

Screw Chillers Market to Grow from USD 4.6 Billion in 2021 to 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, July 7, 2025 /EINPresswire.com/ -- Market Overview

The global screw chillers market, valued at USD 4.6 billion in 2021, is projected to reach USD 6.5 billion by 2031, registering a compound annual growth rate (CAGR) of 3.4% from 2022 to 2031. Screw chillers are advanced refrigeration systems that utilize a pair of mechanically engaged helical screws—a female and a male screw—that rotate simultaneously to compress fluids such as air or refrigerants. These systems are compact, quieter, and have fewer moving parts compared to alternatives like centrifugal, reciprocating, or absorption chillers, making them highly efficient and versatile. Screw chillers are widely used across industries, including food and beverage, chemicals and petrochemicals, pharmaceuticals, oil and gas, and others, for their ability to provide consistent cooling in various applications.

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Market Dynamics

Rising Demand Across Industries

The screw chillers market is driven by increasing demand from diverse industries such as food and beverage, chemicals, petrochemicals, pharmaceuticals, and oil and gas. These sectors rely on screw chillers for precise temperature control in processes like machine cooling, oil cooling, and refrigeration. The high volumetric efficiency of screw chillers, coupled with their ability to deliver uniform and continuous refrigerant flow, makes them a preferred choice. Additionally, screw chillers lack suction and discharge valves, reducing pressure drops and enhancing productivity. Their low vibration and minimal moving parts further contribute to their appeal, ensuring reliability and reduced maintenance costs.

Technological Advantages

Screw chillers offer significant advantages over competing technologies. Their compact design and quieter operation make them suitable for a wide range of applications, with refrigerant flow capacities ranging from 200 to 20,000 m³/hr. These attributes make them ideal for both small- and large-scale industrial operations. Leading manufacturers, such as Airedale International Air Conditioning Ltd., Trane Technologies Company, LLC, and Johnson Controls International PLC,

offer a diverse range of screw chillers tailored to specific industry needs, further fueling market growth.

Strategic Industry Initiatives

Major players in the screw chillers market are adopting strategies like product launches and acquisitions to strengthen their market position and enhance their product portfolios. For instance, in July 2022, Dunham-Bush introduced the HELIOS series air-cooled horizontal screw compressor (ACHX-BVD), featuring inverter compressors and variable speed fans. This innovation improves part-load performance and reduces noise levels, catering to the Asia region's specific requirements. Such advancements are expected to create new growth opportunities and drive market expansion.

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Impact of the COVID-19 Pandemic

The COVID-19 pandemic significantly disrupted the screw chillers market, with global lockdowns halting production and affecting supply chains. The construction, manufacturing, and industrial sectors faced setbacks, leading to a temporary decline in demand for screw chillers. However, with the introduction of vaccines and declining infection rates, the market is recovering. Companies have resumed full-scale operations, and the market is expected to stabilize by the end of 2022. Manufacturers are now focusing on safeguarding their workforce, optimizing operations, and strengthening supply chains to adapt to new working conditions and meet rising demand.

Market Segmentation

The screw chillers market is segmented by product type, compressor type, end-user industry, and region, providing a comprehensive view of its dynamics.

By Product Type

Water-Cooled Chillers: This segment generated the highest revenue in 2021, driven by rapid urbanization, population growth, and increased demand from the food and beverage and construction industries. Water-cooled chillers are highly efficient for large-scale cooling applications.

Air-Cooled Chillers: These chillers are valued for their ease of installation and suitability for environments where water availability is limited, contributing to steady market growth.

By Compressor Type

Single: Single screw compressors are widely used for their simplicity and cost-effectiveness in smaller applications.

Dual and Twin: Dual and twin screw compressors are preferred for high-capacity applications, offering enhanced efficiency and reliability. This segment is expected to see significant growth

due to increasing industrial demand.

By End-User Industry

Chemical and Petrochemical: This segment accounted for the highest revenue in 2021, driven by the need for precise cooling in machine and oil cooling processes. The chemical industry's growth, particularly in Asia-Pacific, fuels demand.

Food and Beverage: Screw chillers are critical for maintaining temperature control in food processing and storage, contributing to market growth.

Pharmaceutical: The pharmaceutical industry relies on screw chillers for temperature-sensitive processes, with demand rising due to increased healthcare investments.

Oil and Gas: The oil and gas sector uses screw chillers for cooling in refining and processing, driven by expanding energy demands.

Others: This includes applications in industries like plastics and construction, which also contribute to market expansion.

By Region

North America: The U.S., Canada, and Mexico drive demand due to advanced industrial infrastructure and high adoption in chemical and food processing sectors.

Europe: Countries like the UK, France, Germany, and Italy contribute to steady growth, with a focus on energy-efficient cooling solutions.

Asia-Pacific: This region held the largest market share in 2021, driven by rapid industrialization and urbanization in countries like China, India, Vietnam, and Indonesia. Asia-Pacific is expected to register the highest CAGR during the forecast period.

LAMEA: Latin America, the Middle East, and Africa are emerging markets, with growth fueled by increasing industrial activities and infrastructure development.

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Competitive Landscape

The screw chillers market is competitive, with key players focusing on innovation, product launches, and acquisitions to enhance their market presence. Major companies include:

Carrier Global Corporation

Dunham-Bush

EUROKLIMAT S.P.A.

Haier Group

Johnson Controls International PLC

LG Electronics

McQuay Air-conditioning Ltd.

Mitsubishi Electric Corporation

Robert Bosch GmbH

Trane Technologies Company, LLC

These companies are investing in advanced technologies to develop energy-efficient and low-noise screw chillers, catering to diverse industry needs. Strategic initiatives, such as Dunham-Bush's HELIOS series launch, demonstrate the industry's focus on innovation and regional customization.

Key Benefits for Stakeholders

Market Insights: The report offers a detailed analysis of current and emerging trends, providing insights into market dynamics from 2022 to 2031.

Segment-Specific Analysis: Evaluations of product type, compressor type, end-user industry, and region help stakeholders identify high-growth opportunities.

Competitive Positioning: Insights into key players' strategies, including product launches and acquisitions, support strategic decision-making.

Regional Opportunities: Analysis of North America, Europe, Asia-Pacific, and LAMEA highlights regional growth potential.

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