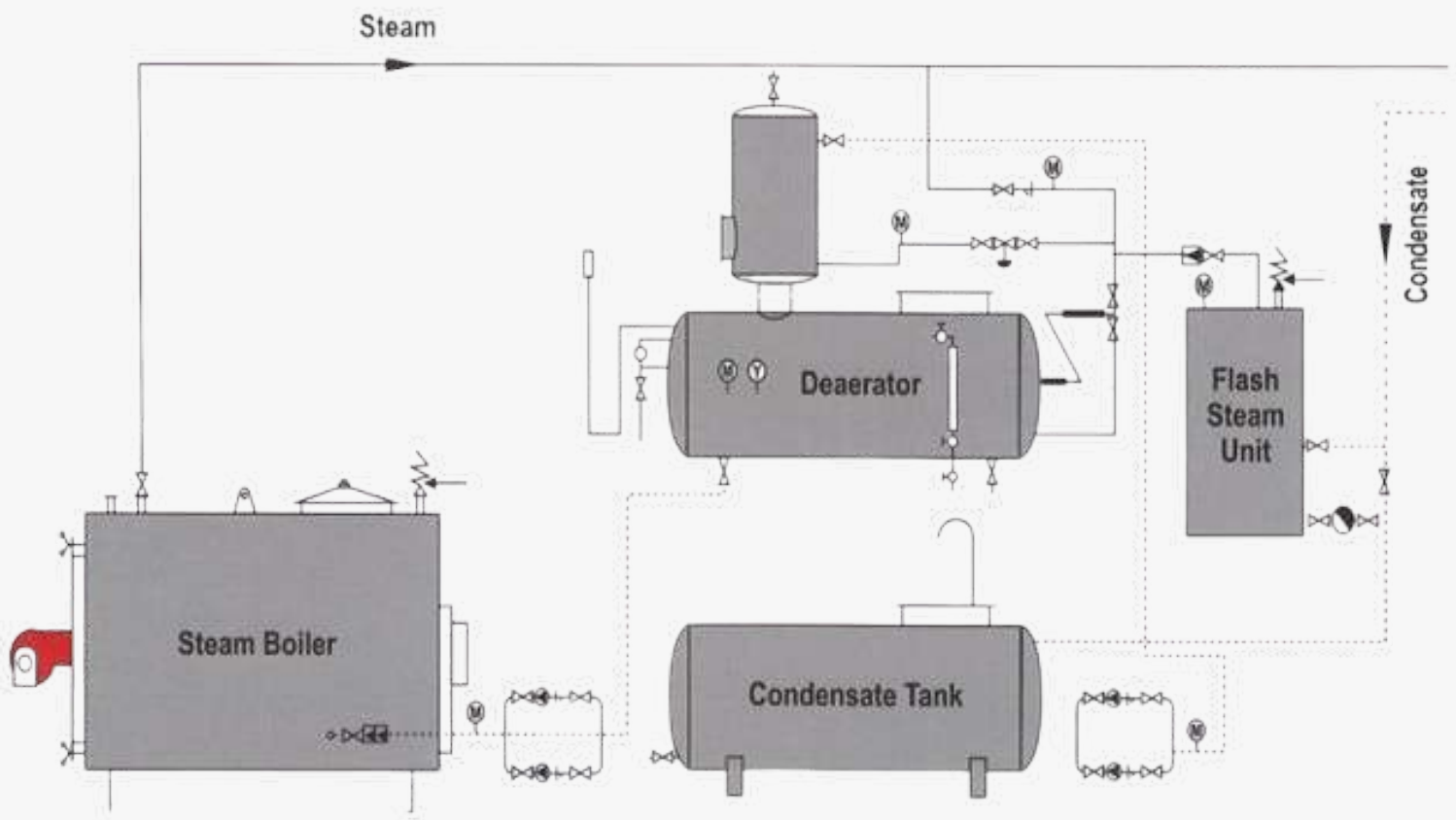


CHALLENGES OF CONVENTIONAL DEAERATION SYSTEMS



However, conventional deaeration systems present certain limitations. For instance, the water level inside the deaerator must be at least 6 meters above the suction side of the feed water pump to prevent evaporation and cavitation.

This requirement dictates a boiler room height of at least 10 meters, along with the need for a supporting platform for the deaerator, both of which drive up construction costs.



06/HEAT RECOVERY SYSTEM

Definition

Heat recovery systems or wasted heat recovery systems capture and reuse waste heat from various sources, such as steam boilers, thermal oil boilers, and furnaces used for glass melting or drying. This recovered heat can be utilized for heating boiler feed water, providing hot water for radiators, domestic use, or industrial processes. Additionally, it can serve to preheat combustion air or process air, enhancing both environmental and industrial efficiency.

