

# INDUSTRIAL BOILERS

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ÜNİVERSAL  
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# CONTENT

**01**

About Us

**02**

Steam Boiler

**03**

Steam  
Generator

**04**

Thermal Oil  
Boiler

**05**

Hot Water  
Boiler

**06**

Heat Recovery  
System

**07**

Conclusion



# 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**





A large industrial steam boiler is the central focus of the image. It has a dark, cylindrical body with a large, circular, polished metal front door. The word "Universal" is written in red cursive on the upper part of the door. A red fuel pump or motor is attached to the bottom of the door. Above the door, a vertical stack of pipes and valves leads to a tall, thin, vertical cylindrical tank. To the left of the boiler, there is a white electrical control panel with a digital display, several red and green indicator lights, and various switches and buttons. The entire setup is in a well-lit industrial or laboratory environment with large windows in the background.

# STEAM BOILER

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.





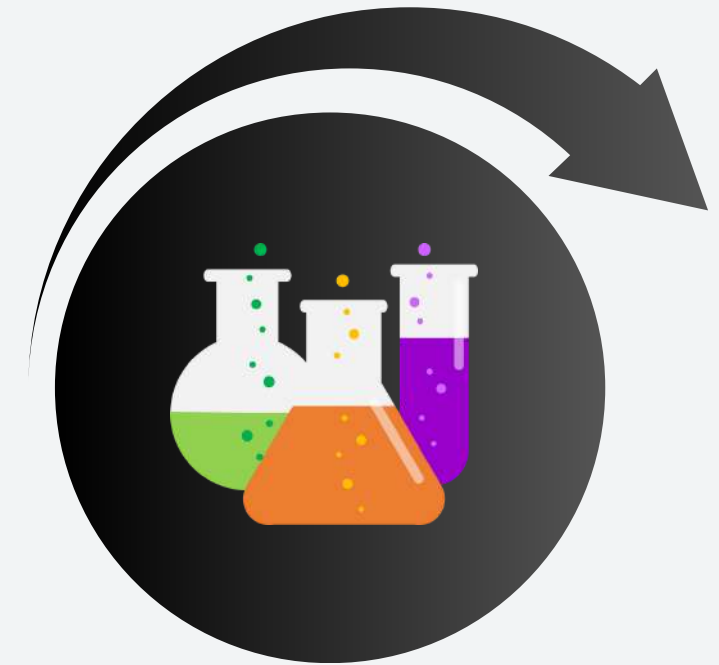
## Food and Beverage Processing

steam is used for cooking, sterilizing, and pasteurizing food products. It helps ensure food safety by reducing bacterial risks during processing.

. Breweries also rely on steam for maintaining precise temperatures during brewing and distillation processes

## Textile Industry

Steam boilers provide the necessary heat for dyeing and finishing fabrics. The textile manufacturing process often requires consistent high temperatures for effective treatment of materials

