

# **Waste Heat Recovery Market Forecasts to 2034 – Global Analysis By Technology (Recuperators, Regenerators, Economizers, Heat Exchangers, Waste Heat Boilers, Organic Rankine Cycle (ORC) Systems and Thermoelectric Generators), Application, End User and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global Waste Heat Recovery Market is accounted for \$17.9 billion in 2026 and is expected to reach \$34.4 billion by 2034 growing at a CAGR of 8.5% during the forecast period. Waste heat recovery is the practice of collecting unused heat produced by machinery, industrial operations, and power generation systems and converting it into valuable energy instead of releasing it into the surroundings. The captured heat can be transformed into electricity, steam, or heated fluids, thereby increasing efficiency and decreasing fuel demand. Common solutions include heat exchangers, organic Rankine cycle systems, and recuperative technologies. This approach reduces environmental impact and operating expenses while boosting performance. It plays a crucial role in sustainable energy management and is widely applied in industries, transport systems, and power sectors to improve energy utilization overall efficiency.

According to the International Energy Agency (IEA), nearly 20% of industrial energy input is lost as waste heat, representing a major opportunity for efficiency improvements through recovery technologies. Data shows that industries such as cement, steel, and petrochemicals are among the largest contributors to waste heat potential.

Market Dynamics:

### Driver:

#### Focus on sustainability and energy efficiency

Increasing emphasis on sustainable development and efficient energy use is driving the adoption of waste heat recovery systems. Businesses are focusing on reducing energy waste and lowering emissions to meet environmental objectives. By capturing unused heat and converting it into useful energy, these systems help improve efficiency and decrease environmental harm. Corporate sustainability goals and social responsibility initiatives further encourage adoption. With growing concerns about climate change, both governments and industries are prioritizing technologies that enhance energy efficiency. As a result, waste heat recovery is becoming an essential solution for achieving long-term sustainability and responsible energy management across various sectors.

### Restraint:

#### High initial investment costs

The high upfront cost of implementing waste heat recovery systems is a major obstacle for market growth, particularly for smaller businesses. Significant investment is needed for equipment, installation, and system integration, which can strain financial resources. Many organizations are reluctant due to extended payback timelines and unclear financial returns. Retrofitting older facilities adds to the overall expense and complexity. Although these systems provide long-term energy savings, the initial financial commitment can be discouraging. This challenge is especially evident in developing economies, where limited budgets and financial constraints prevent widespread adoption of advanced energy recovery technologies.

### Opportunity:

#### Advancements in industrial automation and digitalization

The rise of automation and digital technologies is opening new possibilities for the waste heat recovery market. Tools such as smart sensors, IoT devices, and advanced analytics enable continuous monitoring and efficient management of energy systems. These technologies help detect heat losses and optimize recovery processes. Automation improves system performance while reducing maintenance and operational costs. Industries are embracing digital transformation to enhance productivity and

energy efficiency. By integrating these advanced tools with waste heat recovery solutions, companies can achieve better control and reliability, which is expected to boost adoption and support long-term market expansion.

#### Threat:

##### Competition from alternative energy efficiency technologies

The presence of competing energy efficiency solutions creates a challenge for the waste heat recovery market. Technologies like energy storage, efficient boilers, and electrification are becoming more popular due to their simplicity and quicker benefits. Businesses may choose these options instead of investing in waste heat recovery systems, especially when they require less complex installation. In some situations, upgrading existing equipment is seen as a more practical solution. This competition can reduce demand and slow market expansion. To remain relevant, companies in the waste heat recovery sector must innovate and clearly demonstrate the unique value of their solutions.

#### Covid-19 Impact:

The COVID-19 crisis affected the waste heat recovery market in both negative and positive ways. At the beginning, disruptions in supply chains, halted industrial activities, and lockdown measures reduced the demand for such systems. Companies postponed or canceled projects due to financial constraints and uncertainty. Energy consumption also declined during this period, further impacting market growth. As conditions improved, industries shifted their focus toward efficiency and sustainability. Waste heat recovery gained attention as a cost-effective solution for energy management. The pandemic emphasized the importance of optimizing energy use, leading to a gradual recovery and stronger future demand in the market.