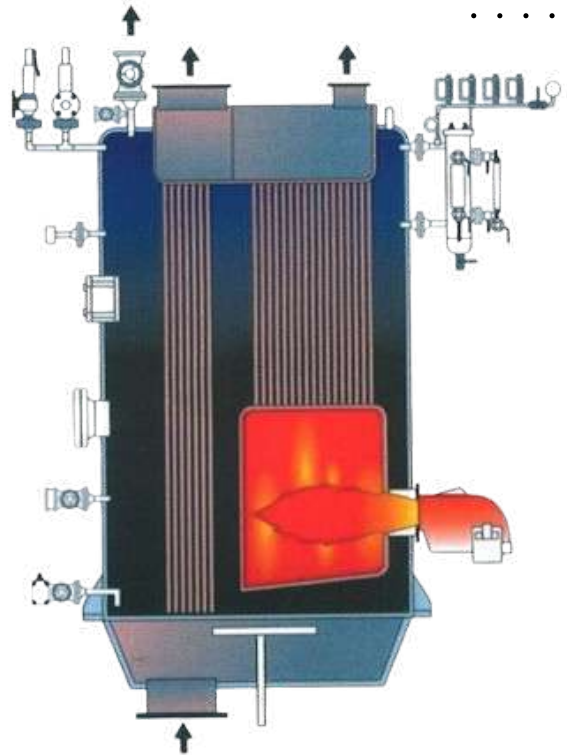
Notably, every 20°C reduction in flue gas temperature can improve device efficiency by approximately 1%.



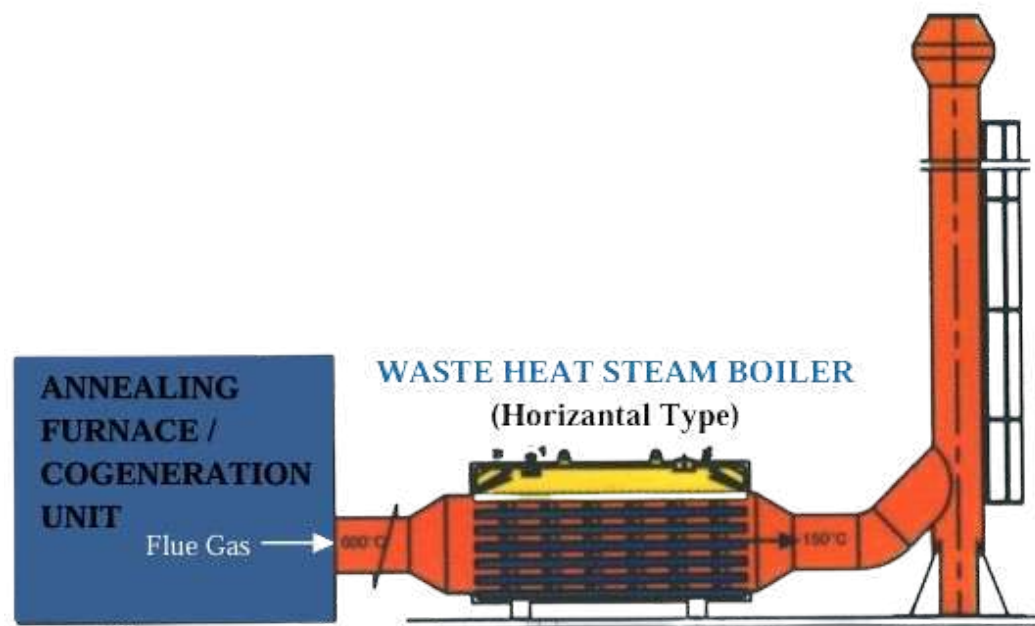
DESIGN

Heat recovery devices are custom-designed based on the specific operating conditions and the type of fuel used.

They can be manufactured using different materials, such as straight seamless tubes, finned tubes, or 316L stainless steel tubes, depending on the application.



500-600°C Waste Gasses
Vertical Type Waste Heat Boiler
Reinforced with burner.



Heat Recovery via Economizer

Fuel Savings: 2-5%

Condensing Economizer (Natural Gas): Achieves up to 15.7% efficiency.