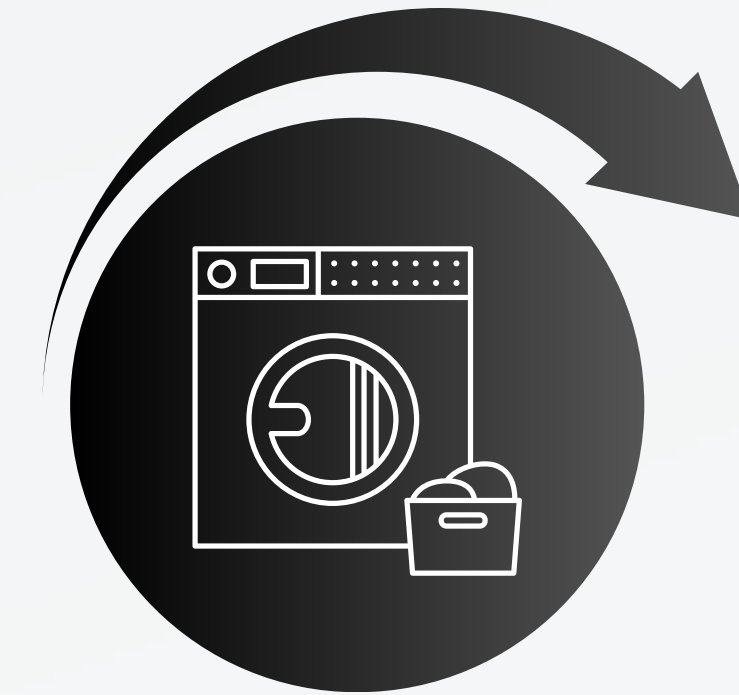


## Chemical Manufacturing

In chemical processing industries, steam is used for various reactions and processes, including the production of plastics, fertilizers, and pharmaceuticals. Maintaining specific temperatures is critical for ensuring product quality

# Healthcare Facilities

Hospitals utilize steam boilers for sterilization processes and to provide heating throughout the facility. High-pressure steam is essential for maintaining a sanitary environment in medical settings




# Commercial Laundries

Steam is used extensively in commercial laundry operations to power washing machines and for pressing clothes. The high temperature of steam enhances cleaning efficiency

# Oil and Gas Industry

steam boilers are employed for refining processes and enhanced oil recovery techniques, utilizing steam to improve extraction rates from oil wells



