

# Industrial Boilers Market Assessment, By Type [Fire-tube, Water-tube, Others], By Function [Steam, Hot Water], By Fuel [Natural Gas, Oil, Coal, Electric, Others], By Horsepower [10-150 BHP, 151-300 BHP, 301-600 BHP, Above 600 BHP], By End-use Industry [Food and Beverages, Chemicals and Petrochemicals, Metal and Mining, Paper and Pulp, Power Generation, Others], By Region, Opportunities and Forecast, 2017-2031F

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### **Report description:**

Global industrial boilers market is projected to witness a CAGR of 3.9% during the forecast period 2024-2031, growing from USD 16.01 billion in 2023 to USD 21.73 billion in 2031. The market thrives with industrial expansions and new technology-enabling opportunities.

Boilers are utilized in major industrial applications across varied verticals. Advanced technological trends have influenced the functioning and technology of industrial boilers. The sector is currently witnessing a transformation towards environmentally friendly procedures and innovations. This covers the use of cutting-edge methods for reducing emissions and the adoption of greener fuel sources such as biomass. Companies are spending more money on steam boiler systems that provide performance that meets standards and supports environmental objectives. These eco-friendly boilers provide long-term financial savings in addition to lowering carbon emissions.

The advent of automation and digitalization in manufacturing and production lines will transform the industrial boilers market in the forecast period. Manufacturing steam boilers are adopting the Internet of Things (IoT) and real-time data analysis to enhance efficiency. Devices and intelligent surveillance systems are constantly gathering and examining information, offering important knowledge about the condition and functioning of the boilers. Algorithms for predictive maintenance assist in spotting possible

problems before they cause any interruptions. Along with IoT, the industrial boiler industry is transitioning from conventional fossil and nuclear-based boilers to electric boilers.

For instance, in August 2022, industrial process heating equipment and solutions provider Babcock Wanson Ltd introduced two new electric boiler ranges: the e-Pack industrial electric boiler, which has models ranging from 500 to 17,000 KG/H, and the VAP EL 400V three-phase, 50Hz electric steam boiler, which has models ranging from 16 to 360 kW.

Rapid Industrial Expansion, Along with Government Policies to Fuel Market Growth

Industrial expansion can be witnessed globally, especially in emerging economies, boosted by high-rate manufacturing and production lines. Therefore, the demand for highly productive and efficient industrial boilers is rising. Companies focus on increasing the productivity of industrial boilers while limiting carbon emissions to a minimum. Strict regulations governing dangerous emissions encourage industrial boilers equipped with cutting-edge technologies to meet environmental standards and minimize emissions. According to projections from the government authorities, new boiler regulations are projected to promote new sustainable and efficient boiler technologies. For instance, in June 2023, The Indian Ministry of Environment, Forest and Climate Change (MoEF&CC) finalized the draft notification for tightening particulate matter (PM) emission specifications for industrial boilers based on different fuels in May 2023. Within the introduction of two years of the new regulations, the industries using hot air generators, thermic fluid heaters, and boilers with various fuel types must adhere to the PM standard. Hence, companies are working on a highly sustainable and low-emission-based boiler through research and development. Companies are focused on using machine learning and other advanced technologies to build and test sustainable boiling machines. For instance, in September 2023, Verdemobil Biogaz SAS announced that it would deliver its 3 MW boiler and the CO2 liquefaction system to Villers-Saint-Paul industrial site (Oise), managed by Engie Solutions SA. Naldeo Technologies & Industries will oversee the engineering coordination throughout the project. As early as 2025, the Ch0C boiler will be available for purchase. The new boiler has the potential to reduce annual CO2 emissions by 4 million tonnes when 1,000 industrial boilers are replaced. Technological Advancements and Predictive Maintenance to Expand Market Size

The expansion of industries has led to mass human resources for machine handling. Therefore, companies deliver products requiring less human intervention and higher productivity. These advancements include artificial intelligence (AI), machine learning, and IoT. AI-based technologies are adding safety layers to boiler maintenance. Industrial steam boilers can be monitored through the incorporation of remote monitoring systems. Sensing and IoT devices gather and send real-time data to centralized control centers. The data enables preventative maintenance and troubleshooting by giving important insights into the boiler's operation. Algorithms for predictive maintenance examine the data to identify any problems, allowing for prompt repairs to avoid expensive malfunctions. Further minimizing downtime, remote diagnostics can locate and frequently fix issues without requiring on-site visits.