Example Calculation for Usable Heat:

$$\frac{(258^{\circ}\text{C} - 160^{\circ}\text{C})}{20^{\circ}\text{C}} = 4.9\% \text{ fuel savings}$$

Optimal Temperatures

Flue gas temperatures entering the economizer = Steam Temp + (50-70°C)

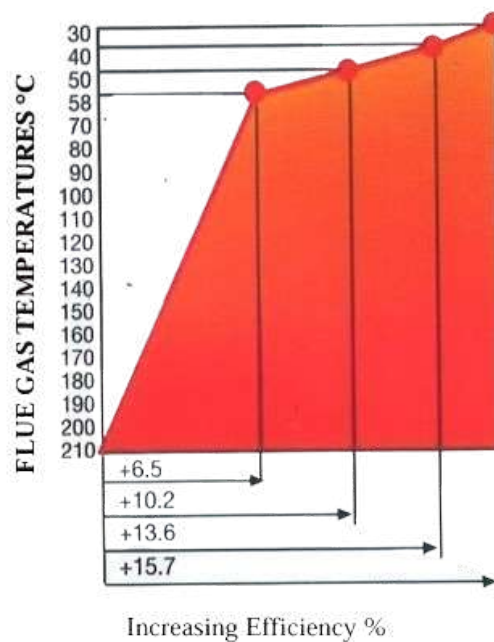
Minimum feed water temperature: 70°C for coal-fired systems to prevent corrosion.

Flue gas exit temperatures:

180°C for coal (high sulfur content)

160°C for heavy fuel oil (HFO)

120°C for natural gas (non-condensing).



The graph shows fuel saving values for a boiler working on full load at 6 bar and the effect of economizer at the back of boiler.

07 **HYBRID TYPE STEAM AND HOT WATER BOILER**

Definition

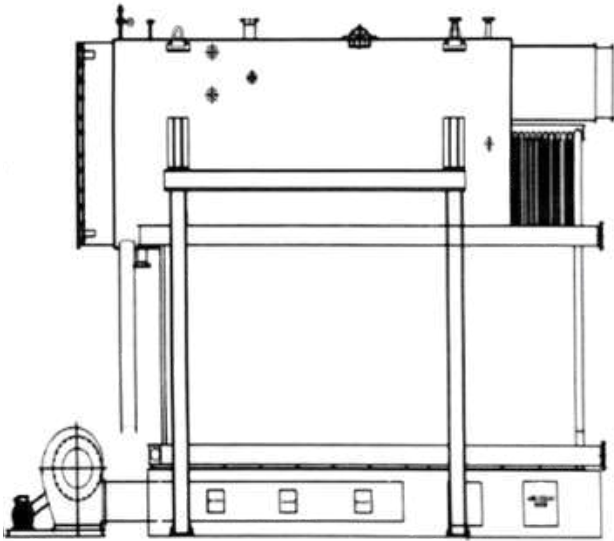
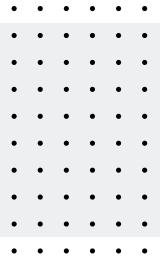
A hybrid type steam and hot water boiler is a versatile heating system designed to generate both steam and hot water simultaneously or alternately, depending on the operational requirements. This type of boiler typically combines features of traditional steam boilers and hot water boilers, allowing for efficient energy use and flexibility in applications. Hybrid boilers can utilize various fuel sources, such as natural gas, oil, or electricity, and are equipped with advanced controls to optimize performance. They are commonly used in industries where both steam and hot water are needed, such as in food processing, chemical manufacturing, and building heating systems.

Why Hybrid TYPE

Hybrid Type Fixed Grate Solid Fuel-Fired Boilers are becoming increasingly important for generating energy in the form of steam and hot water for various production industries, including textiles, paper, agriculture, sugar, oil, dyeing, leather, and rubber.

ÜNİVERSAL specializes in manufacturing these boilers, with capacities ranging from 3 ton/h (1,800,000 kcal/h) to 10 ton/h (6,000,000 kcal/h).





Our boilers are designed for thermal efficiency, fuel consumption, and cost-effectiveness, accommodating various solid fuels (1400–8200 kcal/kg) with different moisture and volatile matter contents. Solid fuels like waste fabric, wood, corncobs, and biomass can be fed through multiple doors, with combustion managed automatically via a main control panel. The hybrid fire-tube design ensures durability against hard water, while the accessible water-tube section simplifies cleaning and maintenance.

Key features of ÜNİVERSAL Hybrid Type Boilers:

Rapid start-up time.

Safe and reliable operation.

Low operational costs and long service life.

Compact dimensions with easy repair and maintenance.

Quick response to peak steam demands.

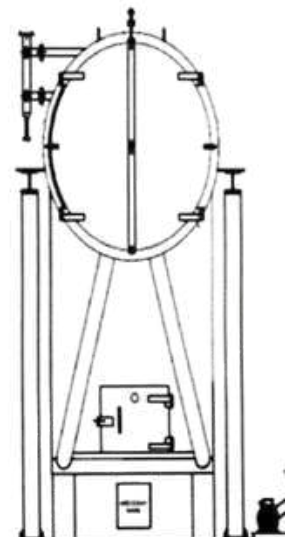
High dryness value of saturated steam.

Low flue gas resistance.

Advanced automatic control systems.

Flexible design for multiple fuel types.

These features, combined with a low initial investment cost, make ÜNİVERSAL Hybrid Boilers an economical and efficient solution for various industrial applications.





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