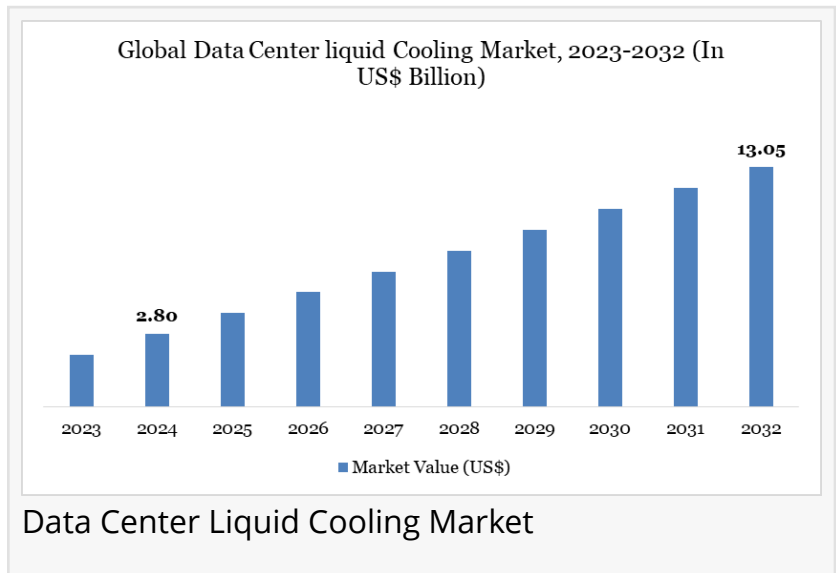


Data Center Liquid Cooling Market to Grow at a CAGR of 21.21% During 2025-2032 | DataM Intelligence

Data center liquid cooling market size, trends, growth drivers, and forecasts to 2032 with insights on innovations and key players.

CALIFORNIA, CA, UNITED STATES, September 2, 2025 /EINPresswire.com/ -- The global [data center liquid cooling market](#) is surging, with projections indicating growth from US\$ 2.80 billion in 2024 to US\$ 13.05 billion by 2032, reflecting a CAGR of 21.21%. This momentum is driven by the escalating demands for energy-efficient, sustainable cooling solutions in high-performance data centers, the rise of AI and HPC workloads, and increasing regulatory pressure to minimize environmental impact.



Data center liquid cooling refers to the use of liquid-based methods such as immersion and direct-to-chip cooling to dissipate heat generated by densely packed servers and advanced computing hardware. Compared to traditional air cooling, liquid cooling offers greater thermal efficiency, supports higher rack densities, and reduces both energy consumption and operational costs. Its importance is magnified in hyperscale data centers, colocation facilities, and edge sites managing computationally intensive tasks, such as artificial intelligence and big data analytics.

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United States: Recent Industry Developments

□ In July 2025, Microsoft announced the deployment of advanced two-phase liquid immersion cooling at its Arizona data centers. The system improves energy efficiency by 20%. It supports the company's goal of achieving carbon-negative operations by 2030.

- In June 2025, Intel invested \$150 million in U.S.-based startups focused on liquid cooling technologies. The initiative accelerates adoption of sustainable cooling solutions for AI and high-performance computing workloads. Pilot projects are set to begin in 2026.
- In May 2025, Google partnered with LiquidStack to implement large-scale immersion cooling systems in its Virginia cloud region. The solution reduces water usage while increasing rack density. It represents one of Google's largest liquid cooling deployments to date.

Japan: Recent Industry Developments

- In July 2025, NTT Data introduced a direct-to-chip liquid cooling solution in its Tokyo data center. The technology cuts cooling energy consumption by 30%. It enables high-density computing for AI and 5G applications.
- In June 2025, Fujitsu invested in next-generation liquid immersion cooling research with RIKEN. The project focuses on supercomputing and quantum computing infrastructure. Early results showed significant efficiency gains in HPC workloads.
- In May 2025, NEC Corporation launched a modular liquid cooling system for edge data centers in Osaka. The compact design supports rapid deployment in urban areas. It enhances sustainability while meeting Japan's growing digital demand.

