Superconductors Market Forecast to 2028 - COVID-19 Impact and Global Analysis By Type (Low Temperature Superconductors and High Temperature Superconductors) and Application (Medical, Electronics, Defense & Military, and Others)

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Report description:

The Superconductors Market is projected to reach US$ 8,564.61 million by 2028; it is expected to grow at a CAGR of 8.4% from 2022 to 2028.

Superconducting technologies are esoteric systems used in laboratories, electronics, defense, hospitals, and many other places. The capacity of superconductivity to efficiently produce high magnetic fields that are otherwise exceedingly expensive to obtain with traditional materials has long been recognized by large science endeavors. The superconductors market size is segmented based on type, applications, and geography. Based on type, the superconductors market is categorized into low temperature superconductors and high temperature superconductors). By application, the superconductors market is segmented into medical, electronics, defense & military, and others. Based on geography, the superconductors market size is primarily segregated into North America, Europe, Asia Pacific (APAC), the Middle East & Africa (MEA), and South America.

A quantum computer's processing power is based on superconducting qubits that operate at extremely low temperatures. At room temperature, qubits are commonly operated by conventional electronics connected by electrical lines. When the number of qubits reaches the needed level of hundreds of thousands, the number of control cables becomes incapable of scaling up to match the number of qubits without causing an unacceptable heat load, thereby jeopardizing the quantum processor's low temperature. One solution is to control the quantum processor with a nearby classical processor. The single flux quantum (SFQ) technology, which follows classical computer logic but employs superconducting technology instead of semiconductors, is the most promising answer. Due to its low-temperature requirements, SFQ has only been employed in a few classical computers.

This disadvantage becomes a benefit when utilized in conjunction with superconducting quantum computers. Additionally, the

extremely high-power consumption of CPUs and GPUs due to energy dissipation in silicon chips is a major restriction of supercomputers. In GPUs, replacing silicon chips with superconducting SFQ chips could significantly influence performance and power consumption. Thus, the increase in superconducting chips to scale up quantum computers and supercomputers is driving the superconductors market.

North America accounted for the largest global superconductors market share in 2021, whereas the Asia Pacific superconductors market is expected to grow with the highest CAGR during the forecast period. Based on country, the Asia Pacific superconductors market is segmented into Australia, China, India, Japan, South Korea, and the rest of Asia Pacific. Asia Pacific is the largest market for superconductor materials due to the high application of low-temperature superconductors in medical imaging applications such as Nuclear Magnetic Resonance (NMR) and Magnetic Resonance Imaging (MRI). The Asia Pacific region's large population, combined with the rise in health awareness, has fueled the expansion of the low-temperature superconductors market in the region. Because of factors such as ongoing MRI expansion and investment in strong energy storage and transmission technology, Asia Pacific is predicted to be the fastest-growing region for the superconductors market. For instance, in October 2021, SuperQ Technologies India Pvt Ltd., a subsidiary of Qpi Technology, signed a Memorandum of Understanding (MoU) with the Cryogenic Engineering Department of IIT-Kharagpur to accelerate their research in the field of Superconductors. The discoveries in superconducting-based products will pave the way for growth in many domains. Some range from healthcare, power generation, energy storage and distribution, high-energy physics, and quantum computing. Such discoveries in the superconducting-based product will boost the superconductors market share.

COVID-19 Impact on Superconductors Market

The COVID-19 pandemic negatively hampered the global superconductors market growth due to considerable disruption in the supply chain activities and several countries sealing off their international trade in the wake of the pandemic. Due to the pandemic, various industries were declining in 2020. The lockdowns impacted the global manufacturing sectors. The worldwide lockdown to minimize the transmission of the virus has significantly disrupted the supply chain activities and reduced the production of commodities, goods, and services. As a result, the superconductors market players witnessed a slowdown in production. Further, there were restrictions on foreign trades due to the closure of international borders, non-operational distribution channels, and various government norms to take precautionary measures for public health and safety.

North America was severely affected by the COVID-19 pandemic, with North American countries experiencing a drop in national GDPs, international trade, and economy. The North America electronic industry was disrupted during the first half of 2020, leading to a massive decline in the revenue of key players operating in the superconductors market analysis. The COVID-19 outbreak resulted in a decrease in component manufacturers and disruptions of supply chains across the region. Further, the US is the world's largest producer of superconductor products and one of the largest consumers of superconductors. However, the country experienced strict government regulations in the mid of 2020 due to COVID-19 safety measures, which resulted in considerable disruption in the manufacturing and supply chain of superconductors. Due to this, superconductor manufacturing companies faced revenue losses and slow growth. Meanwhile, as the economy started to revive from late Q4 of 2020 and the demand for superconductors showcased growth in adoption rate from various end-users in the superconductors market analysis.

A few players in the global superconductors market profiled in the market study include Bruker Corporation; Furukawa Electric Co. Ltd.; American Superconductor Corporation; Sumitomo Electric Industries, Ltd.; and Hitachi Ltd. The superconductors market players are highly fragmented, with several players localized in a specific region to cater to the domestic demand.

The overall superconductors market has been derived using both primary and secondary sources. To begin the research process, exhaustive secondary research has been conducted using internal and external sources to obtain qualitative and quantitative information about the superconductor's size. The process also obtains an overview and market forecast of the superconductor's market size with respect to all the market segments. Also, multiple primary interviews have been conducted with industry

participants and commentators to validate the data and gain more analytical insights into the topic. The participants typically involved in this process include industry experts such as VPs, business development managers, market intelligence managers, and national sales managers-along with external consultants such as valuation experts, research analysts, and key opinion leaders-specializing in the superconductors market growth.

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