

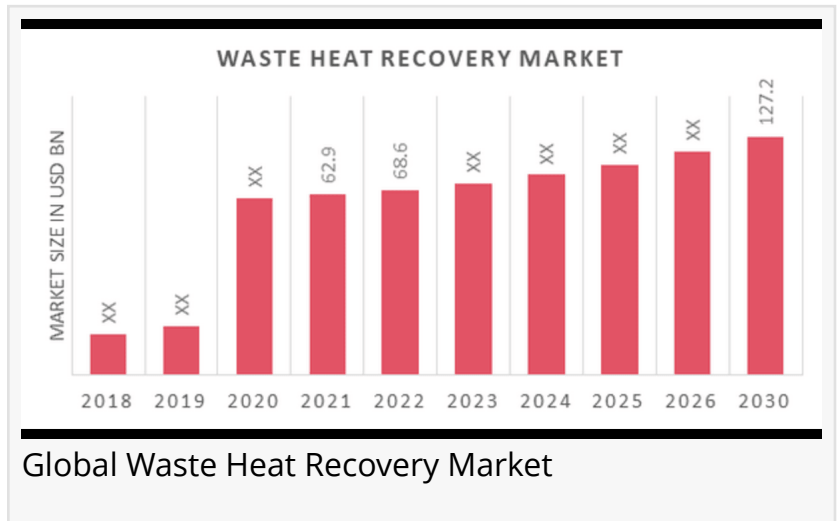
Waste Heat Recovery Market Demand to Drive USD 127.2 Billion by 2030 with 9.2% CAGR

The Waste Heat Recovery Market focuses on technologies that capture and reuse waste heat, enhancing energy efficiency.

NEW YORK, NY, UNITED STATES,
January 16, 2025 /EINPresswire.com/ --

Comprehensive Research Study by Market Research Future (MRFR), The Waste Heat Recovery Market Information by Technique, Application

and Industries and By Region - Forecast till 2030. The [Waste Heat Recovery Market Size](#) was valued at USD 62.9 billion in 2021. The waste heat recovery market industry is projected to grow from USD 68.6 Billion in 2022 to USD 127.2 billion by 2030, exhibiting a compound annual growth rate (CAGR) of 9.2% during the forecast period 2024 - 2030.



The Waste Heat Recovery Market is driven by rising energy efficiency demands, offering sustainable solutions across industries for cost savings and emissions reduction."

MRFR

Waste Heat Recovery System Market Overview

The Waste Heat Recovery System (WHRS) market is gaining significant traction due to the increasing emphasis on energy efficiency and environmental sustainability across industries. Waste heat recovery systems capture and reuse waste heat, which would otherwise be lost to the environment, contributing to reduced energy consumption, cost savings, and lowered emissions. This market includes systems that convert waste heat into

useful forms of energy, such as electricity or steam, for industrial applications.

The growing demand for energy efficiency in manufacturing processes, the push towards industrial sustainability, and the rise in government regulations promoting energy conservation are driving the adoption of these systems globally.

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List of Key Companies in the waste heat recovery market include

Alstom SA (France)
ABB Ltd. (Switzerland)
Amec Foster Wheeler (U.K.)
Ormat Technologies Inc. (U.S.)
General Electric Co. (U.S.)
Mitsubishi Heavy Industries Ltd. (Japan).
Echogen Power Systems Inc. (U.S.)
Econotherm Ltd. (U.K.)
Thermax Limited (India)
Siemens AG (Germany)
China Energy Recovery Inc. (China)

Market Trends Highlights

One of the prominent trends in the WHRS market is the increasing integration of renewable energy sources into waste heat recovery systems. For instance, some systems now incorporate solar energy or geothermal energy to optimize the energy recovery process, further enhancing their efficiency and environmental benefits. The market is also witnessing advancements in technology, with innovations such as thermoelectric generators and Organic Rankine Cycle (ORC) systems being implemented to harness heat at lower temperatures, making these systems applicable to a wider range of industries.

Industries such as cement, steel, oil and gas, and power generation, which traditionally produce substantial amounts of waste heat, are at the forefront of adopting these systems. Additionally, the growth of the industrial Internet of Things (IIoT) is also influencing the WHRS market, with more systems becoming integrated with smart sensors and advanced monitoring systems, improving performance optimization and operational efficiency.

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Market Drivers

Energy Efficiency Demand: One of the primary drivers of the WHRS market is the growing need for energy efficiency in industrial sectors. Industries are seeking to reduce their energy consumption to lower operational costs and meet stringent environmental regulations. Waste heat recovery systems provide a viable solution for repurposing wasted energy, reducing overall energy usage and improving sustainability.

Government Regulations and Environmental Policies: Governments across the globe are introducing regulations that incentivize energy conservation and sustainable practices in industrial processes. Initiatives such as carbon pricing, energy efficiency standards, and emission reduction targets encourage industries to adopt waste heat recovery systems to comply with these regulations and reduce their environmental impact.

Market Restraints

While the WHRS market is growing, several challenges exist that could limit its full potential. These restraints are factors that need to be addressed for sustained market growth.

High Initial Investment: One of the major obstacles to the widespread adoption of waste heat recovery systems is the high upfront cost of installation. While these systems offer long-term cost savings, the initial investment required for purchasing and installing these systems can be prohibitive for smaller or budget-constrained industries. This limits their adoption, especially in developing economies or smaller industrial setups.

Technological Complexity: The installation and maintenance of waste heat recovery systems require specialized expertise. The complexity of designing, integrating, and maintaining these systems could deter some industries from adopting them. In some cases, companies may face difficulties in finding skilled professionals to manage these systems, which can result in higher operational costs and system downtime.

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Market Segmentations

The waste heat recovery system market can be segmented based on several factors, including technology type, end-user industry, and geography.

By Technology Type:

Organic Rankine Cycle (ORC): ORC systems are designed to convert low-temperature waste heat into electrical energy. They are particularly effective in industries with abundant low-grade heat sources, such as the chemical and food processing industries.

Thermoelectric Generators (TEGs): These devices generate electricity from heat using the thermoelectric effect. TEGs are gaining traction due to their ability to recover heat from small-scale sources and their scalability.

Steam Rankine Cycle (SRC): This technology uses high-temperature heat to generate steam, which can then be used to drive turbines and generate electricity. It is commonly used in

industries with higher temperature waste heat sources, such as power plants and steel mills.

Heat Exchangers: Heat exchangers capture and transfer waste heat to other processes. These systems are primarily used in industries where heat recovery does not need to be converted into electricity but can be used to preheat fluids or other materials.

By End-User Industry:

Industrial Sector: The industrial sector is the largest contributor to the WHRS market, with industries such as cement, steel, and chemical processing generating significant waste heat. These sectors are the primary adopters of waste heat recovery systems, given their high energy demands and environmental concerns.

Power Generation: Power plants utilize waste heat recovery systems to increase efficiency and reduce fuel consumption. These systems are integral to combined heat and power (CHP) plants and other energy generation facilities.

Oil & Gas: The oil and gas industry produces vast amounts of waste heat during extraction, refining, and processing activities. Waste heat recovery systems are used to capture this heat and convert it into usable energy for various processes.

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