

Green Industrial Heat Technologies Market Forecasts to 2034 – Global Analysis By Type (Industrial Heat Pumps, Electric Boilers and Furnaces, Thermal Energy Storage, Solar Thermal Systems, Biomass and Biogas Boilers, Hydrogen-Fired Heaters and Waste Heat Recovery Systems), Component, Temperature Range, Capacity, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Green Industrial Heat Technologies Market is accounted for \$9.7 billion in 2026 and is expected to reach \$18.4 billion by 2034 growing at a CAGR of 8.3% during the forecast period. Green Industrial Heat Technologies refer to sustainable heating solutions used in industrial processes that reduce greenhouse gas emissions and reliance on fossil fuels. These technologies utilize renewable energy sources, electrification, waste heat recovery, hydrogen-based systems, biomass, and advanced thermal storage to generate process heat efficiently. They are designed to improve energy productivity, lower carbon intensity, and support decarbonization across manufacturing and processing industries while maintaining operational performance, enhancing resource efficiency, and contributing to long-term environmental sustainability goals.

Market Dynamics:

Driver:

Decarbonization mandates

The escalating regulatory pressure to reduce industrial carbon emissions is driving

substantial demand for green heat technologies across manufacturing sectors. The European Union's Emissions Trading System and carbon border adjustment mechanism compel energy-intensive industries to transition away from fossil-fuel combustion. Corporate net-zero commitments require Scope 1 emission reductions from direct process heating. Government incentive programs for industrial electrification and renewable heat accelerate capital deployment. These converging pressures establish a robust foundation for sustained market expansion throughout the forecast period.

Restraint:

High capital costs

The substantial upfront investment required for green industrial heat systems presents a significant barrier to widespread adoption across manufacturing facilities. High-temperature heat pumps and hydrogen-fired heaters command premium pricing compared to conventional gas boilers. Retrofit integration with existing process infrastructure creates additional engineering complexity and downtime costs. Limited availability of renewable electricity and green hydrogen at scale affects operational economics. These constraints require innovative financing mechanisms and sustained policy support to overcome economic hurdles.

Opportunity:

Thermal storage integration

The integration of thermal energy storage with renewable heat generation presents transformative expansion opportunities for industrial applications. Storage systems enable excess solar thermal energy to be captured during peak irradiance and dispatched during nighttime or cloudy periods. Molten salt and phase-change materials provide cost-effective heat retention for medium-temperature processes. Grid flexibility services create additional revenue streams for facilities with large thermal storage capacity. The convergence of declining renewable energy costs and advancing storage technologies enhances commercial viability.

Threat:

Fossil fuel volatility

The volatility of natural gas prices and potential policy reversals threaten the economic case for green heat technology investments. Low fossil fuel prices during certain periods reduce the operational cost advantage of electrified heating systems. Geopolitical disruptions affecting hydrogen supply chains delay high-temperature decarbonization timelines. Competing decarbonization pathways, including carbon capture and utilization, compete for industrial capital allocation. Market fragmentation between competing technology approaches complicates standardization and economies of scale achievement.

Covid-19 Impact:

The COVID-19 pandemic disrupted global supply chains for heat pump compressors and thermal storage materials, delaying several industrial decarbonization projects. However, the crisis accelerated corporate sustainability commitments and government green recovery investments. Remote monitoring capabilities for distributed heating systems gained prominence as facilities adapted to reduced staffing. Post-pandemic, stimulus packages prioritized industrial energy transition funding, supporting continued development of green heat technologies and manufacturing reshoring initiatives.

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

The industrial heat pumps segment is expected to account for the largest market share during the forecast period, due to mature technology platforms and broad applicability across low and medium-temperature processes. Advances in high-temperature heat pump designs extend operational ranges to 150 degrees Celsius and beyond. Waste heat recovery integration enables simultaneous cooling and heating optimization. European regulatory frameworks mandate heat pump adoption for new industrial installations. Major equipment manufacturers offer comprehensive service and maintenance networks that reduce operational risk.

The compressors segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the compressors segment is predicted to witness the highest growth rate, driven by increasing adoption of high-efficiency heat pump systems and industrial electrification initiatives aimed at reducing carbon emissions. Compressors play a critical role in transferring and amplifying thermal energy within sustainable heating applications, making them essential for energy-efficient process heating.

Growing investments in low-carbon manufacturing facilities, advancements in compressor technologies, and rising demand for renewable heat solutions are further accelerating segment expansion. Additionally, stringent decarbonization targets across industrial sectors continue to strengthen demand for advanced compressor-based heating systems.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, due to substantial government support for industrial electrification and a strong manufacturing base. The United States leads with the Inflation Reduction Act tax credits for clean heat technologies and state-level renewable thermal standards. Major chemical and food processing companies commit to net-zero manufacturing targets. Canada contributes through carbon pricing mechanisms that incentivize fuel switching. Mexico addresses industrial energy costs through renewable heat adoption.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, driven by rapid industrialization and government mandates for manufacturing decarbonization. China leads with national carbon neutrality targets and expanding industrial heat pump manufacturing capacity. Japan invests heavily in hydrogen-fired heating demonstration projects. South Korea establishes green industrial complexes with integrated renewable heat systems. Southeast Asian nations address air quality concerns through industrial coal-to-electricity transitions.

Key players in the market

Some of the key players in Green Industrial Heat Technologies Market include Siemens Energy AG, GE Vernova, Mitsubishi Heavy Industries, Ltd., Danfoss A/S, ABB Ltd., Johnson Controls International plc, Andritz AG, Thermax Limited, Spirax-Sarco Engineering plc, Cleaver-Brooks, Inc., Babcock & Wilcox Enterprises, Inc., Bosch Thermotechnik GmbH, Kraftblock GmbH, Kyoto Group AS, Rondo Energy, Inc., and Antora Energy, Inc.

Key Developments:

In May 2026, Siemens Energy AG launched an integrated high-temperature heat pump platform for industrial steam generation, achieving thermal output temperatures of 150

degrees Celsius for food processing and chemical manufacturing applications across European facilities.

In April 2026, Mitsubishi Heavy Industries, Ltd. expanded its hydrogen-fired heater portfolio through a strategic partnership with a leading electrolyzer manufacturer, enabling integrated green hydrogen-to-heat solutions for steel and cement production.

In March 2026, Danfoss A/S secured a major contract deploying industrial heat pump systems across Scandinavian district heating networks, integrating waste heat recovery from data centers for residential and commercial thermal distribution.

Types Covered:

Industrial Heat Pumps

Electric Boilers and Furnaces

Thermal Energy Storage

Solar Thermal Systems

Biomass and Biogas Boilers

Hydrogen-Fired Heaters

Waste Heat Recovery Systems

Components Covered:

Compressors

Heat Exchangers

Control Systems and Software

Storage Media

Balance of Plant

Temperature Ranges Covered:

Low Temperature (400°C)

Capacities Covered:

50 MW

End Users Covered:

Chemicals

Food and Beverage

Pulp and Paper

Cement

Steel and Metals

Textiles

Pharmaceuticals

Oil Refining

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)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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