

Screw Chillers Market: USD 4.6 Billion in 2021, Projected to Reach USD 6.5 Billion by 2031 with a CAGR of 3.4%

Screw Chillers Market Size, Share, Competitive Landscape and Trend Analysis Report

WILMINGTON, DE, UNITED STATES, June 24, 2025 /EINPresswire.com/ -- Market Overview

The global [Screw Chillers Market](#) was valued at \$4.6 billion in 2021 and is projected to reach \$6.5 billion by 2031, registering a compound annual growth rate (CAGR) of 3.4% from 2022 to 2031. The market's growth is driven by increasing demand for process cooling in industrial applications, the compact and energy-efficient design of screw chillers, and their growing adoption in commercial and high-rise buildings. Despite disruptions from the COVID-19 pandemic, the market is recovering, supported by rapid urbanization, industrialization, and technological advancements in chiller systems.



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Screw chillers are refrigeration systems that provide cooling for air conditioning and industrial processes. They feature two helical slotted rotors—a convex flap and a concave groove—housed in a fixed casing, moving simultaneously to compress refrigerant. Key components include an evaporator, expansion valve, refrigerant, internal piping, and control systems. Screw chillers are compact, lightweight, and available with cooling capacities ranging from 20 to 1,000 tons. Their variable speed, minimal maintenance, and high energy efficiency make them ideal for applications in commercial refrigeration, industrial cooling, and high-rise buildings.

Research Scope and Methodology

This analysis covers the global Screw Chillers Market, segmented by product type, end-user

industry, and region. The study integrates data from industry reports, product launches, and competitive strategies, supplemented by quantitative market estimations. It evaluates trends and dynamics from 2022 to 2031, focusing on key regions including Asia-Pacific, North America, Europe, and LAMEA. The methodology emphasizes product positioning, competitor monitoring, and regional analysis to provide stakeholders with actionable insights for strategic planning.

Market Dynamics

Drivers

Demand for Process Cooling: Growing industrial applications in sectors like chemical, petrochemical, and manufacturing drive demand for screw chillers due to their efficient cooling capabilities.

Energy Efficiency and Compact Design: Screw chillers offer high energy efficiency, variable speed operation, and a smaller footprint, making them suitable for modern buildings and industrial facilities.

Urbanization and Construction Growth: Rapid urbanization in countries like China, India, and Indonesia fuels construction activities, increasing the need for screw chillers in commercial and residential buildings.

Commercial Refrigeration Adoption: The rising use of screw chillers in supermarkets, data centers, and high-rise buildings supports market expansion.

Technological Advancements: Integration of advanced analytics, IoT, and visualization tools enhances chiller performance, driving market growth.

Restraints

COVID-19 Disruptions: The pandemic halted manufacturing and construction activities in 2020, particularly in China, the U.S., and India, reducing demand for screw chillers. Supply chain issues and labor shortages further constrained market growth.

High Initial Costs: The upfront investment for screw chiller systems can deter adoption, especially in cost-sensitive markets.

Raw Material Shortages: Limited availability of key components during the pandemic negatively impacted production and supply chains.

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Opportunities

Post-COVID Recovery: The reopening of production facilities and vaccine rollouts since late 2021 have revitalized the market, with companies resuming full-scale operations.

Sustainability Trends: Environment-friendly refrigerants and energy-efficient designs align with global sustainability goals, boosting market appeal.

Emerging Markets: Rapid industrialization in Asia-Pacific countries presents significant growth opportunities for screw chiller manufacturers.

Impact of COVID-19

The COVID-19 pandemic significantly disrupted the screw chillers market in 2020, with lockdowns halting construction and manufacturing in key markets like China, the U.S., and India. Supply chain disruptions, labor shortages, and raw material constraints further limited production and sales. However, by late 2021, the introduction of vaccines and easing of restrictions enabled industries to recover. As of 2025, the market has shown robust recovery, supported by renewed construction and industrial activities, though global economic challenges like inflation pose ongoing risks.

