+357 96 030922
info@marketpublishers.com

Power Electronics Equipment Cooling System Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Cooling Type (Air Cooling, Liquid Cooling, Hybrid Cooling Systems), By Power Rating (Low Power (Below 500 kW), Medium Power (500 kW – 5 MW), High Power (Above 5 MW)), By Application (Automotive, Energy & Power, IT & Telecom, Industrial Manufacturing, Consumer Electronics, Others), By Region, and By Competition, 2020-2030F

https://marketpublishers.com/r/P707DDEDB46AEN.html
Date: September 2025
Pages: 185
Price: US$ 4,500.00 (Single User License)
ID: P707DDEDB46AEN

Abstracts

Market Overview

The Global Power Electronics Equipment Cooling System Market was valued at USD 5.63 Billion in 2024 and is expected to reach USD 8.89 Billion by 2030 with a CAGR of 7.74% during the forecast period.

The global Power Electronics Equipment Cooling System Market is witnessing robust growth, driven by the rising demand for efficient thermal management solutions across diverse industries such as automotive, energy, consumer electronics, data centers, and industrial manufacturing. Power electronics are increasingly embedded in electric vehicles (EVs), renewable energy systems, high-performance computing, and industrial automation, leading to higher heat generation and greater emphasis on advanced cooling solutions to maintain reliability, safety, and efficiency. Effective cooling systems are essential for minimizing energy losses, extending device lifecycles, and ensuring

+357 96 030922
info@marketpublishers.com

stable performance of sensitive electronic components, making them a critical enabler for modern high-power applications.

Technological advancements are reshaping the market, with traditional air-cooling methods being gradually complemented or replaced by liquid and hybrid cooling systems that offer higher efficiency and compact designs. Liquid cooling, including cold plates and immersion systems, is gaining traction in data centers, EV powertrains, and renewable energy converters due to its superior heat dissipation capabilities. Meanwhile, innovations in thermal interface materials, phase-change technologies, and heat exchangers are further enhancing system performance. The growing adoption of immersion and direct liquid cooling in high-density server environments and electric mobility infrastructure reflects the market's shift toward next-generation solutions capable of handling higher power densities.

Key Market Drivers

Rising Data Center Energy Demand and Cooling Needs

The exponential growth of digital infrastructure has intensified the demand for advanced cooling systems in power electronics. Data centers are consuming unprecedented amounts of electricity, with forecasts suggesting an additional 20 GW of power demand by 2030. Energy consumption is expected to represent between 6.7–12% of national power usage by 2028, up from 4.4% in 2023. Traditional air-cooling methods often result in an average PUE (Power Usage Effectiveness) of 1.58, whereas advanced liquid cooling can reduce this figure to nearly 1.1, demonstrating much higher efficiency. Moreover, cooling-related issues are responsible for over 40% of data center downtime, highlighting the operational risks of outdated thermal management. Advanced liquid and immersion cooling solutions can cut overall energy consumption by up to 50%, providing significant cost savings. These improvements are vital as data centers scale operations, ensuring reliability, efficiency, and compliance with sustainability goals.

Key Market Challenges

High Capital and Operational Costs

One of the primary challenges in the global power electronics equipment cooling system market is the high capital investment and operating costs associated with advanced cooling solutions. While air-cooling systems are relatively inexpensive, liquid cooling, immersion cooling, and hybrid systems require significant upfront infrastructure

+357 96 030922
info@marketpublishers.com

investment. For example, immersion cooling units can cost up to 15–20 times more than conventional air systems. Beyond installation, operators must bear recurring costs for specialized dielectric fluids, pumps, chillers, and maintenance protocols. Smaller enterprises, especially in emerging economies, often find these costs prohibitive. Moreover, retrofitting legacy facilities with advanced liquid cooling adds complexity and capital pressure, as existing infrastructure must often be redesigned to support new thermal management systems. Operationally, managing liquid leaks, coolant degradation, and ensuring fluid compatibility with sensitive electronics adds to cost burdens. As industries scale computing workloads, especially in AI and data centers, the total cost of ownership for next-generation cooling becomes a major decision-making barrier. This cost challenge creates a market divide: hyperscalers and large enterprises adopt high-end systems, while small and medium businesses remain dependent on less efficient, lower-cost solutions. Bridging this cost-performance gap remains a pressing obstacle for manufacturers and integrators.