For instance, in August 2023, United Kingdom-based boiler manufacturer Navien Ltd. launched its ON AI platform, seamlessly incorporating Navien's NCB ON range of Combi Crossover boilers.

Also, an Indian Institute of Technology (IIT) professor found an AI-based solution in January 2022 which can stop boiler explosions through advanced prediction and control of vapor explosion, advancing the overall industrial boiling.

Higher Affordability and Efficiency to Fuel Water-tube Segment

Based on type, the water-tube segment is projected to lead the market. They can operate at higher temperatures and pressures without excessively thick walls. Nonetheless, fluidized-bed combustion boilers (FCB) have become a strong contender, presenting several benefits that surpass traditional combustion systems. These include the ability to design compact boilers, the versatility in fuel types, improved combustion efficiency, and a reduction in the emission of harmful pollutants such as sulfur dioxide (SO2) and nitrogen oxides (NOx). Compared to fire-tube boilers, water-tube boilers are recognized for their increased efficiency and reduced running expenses. They use a more effective heat transfer system, which lowers emissions and fuel consumption. Major consumption of this type of boiler is through the food and beverage sector. As water tube boilers can handle high-pressure and high-temperature applications, which are widespread in the food processing industry, they are chosen for industrial purposes. For instance, in March 2023, Babcock Wanson Ltd. launched FM pack Water-tube boilers. These boilers deliver a steam outcome of 4.5 to 80 t/h. Because of the heat exchanger design, the FM Pack range can provide very high operating pressures, from 10 to 95 barg. It is ideal for applications requiring high steam output, high-pressure steam, or superheated steam. The range offers high-quality steam, from dry saturated to high-temperature superheated.

#### Asia-Pacific Dominates Industrial Boilers Market Share

Asia-Pacific holds the major share of the global industrial boiler market. The world's highest population currently resides in the region and is projected to grow during the forecast period. Since the demand for energy resources is increasing due to the growing population, industrial boilers are seen as more effective and environmentally friendly methods of producing steam and heat than conventional techniques. The governments of the Asia-Pacific countries are assisting in the development of industrial boilers. Furthermore, the area benefits from abundant supplies of steel and coal, two essential raw materials required to manufacture industrial boilers. Countries such as India and China are focused on building new spaces for industrial exploration. For instance, in February 2024, in Guwahati, Assam, India, Bharat Steam Boiler Expo 2024 officially opened, signaling a critical turning point in India's industrial development, found to boost the expansion and effectiveness of industries which depend on steam boilers. Leading companies in the sector, such as Indian Oil Corporation (IOC), Oil India Ltd (OIL), Numaligarh Refinery Ltd (NRL), Brahmaputra Cracker and Polymer Ltd (BCPL), Assam Petro Chemicals Ltd, and NTPC Ltd, have worked together to create this innovative exhibition.

Future Market Scenario (2024 [] 2031F)

□ Sustainable and green technology is anticipated to transform the upcoming industrial boilers while maintaining operational efficiency.

Higher automation and digitization are likely to revolutionize industrial heating and steam systems.

Integrated technologies such as AI, ML, and IoT have enhanced boiler maintenance, functioning, and performance which is likely to fuel the market expansion in the future.

Key Players Landscape and Outlook

Key participants in the global industrial boilers market are focused on building sustainable and efficient boilers. The key player produces boilers with higher productivity and flexibility to integrate with industry 4.0 technologies. The rapid automation and digitalization of industrial spaces will likely transform the market's key player landscape. Private and public partnerships are expected to flourish the market expansion. Players are experimenting with the area coverage. Alongside, strategic partnerships, collaboration, acquisitions, and joint ventures are used as the major elements of the market's strategic landscape. In August 2022, A multi-fuel boiler system was introduced by Thermax for industrial users who want to go green. To offer flexible energy input, Thermax Babcock & Wilcox Energy Solutions, has launched FlexiSource, which is a multi-waste solution. In February 2024, Miura Co. Itd. Launched its Miura Care program in partnership with Hartford Steam Boiler. The program comprises a comprehensive preventative boiler maintenance program. Miura Care has been meticulously developed to provide a thorough and simple maintenance experience, guaranteeing maximum safety for boiler system and offering unmatched peace of mind.

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