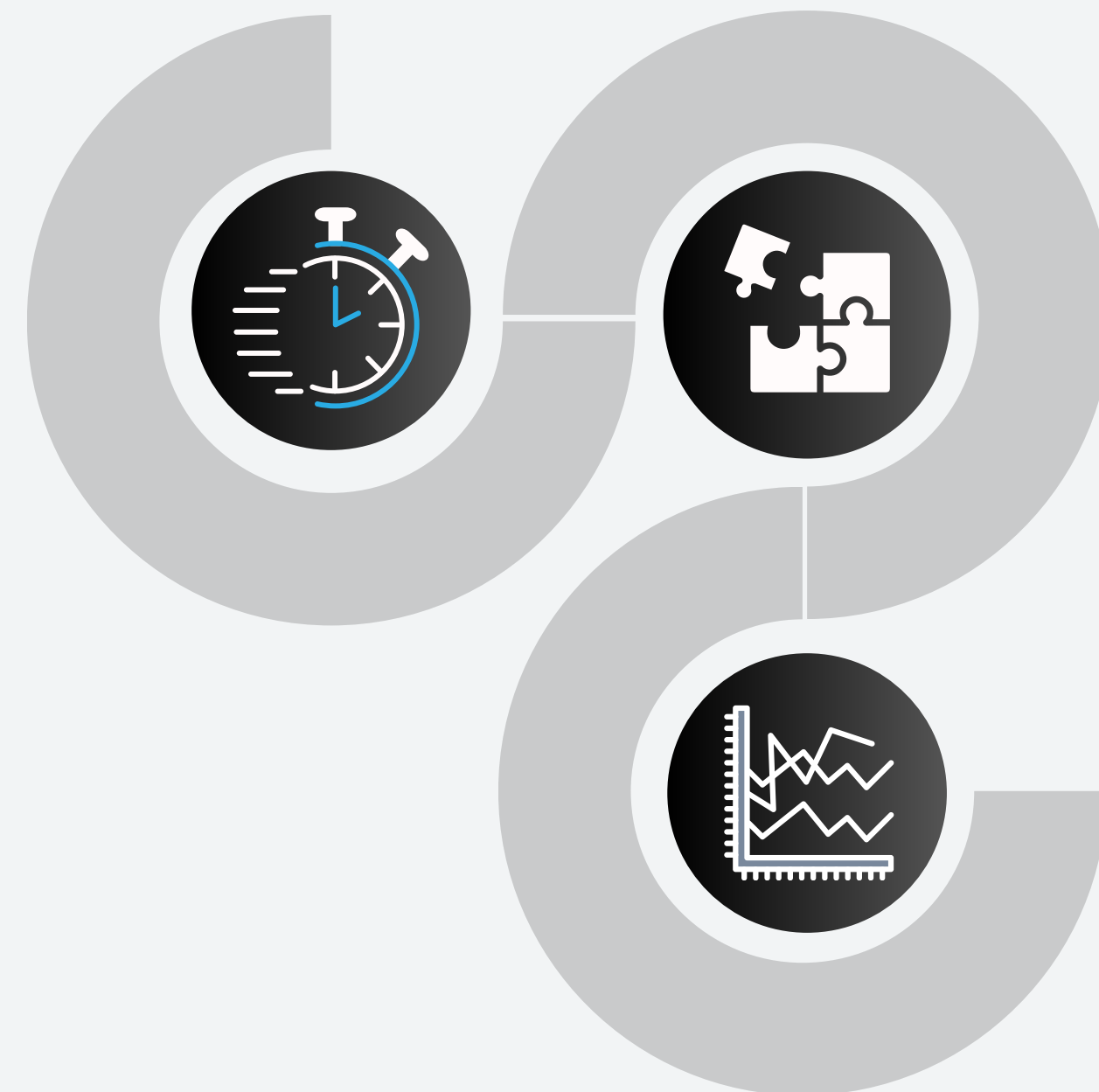


# **STEAM GENERATOR**

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.

# Steam generators are preferred where:

- 01** Steam is needed intermittently or only for short periods
- 02** The facility has limited space for installation.
- 03** There is a need for quick startup times, such as in chips or laboratories
- 04** The steam load is not constant, allowing the generator to operate efficiently without the need for large storage capacities





# THERMAL OIL BOILER

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.



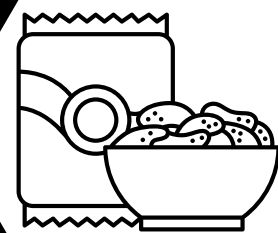


Thermal oil boilers are essential for heating reactors, distillation columns, and polymerization processes



## Chemical Industry

## Food and Beverage Industry



Used in processes such as frying, baking, pasteurization, and food processing.

Employed in reactor heating, distillation processes, drying systems, and sterilization.

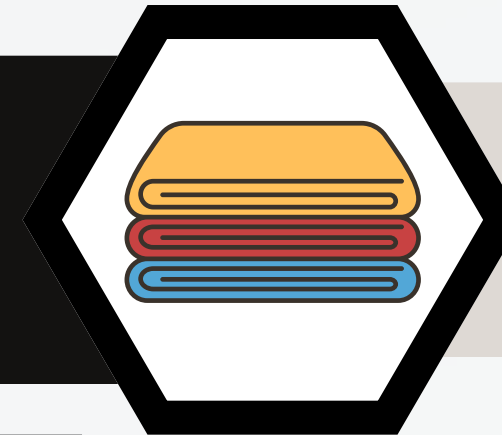


## Pharmaceutical Industry





provide the necessary heat for dyeing fabrics at specific temperatures without risking damage to sensitive materials.



**Textile Industry**

**Food and Beverage Industry**



maintain the viscosity of crude oil during transportation by heating pipelines to prevent blockages due to pressure

Employed in metal processing, wood drying, enamling, chrome plating, and other industrial heating applications.



**Manufacturing Industries**



# OIL REFINERY AND PETROLEUM INDUSTRIES

## Crude Oil Heating

Thermal oil is used to heat crude oil before it enters the refining process, reducing its viscosity and facilitating easier flow

## Asphalt Production

In asphalt plants, thermal oil provides the required heat to maintain the viscosity of asphalt mixtures, ensuring quality and performance during paving operations.

## Bitumen Processing

Thermal oil systems are used to heat bitumen for various applications, including transportation and storage.

In facilities that produce or utilize bitumen, thermal oil helps maintain the material at a workable temperature, preventing solidification.



# IMPORTANT FEATURES

## Enhanced Safety Features

Operating at lower pressures than traditional steam systems enhances safety in high-temperature environments.