The heat exchangers segment is expected to be the largest during the forecast period

The heat exchangers segment is expected to account for the largest market share during the forecast period because of their broad applicability, efficiency, and reliable performance in various industries. They function by transferring heat between different fluids without mixing them, enabling effective recovery of excess thermal energy. These systems are widely used in industries like power, oil and gas, chemicals, and manufacturing due to their flexibility. They are generally more affordable, simpler to install, and easier to maintain than many alternatives. Their strong track record and

ability to enhance energy efficiency have made heat exchangers the leading segment, contributing significantly to the overall growth of the waste heat recovery market.

The power & electricity generation segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the power & electricity generation segment is predicted to witness the highest growth rate as industries seek cleaner and more efficient energy options. Converting unused heat into electricity helps reduce operational costs and reliance on traditional energy sources. Technologies like organic Rankine cycles and steam-based systems support this process effectively. Increasing focus on reducing emissions and improving energy security is encouraging adoption. Government incentives and growing investments in energy-efficient technologies are also contributing to this rapid growth. As a result, power generation is emerging as the most dynamic and fast-growing application area in the market.

Region with largest share:

During the forecast period, the Asia-Pacific region is expected to hold the largest market share because of its fast-growing industrial base, rising energy consumption, and strong manufacturing activities in countries like China, India, and Japan. Industries such as cement, steel, chemicals, and power generation generate large volumes of excess heat, increasing the need for recovery solutions. Supportive government policies focused on energy efficiency and environmental protection also boost adoption. Continuous investments in industrial expansion and infrastructure development further contribute to market growth. The region's focus on lowering energy expenses and enhancing sustainability ensures its leading position in the global waste heat recovery industry.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR due to heightened attention on reducing energy consumption and lowering carbon emissions. Industries in the region are increasingly adopting modern and efficient technologies to improve performance and sustainability. Supportive government policies and environmental regulations are encouraging the use of energy recovery systems. Efforts to modernize existing industrial infrastructure and incorporate advanced solutions are also boosting demand. With a strong focus on innovation and sustainability goals, North America is emerging as the most rapidly expanding region in the waste heat recovery market globally.

## Key players in the market

Some of the key players in Waste Heat Recovery Market include ABB, Alfa Laval, Bosch, Climeon, Danfoss Group, Durr Group, Echogen Power Systems, ElectraTherm, General Electric (GE), IHI Power Systems, Kawasaki, Mitsubishi Heavy Industries (MHI), Ormat Technologies, Schneider Electric, Siemens Energy, Thermax Limited, Turboden and Veolia.

## Key Developments:

In November 2025, Siemens Energy has signed a contract to design and deliver the power conversion system for Oklo's Aurora powerhouse reactors. The contract will see Siemens Energy conduct detailed engineering and layout activities for a condensing SST-600 steam turbine, an SGen-100A industrial generator, and associated auxiliaries to support Oklo's first advanced reactor, the Aurora powerhouse at Idaho National Laboratory.

In November 2025, Schneider Electric announced a two-phase supply capacity agreement (SCA) totaling \$1.9 billion in sales. The milestone deal includes prefabricated power modules and the first North American deployment of chillers. The announcement was unveiled at Schneider Electric's Innovation Summit North America in Las Vegas, convening more than 2,500 business leaders and market innovators to accelerate practical solutions for a more resilient, affordable and intelligent energy future.

In October 2025, Ormat Technologies and SLB announced an agreement to fast-track the development and commercialization of integrated geothermal assets, including enhanced geothermal systems (EGS). EGS is the next generation of geothermal technology, meant to unlock geothermal energy in regions beyond where conventional geothermal resources exist.

## Technologies Covered:

Recuperators

Regenerators

Economizers

Heat Exchangers

Waste Heat Boilers

Organic Rankine Cycle (ORC) Systems

Thermoelectric Generators

#### Applications Covered:

Preheating

Power & Electricity Generation

Steam Generation

District Heating

Combined Heat & Power (CHP)

#### End Users Covered:

Cement

Iron & Steel

Non-Ferrous Metals

Petroleum Refining

Chemicals & Fertilizers

Pulp & Paper

Food & Beverage

Glass

Other End Users

## Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

## Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

## South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

## Rest of the World (RoW)

## Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

## Africa

South Africa

Egypt

Morocco

Rest of Africa

## What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

#### Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

##### Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

##### Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

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