

Solid State Cooling Market by Product (Refrigerators, Freezers, Air Conditioners, Chillers, Coolers), Type (Single-stage, Multi-stage, Thermocycler), Technology (Thermoelectric, Electrocaloric, Magnetocaloric), Vertical, Region - Global Forecast to 2029

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Abstracts

The global solid state cooling market is expected to be valued at USD 0.8 billion in 2024 and is projected to reach USD 1.5 billion by 2029; it is expected to grow at a CAGR of 13.6% from 2024 to 2029. Increasing demand for energy-efficient and environmentally friendly cooling solutions across industries, advancements in semiconductor technology enabling more efficient and reliable solid-state cooling devices, expanding applications in electronics, automotive, aerospace, and healthcare sectors, and rising awareness of the detrimental effects of traditional cooling methods on the environment and energy consumption.

“Cooling systems in solid state cooling market to account for the highest market share during the forecast period.”

The solid-state cooling market for cooling systems is driven by several factors, including the rising demand for energy-efficient and environmentally friendly cooling solutions, technological advancements enabling higher efficiency and reliability in solid-state cooling devices, increasing applications across industries such as electronics, automotive, aerospace, and medical devices, and growing awareness of the limitations and environmental impacts of traditional cooling methods. As companies seek innovative and sustainable cooling solutions to address thermal management challenges, the solid-state cooling market for cooling systems experiences continued growth, catering to the diverse needs of various sectors.

“Thermoelectric technology in solid state cooling market to account for the highest market share during the forecast period.”

The solid-state cooling market for thermoelectric technology is propelled by several key factors, including the escalating demand for energy-efficient and environmentally friendly cooling solutions across industries such as electronics, automotive, aerospace, and healthcare, the advancements in semiconductor materials and manufacturing processes enabling improved performance and reliability of thermoelectric devices, the compact size and versatility of thermoelectric modules allowing for diverse applications, and the increasing awareness of the advantages of thermoelectric cooling, such as silent operation and precise temperature control. As companies and consumers prioritize sustainability and seek innovative cooling solutions, the solid-state cooling market for thermoelectric technology continues to grow, offering efficient and reliable alternatives to traditional cooling methods.

“Healthcare vertical in solid state cooling market to account for the highest market share during the forecast period.”

The solid-state cooling market for the healthcare vertical is experiencing significant growth due to the increasing demand for precise temperature control and reliable thermal management solutions in medical devices, laboratory equipment, and pharmaceutical storage. Solid-state cooling technologies offer advantages such as compact size, energy efficiency, and precise temperature control, making them ideal for applications such as blood analyzers, medical imaging systems, drug delivery devices, and vaccine storage units. Additionally, the growing emphasis on patient safety, regulatory compliance, and the need to preserve sensitive biological samples further drive the adoption of solid-state cooling solutions in the healthcare sector, fueling the growth of the market.

“Solid State Cooling market for North America to account for the second highest market share during the forecast period.”

The solid-state cooling market in North America is witnessing significant growth due to several factors, including the region's strong focus on technological innovation, robust industrial infrastructure, increasing adoption of energy-efficient and environmentally friendly cooling solutions across various industries, and rising demand for advanced thermal management solutions in electronics, automotive, healthcare, and aerospace sectors. Additionally, government initiatives promoting sustainable technologies and the presence of key market players further accelerate the growth of the solid-state cooling

market in North America, positioning it as a hub for innovation and market expansion in the industry.

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

By Company Type: Tier 1 – 10%, Tier 2 – 55%, and Tier 3 – 35%

By Designation: C-level Executives – 45%, Managers – 25%, and Others – 30%

By Region: North America – 55%, Europe – 20%, Asia Pacific – 15%, RoW – 10%

The key players operating in the Solid state cooling market are CUI Devices (US), Delta Electronics, Inc. (Taiwan), Ferrotec Holdings Corporation (Japan), Coherent Corp. (US), Laird Thermal Systems, Inc. (US).

Research Coverage:

The research report categorizes the Solid state cooling market, By Product (Refrigeration Systems and Cooling Systems), Type (Single-Stage, Multi-Stage, Thermocycler), Technology (Thermoelectric Cooling, Electrocaloric Cooling, Magnetocaloric Cooling, Other Technologies), Vertical (Automotive, Semiconductor & Electronics, Healthcare, Consumer (Residential), and Other Verticals (Aerospace & Defense, Industrial etc.), Region (North America, Europe, Asia Pacific, and RoW).

Key Benefits of Buying the Report

Analysis of key drivers (Increasing demand for energy-efficient cooling solutions to drives market, Expansion of the IoT and smart home devices accelerate market growth, Rising adoption of electric vehicles (EVs) and hybrid electric vehicles (HEVs) to drive market, Growing data center industry to increase adoption of solid state cooling technology), restraints (High initial investment and manufacturing costs associated with solid-state cooling technology, Complexity in integrating solid-state cooling solutions into existing systems and infrastructure, Regulatory barriers and standards compliance requirements in healthcare and automotive industries), opportunities (Emerging applications in aerospace, defense, and consumer sectors to present opportunities for solid

state cooling market, Adoption of solid-state cooling technology in growing industrialization and urbanization), and challenges (Complexity in designing and engineering solid-state cooling systems for diverse applications and operating conditions, Shortage of qualified expert in thermoelectric cooling and thermal management) influencing the growth of the solid state cooling market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product launches in the solid state cooling market

Market Development: Comprehensive information about lucrative markets – the report analyses the solid state cooling market across varied regions.

Market Diversification: Exhaustive information about new services, untapped geographies, recent developments, and investments in the solid state cooling market

Competitive Assessment: In-depth assessment of market shares, growth strategies and service offerings of leading players like CUI Devices (US), Delta Electronics, Inc. (Taiwan), Ferrotec Holdings Corporation (Japan), Coherent Corp. (US), Laird Thermal Systems, Inc. (US) among others in the Solid state cooling market.

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