In environments where explosive materials are handled, thermal oil boilers minimize the risk of high-pressure failures, making them a safer alternative.

## Energy Efficiency

The high thermal efficiency of thermal oil boilers reduces fuel consumption and operational costs.

This efficiency is particularly beneficial in large-scale operations within refineries that require continuous heating over extended periods.



# **HOT WATER BOILER**

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.



## **HOT WATER BOILERS ARE WIDELY USED ACROSS VARIOUS INDUSTRIES DUE TO THEIR ABILITY TO EFFICIENTLY PRODUCE HOT WATER FOR NUMEROUS APPLICATIONS.**

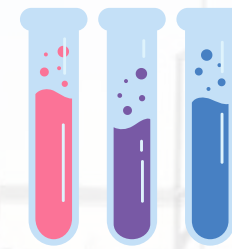
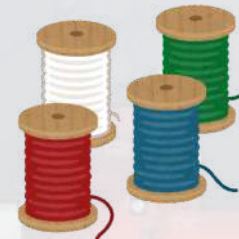


### **Food and Beverage**

In food processing plants, hot water boilers provide heated water for washing equipment, sanitizing surfaces, and cooking processes. For instance, they are used in breweries for cleaning tanks and in dairy plants for pasteurization.

Hot water boilers supply the necessary heat for washing fabrics at controlled temperatures, ensuring uniform color application and quality. They also provide hot water for washing raw materials and finished products.

### **Textile Industry**



### **Chemical Industry**

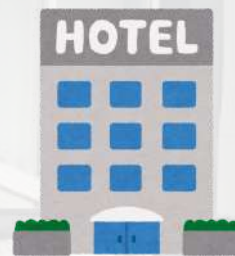
In chemical manufacturing, hot water boilers help maintain temperatures required for reactions and facilitate the cleaning of reactors and other equipment to prevent contamination.

Hot water boilers provide heated water for sterilizing surgical instruments, laundering linens, and maintaining hygiene standards in patient care areas.

### **Healthcare Sector**





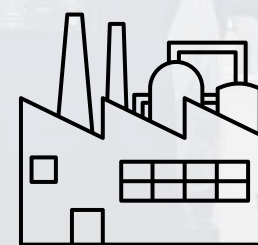


## Hospitality Industry

Hot water is essential for laundry operations (cleaning sheets and towels), kitchen sanitation (washing dishes), and heating systems (providing comfort in guest rooms).

hot water is employed in cleaning machinery and tools to ensure operational efficiency

## Manufacturing Industry



## Residential Applications

In homes, these boilers provide hot water for showers, dishwashing, laundry, and space heating through radiators or underfloor heating systems.



# HEAT RECOVERY SYSTEMS

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.