Market Segmentation

The Screw Chillers Market is segmented by product type, end-user industry, and region.

By Product Type

Water-Cooled Chillers: Dominated the market in 2021, driven by their high efficiency and suitability for large-scale industrial and commercial applications.

Air-Cooled Chillers: Projected to grow at a significant CAGR, favored for their ease of installation and lower water usage in smaller facilities.

By End-User Industry

Chemical and Petrochemical: Registered the highest revenue in 2021, driven by the need for precise temperature control in processing plants.

Food and Beverage: Growing demand for refrigeration in food storage and processing facilities supports market growth.

Commercial (HVAC): Includes offices, malls, and data centers, benefiting from screw chillers' compact design and energy efficiency.

Others: Encompasses pharmaceuticals, healthcare, and manufacturing, with steady adoption.

By Region

Asia-Pacific: Held the highest market share in 2021, driven by rapid industrialization and urbanization in China, India, Vietnam, and Indonesia. It is projected to register the highest CAGR through 2031.

North America: Significant growth due to demand in commercial and industrial sectors, particularly in the U.S.

Europe: Steady adoption in energy-efficient building projects and industrial applications.

LAMEA: Emerging market with potential in Latin America and the Middle East.

Regional Insights

Asia-Pacific

Asia-Pacific led the market in 2021, fueled by booming construction and industrial activities in China, India, Vietnam, and Indonesia. Urbanization and government investments in

infrastructure drive demand for screw chillers in commercial and industrial projects.

North America

The U.S. contributes significantly, with high adoption in data centers, commercial buildings, and chemical industries. Energy efficiency regulations further support market growth.

Europe

Europe's market is driven by sustainability initiatives and the adoption of screw chillers in green building projects and industrial facilities.

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Competitive Landscape

Key players in the Screw Chillers Market include:

Carrier

Trane Technologies

Johnson Controls

Daikin Industries

Mitsubishi Electric

Hitachi

LG Electronics

Dunham-Bush

Blue Star Limited

Thermax Limited

These companies focus on product launches and acquisitions to enhance their portfolios. For example, Carrier's launch of the AquaEdge 19MV oil-free water-cooled centrifugal chiller in May 2022 expanded its offerings, emphasizing efficiency and reliability.

Industry Trends

Energy Efficiency Focus: Adoption of variable-speed drives and eco-friendly refrigerants aligns with global sustainability goals.

IoT and Analytics Integration: Smart chillers with IoT-enabled monitoring improve performance and reduce maintenance costs.

Data Center Growth: Increasing demand for cooling solutions in data centers drives screw chiller adoption.

High-Rise Building Demand: Compact screw chillers are ideal for HVAC systems in urban high-rise structures.

Key Findings

By Product Type: Water-cooled chillers led in 2021; air-cooled chillers are expected to grow

fastest.

By End-User Industry: Chemical and petrochemical sectors dominated; commercial applications show steady growth.

By Region: Asia-Pacific led in revenue and is projected to grow fastest through 2031.

Key Benefits for Stakeholders

Extensive analysis of market trends and dynamics from 2022 to 2031.

In-depth segmentation to identify high-growth opportunities.

Quantitative market estimations to benchmark financial performance.

Competitive analysis of key players and their strategies.

Regional insights to guide market entry and expansion.

Forecast analysis to support strategic planning.

Market Report Highlights

Market Size by 2031: \$6.5 billion

CAGR: 3.4%

Forecast Period: 2022–2031

Key Players: Carrier, Trane, Johnson Controls, and others.

Segment Highlights

By Product Type: Water-cooled chillers dominate; air-cooled chillers grow fastest.

By End-User Industry: Chemical and petrochemical lead; commercial grows steadily.

By Region: Asia-Pacific dominates; North America and Europe show steady growth.

This analysis equips stakeholders with actionable insights to navigate the Screw Chillers Market, leveraging opportunities in industrialization, urbanization, and technological advancements.

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