Data Center Liquid Cooling Market by Component (Solution and Services), End User (Cloud Providers, Colocation Providers, Enterprises, and Hyperscale Data Centers), Data Center Type, Type of Cooling, Enterprise, and Region - Global Forecast to 2030

Market Report | 2024-08-01 | 278 pages | MarketsandMarkets

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Report description:

The global data center liquid cooling market will rise from USD 4.9 billion in 2024 to USD 21.3 billion by 2030 at a CAGR of 27.6% from 2024 to 2030. The data center liquid cooling market is growing due to rising power densities from high-performance computing equipment like GPUs and CPUs, necessitating efficient cooling solutions. Liquid technologies such as direct-to-chip and immersion cooling are increasingly adopted to handle high-density data center challenges more effectively than traditional air cooling. The expansion of edge computing and IoT further drives demand for compact and efficient cooling solutions. There's also a strong focus on reducing energy and water consumption, favoring liquid cooling for its sustainability benefits. Regulatory support and increased data center investments globally are further accelerating the adoption of advanced cooling technologies to enhance efficiency and reduce operational costs.

"The services sector within the components category is projected to witness the fastest compound annual growth rate (CAGR) from 2024 to 2030."

The services by component segment in the data center liquid cooling market is anticipated to witness the highest CAGR due to the increasing complexity of liquid cooling systems, which require specialized installation and maintenance. As organizations move towards advanced cooling solutions, there is a high demand for consulting services that can help improve performance and energy efficiency. Edge computing also requires that specific cooling needs be catered for through specialized support. Moreover, continuous maintenance and enhancement are important for ensuring compliance and sustainability with emerging regulations in this aspect's growth.

"The small and mid-sized data center segment is expected to experience the fastest growth rate from 2024 to 2030."

Due to several key factors, small and mid-sized data centers are poised for the highest CAGR in liquid cooling adoption. These facilities often contend with space limitations, making liquid cooling solutions like direct-to-chip and immersion cooling particularly

attractive for their compact design and enhanced cooling efficiency. Furthermore, the increasing emphasis on energy efficiency and sustainability resonates with the operational objectives of smaller data centers, which seek to minimize energy expenditures. The growth of edge computing and IoT applications also drives the need for innovative cooling strategies, further accelerating the adoption of liquid cooling technologies in this segment. This convergence of factors positions small and mid-sized data centers as a critical driver of the liquid cooling market's expansion.

"The hyperscale data center segment within the liquid cooling market is expected to experience the fastest compound annual growth rate (CAGR) from 2024 to 2030."

Hyperscale data centers are anticipated to experience the highest CAGR due to their capacity to efficiently handle large volumes of data while providing scalability and cost advantages. The surge in demand for cloud services and big data analytics propels investments in these infrastructures, allowing for swift expansion to address consumer requirements. Furthermore, innovations in energy-efficient technologies and advanced cooling methods improve their operational performance, making them more attractive for investment. As more businesses transition to cloud solutions, hyperscale data centers offer the agility and capability needed for high-performance workloads. This trend is further driven by the increasing use of artificial intelligence and machine learning, which necessitate significant computational power, reinforcing the hyperscale model as essential in contemporary data infrastructure.

"The liquid cooling market for data centers within the IT and Telecom sectors is anticipated to have the fastest compound annual growth rate (CAGR) from 2024 to 2030."

This growth is attributed to a variety of influencing factors. Rapid digital transformation across various industries is creating a need for enhanced data processing and storage solutions. The growing adoption of cloud computing, big data analytics, and artificial intelligence requires infrastructure capable of managing increased heat output efficiently. Additionally, the rollout of 5G networks boosts bandwidth requirements, leading to greater demand for data centers that utilize effective cooling methods. The expansion of IoT devices also calls for scalable cooling systems to accommodate the increasing number of connected devices. These developments highlight the necessity for innovative cooling technologies that improve energy efficiency and support high-performance operations in the IT and Telecom domains.

"The data center liquid cooling market's cold plate liquid cooling segment is expected to experience the fastest compound annual growth rate (CAGR) between 2024 and 2030."

Due to several key factors, the cold plate liquid cooling segment is expected to achieve the market's highest compound annual growth rate (CAGR). Firstly, its capability to directly cool high-power components such as CPUs and GPUs effectively addresses the escalating heat densities in modern data centers. Secondly, advancements in cold plate technology have improved thermal performance, offering superior heat dissipation compared to traditional air cooling methods. Additionally, the increasing adoption of high-performance computing and artificial intelligence applications necessitates more efficient cooling solutions, further boosting demand. Moreover, the segment's energy efficiency benefits align well with global efforts to reduce environmental impact, enhancing its attractiveness to data center operators seeking sustainable cooling solutions.