Key Market Trends

Increasing Demand from Electric Vehicle (EV) and Renewable Energy Sectors

The electrification of transportation and the expansion of renewable energy infrastructure are creating new opportunities for advanced cooling systems. EV batteries, inverters, and charging infrastructure generate significant heat, requiring compact, high-performance liquid cooling systems. As EV adoption grows, global charging networks are projected to expand by millions of units, each requiring reliable thermal management. Similarly, renewable energy applications such as solar inverters and wind turbine power converters rely on efficient cooling to maintain system reliability under variable operating conditions. Advanced cooling solutions can extend component life by over 20% and improve efficiency by up to 15%. Governments’ push for clean energy and electric mobility is accelerating demand, making the EV and renewable energy sectors two of the fastest-growing end-users for power electronics cooling systems. This trend positions cooling solutions as a key enabler of the global energy transition.

Key Market Players

Vertiv Holdings Co.

Aavid Thermalloy, LLC

+357 96 030922
info@marketpublishers.com

Advanced Cooling Technologies, Inc.

Boyd Corporation

Lytron Inc.

Laird Thermal Systems

Rittal GmbH & Co. KG

Schneider Electric SE

Johnson Controls International plc

Noren Products Inc.

Report Scope:

In this report, the Global Power Electronics Equipment Cooling System Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Power Electronics Equipment Cooling System Market, By Cooling Type:

Air Cooling

Liquid Cooling

Hybrid Cooling Systems

Power Electronics Equipment Cooling System Market, By Power Rating:

Low Power (Below 500 kW)

Medium Power (500 kW – 5 MW)

High Power (Above 5 MW)

+357 96 030922
info@marketpublishers.com

Power Electronics Equipment Cooling System Market, By Application:

- Automotive
- Energy & Power
- IT & Telecom
- Industrial Manufacturing
- Consumer Electronics
- Others

Power Electronics Equipment Cooling System Market, By Region:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - Germany
  - France
  - United Kingdom
  - Italy
  - Spain
- South America
  - Brazil

+357 96 030922
info@marketpublishers.com

Argentina

Colombia

Asia-Pacific

China

India

Japan

South Korea

Australia

Middle East & Africa

Saudi Arabia

UAE

South Africa

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Power Electronics Equipment Cooling System Market.

Available Customizations:

Global Power Electronics Equipment Cooling System Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

+357 96 030922
info@marketpublishers.com

Detailed analysis and profiling of additional market players (up to five).

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

6. NORTH AMERICA POWER ELECTRONICS EQUIPMENT COOLING SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

7. EUROPE POWER ELECTRONICS EQUIPMENT COOLING SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

8. ASIA PACIFIC POWER ELECTRONICS EQUIPMENT COOLING SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

9. MIDDLE EAST & AFRICA POWER ELECTRONICS EQUIPMENT COOLING SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

10. SOUTH AMERICA POWER ELECTRONICS EQUIPMENT COOLING SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Power Electronics Equipment Cooling System Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Cooling Type (Air Cooling, Liquid Cooling, Hybrid Cooling Systems), By Power Rating (Low Power (Below 500 kW), Medium Power (500 kW – 5 MW), High Power (Above 5 MW)), By Application (Automotive, Energy & Power, IT & Telecom, Industrial Manufacturing, Consumer Electronics, Others), By Region, and By Competition, 2020-2030F

Product link: https://marketpublishers.com/r/P707DDEDB46AEN.html

Price: US$ 4,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/P707DDEDB46AEN.html