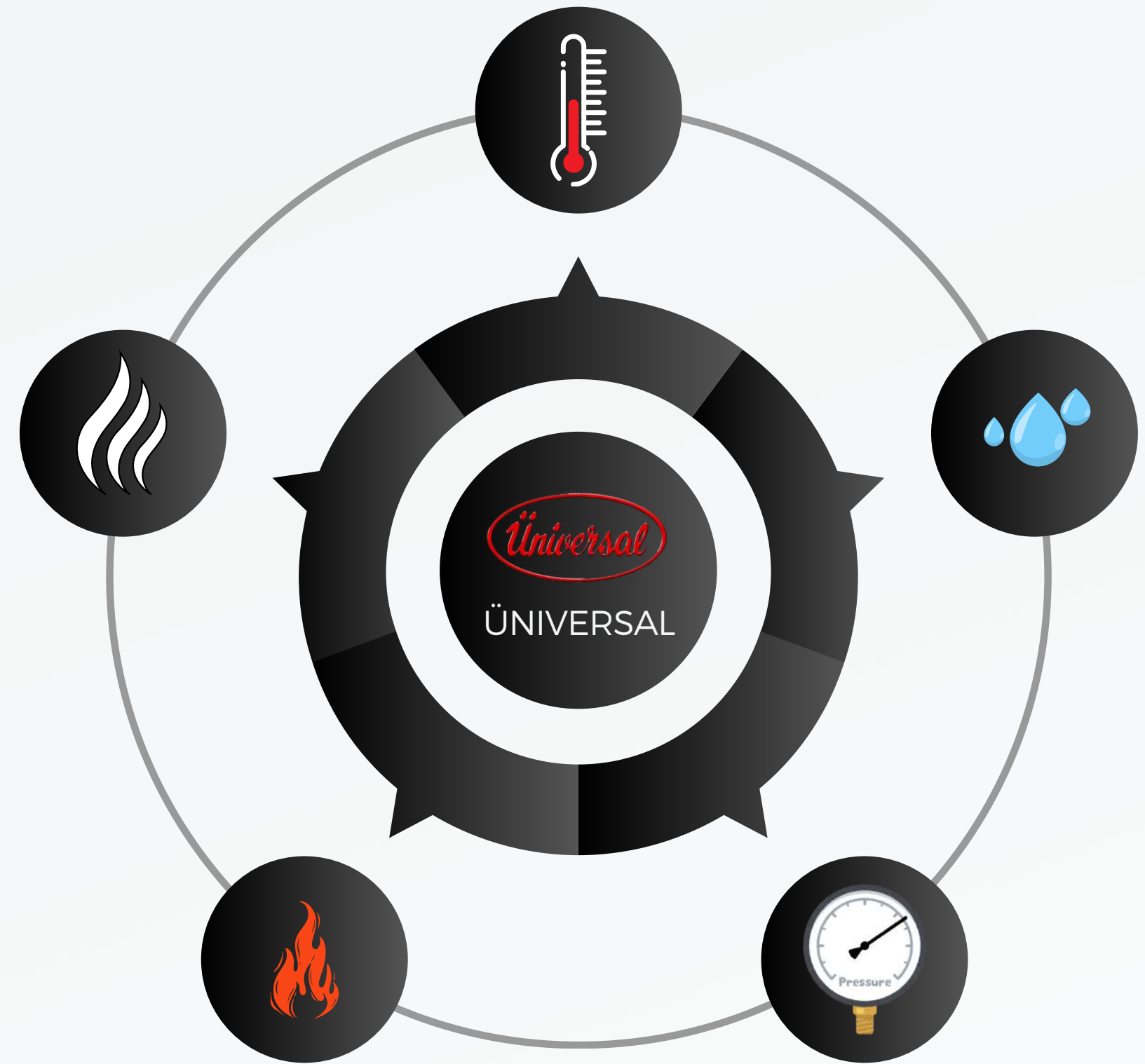
This recovered heat can be utilized for heating boiler feed water, providing hot water for radiators, domestic use, or industrial processes. Additionally, it can serve to preheat combustion air or process air, enhancing both environmental and industrial efficiency.

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



# CONCLUSION

Each type of industrial boiler offers unique advantages and is tailored to meet specific operational needs across various industries. Our fire-tube boilers are valued for their compact design and suitability for 3- to 60-pressure applications, making them ideal for a large variety of industries. Choosing the right boiler type depends on factors such as process requirements, fuel availability, and environmental regulations. By aligning the boiler selection with these criteria, industries can achieve operational efficiency, safety, and sustainability.







# CONTACT

**üniversal kazan**



+90 212 549 7070



[www.universalkazan.com](http://www.universalkazan.com)



[info@universalkazan.com](mailto:info@universalkazan.com)



Örnek Mah. Ercüment Batanay  
Sk.No:14 Dumankaya İkon Rezidance  
A3 Blok K:32/33 D:170 Ataşehir/  
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**WE HOPE THIS OVERVIEW  
HAS PROVIDED VALUABLE  
INSIGHTS INTO THE DIVERSE  
APPLICATIONS AND BENEFITS  
OF EACH INDUSTRIAL BOILER  
TYPE.**