"Asia Pacific region's data center liquid cooling market is also anticipated to achieve the highest CAGR during the same period."

The Asia-Pacific region is projected to grow at the highest CAGR in the data center liquid cooling market due to several key drivers. Rapid digital transformation and increasing cloud adoption in countries like China and India lead to higher power densities in data centers. The growing demand for efficient cooling solutions is further fueled by the expansion of edge computing and IoT applications across the region. Additionally, supportive government initiatives to enhance energy efficiency and sustainability promote the adoption of advanced cooling technologies. Lastly, significant investments in data center infrastructure, particularly from tech giants and startups, are driving the growth of liquid cooling solutions in Asia-Pacific.

The distribution of the main participants in the report is as follows:

-□By Company Type: Tier 1 - 40%, Tier 2 - 20%, and Tier 3 - 40%

-□By Job Title: C-level Executives - 20%, Directors - 50%, and Other Roles - 30%

-□By Geographic Region: North America - 20%, Europe - 40%, Asia Pacific - 30%, Middle East & Africa - 5%, and South America - 5%

Rittal GmbH & Co. KG (Germany), Vertiv Group Corp. (US), Green Revolution Cooling Inc. (GRC) (US), Submer (Spain), Schneider Electric (France), LiquidStack Holding BV (US), Iceotope Precision Liquid Cooling (UK), COOLIT SYSTEMS (Canada), DUG Technology

(Australia), DCX Liquid Cooling Systems (Poland), Delta Power Solutions (Taiwan), Wiwynn (Taiwan), LiquidCool Solutions, Inc. (US), Midas Immersion Cooling (US), BOYD (US), Kaori Heat Treatment Co,. Ltd (Taiwan), Chilldyne, Inc. (US), Asperitas (Netherlands), and STULZ GMBH (Germany) are among the key players leading the market.

Research Coverage:

Based on component, data center type, type of cooling, end user, organization, and region, the report represents, divides, and forecasts the liquid cooling market for data centers. It provides an overview of the main factors influencing the market's growth, such as drivers, constraints, opportunities, and challenges specific to certain industries. It strategically profiles key providers of data center liquid cooling solutions and gives a thorough analysis of their market shares and core competencies; it also monitors and considers competitive actions, including expansion activities, agreements, and contracts, partnerships with other players in this field as well as acquisitions or divestments carried out by them. The report defines, segments, and forecasts the data center liquid cooling market based on components, data center types, types of cooling, end users, enterprises, and regions. It provides an overview of major factors influencing the growth of this market, such as drivers, restraints, opportunities, and industry-specific challenges. Additionally, it strategically profiles key players in the data center liquid cooling solutions industry, providing detailed analyses of their market shares and core competencies while keeping track of competitive events such as expansions, agreements, contracts, or partnerships made by these firms and their acquisitions or divestments.

Reasons to Buy the Report:

Market leaders and new entrants are expected to benefit from the report, which will provide them with close estimates of revenue figures for the forthcoming data center liquid cooling market and its segments. The report is also expected to assist stakeholders in improving their understanding of the competitive landscape in the market, obtaining insights for enhancing their business position and designing relevant go-to-market strategies. In addition, it allows them to comprehend the market's pulse and informs them about key drivers, restraints, challenges, and opportunities.

Insights from this report include:

- Analysis of key drivers (rising number of data centers and server density), restraints (high capital expenditure and maintenance), opportunities (emergence of AI, blockchain, and other advanced technologies) & challenges (lack of standardization) influencing growth in the liquid cooling solutions for the data center market.

- Product Development/Innovation: Detailed information on emerging technologies, research & development initiatives in liquid cooling within data centers.
- Market Development: Detailed analysis of data center liquid cooling market across different areas for analyzing lucrative markets - comprehensive details included in the report
- Market Diversification: Detailed information about innovative offerings and regions with no market penetration. We are considering investment opportunities as well as new products and services in the context of this cooling system
- Competitive Assessment: A thorough estimation involving how much share a particular firm has got, its strategies for increasing its size over time, and the range of products it sells, including Rittal GmbH & Co KG (Germany), Vertiv Group Corp. (US), Green Revolution Cooling Inc. (GRC) (US), Submer (Spain), Schneider Electric (France), LiquidStack Holding BV (US), Iceotope Precision Liquid Cooling (UK), COOLIT SYSTEMS (Canada), DUG Technology (Australia), DCX Liquid Cooling Systems (Poland), Delta Power Solutions (Taiwan), Wiwynn (Taiwan), LiquidCool Solutions, Inc. (US), Midas Immersion Cooling (US), BOYD (US), Kaori Heat Treatment Co, Ltd (Taiwan), Chilldyne, Inc. (US), Asperitas (Netherlands), and STULZ GMBH (Germany) are the key players in the data center liquid cooling market.

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