Latest Strategic Developments (2024–2025)

- Microsoft's adoption of two-phase immersion cooling in its Azure data centers yielded a 15% improvement in energy efficiency, setting a key industry benchmark.
- Nvidia is integrating liquid cooling into next-generation GB200 servers to efficiently manage heat from powerful AI/ML workloads.
- Super Micro and Centuria Capital are leading in large-scale deployments, with over 1,000 liquid-cooled AI racks and full immersion cooling for edge data centers in Australia, respectively.
- Shell launched the DLC Fluid S3 (direct liquid cooling) solution in June 2025, offering a power usage effectiveness (PUE) improvement of up to 27% and extended fluid service life for AI-intensive operations.
- Aligned's DeltaFlow~ system, unveiled January 2024, supports densities up to 300kW per rack and can be customized for direct-to-chip, rear-door heat exchangers, and immersion cooling platforms.

Major Market Players

Prominent providers shaping this landscape include:

- Schneider Electric SE
- Vertiv Group Corporation
- Asetek A/S
- LiquidStack Inc.
- Submer Technologies SL
- CoolIT Systems Inc.
- Midas Green Technologies LLC

- Iceotope Technologies Limited
- Chilldyne Inc.
- Asperitas BV

These organizations are innovating to deliver scalable, modular, and sustainable liquid cooling solutions for hyperscale, enterprise, and edge data centers.

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Market Dynamics

Drivers

- Rapid AI and HPC growth requires cooling that can handle higher power densities and intensive, continuous workloads.
- Liquid cooling is aligned with global sustainability goals, reducing energy consumption, CO₂ emissions, and water use compared to legacy air systems.
- Regulatory mandates and customer sustainability targets are accelerating the adoption of high-efficiency cooling.
- Single-phase immersion cooling is increasingly favored for its operational simplicity and compatibility with existing data center designs, comprising over 55% of current liquid cooling installations.

Restraints

- Retrofitting legacy air-cooled data centers presents engineering challenges, high capex, infrastructure modification costs, and demands skilled maintenance teams.
- System complexity, risk of fluid leaks, and operational disruptions are still significant barriers for some facilities.

Opportunities

- Edge data centers, modular deployments, and greenfield facilities represent high-growth avenues for immersion and direct-to-chip cooling.
- Continuous R&D is reducing cost, improving reliability, and enabling newer cooling fluids and architectures for future-ready data centers.

Challenges

- Market adoption is slowed by retrofit complexity, especially in mature, mission-critical environments.
- Ongoing requirements for operator training, maintenance, and leak prevention.

Market Segments: Largest and Fastest Growing

Single-phase liquid cooling dominates for its efficiency, ease of integration, and adaptability especially in AI and cloud data centers. Applications span hyperscale, colocation, enterprise, and edge data centers across a wide range of sectors, including BFSI, government, telecom,

healthcare, and manufacturing.

Regional Analysis

North America leads the market, propelled by the US's rapid data center build-out, AI workload expansion, and regulatory focus on data center sustainability. US data centers already consume 4.4% of national electricity, with aggressive efficiency goals shaping technology selection. Asia-Pacific, Europe, and the Middle East are also experiencing fast growth, driven by digital transformation initiatives, rising cloud adoption, and new green data center investments.

Sustainability Analysis

Transitioning to liquid cooling offers data centers reductions in greenhouse gas emissions, energy demand, and water consumption up to 30–50% less water than air cooling, according to Microsoft studies.

Conclusion

Liquid cooling is transforming data center design, making high-density, sustainable operations possible for AI, cloud, and enterprise customers worldwide. Providers offering modular, easy-to-integrate, and energy-efficient solutions are poised for strong, continued growth as digital and sustainability imperatives intensify globally.

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Related Reports:

Global [Data Center Cooling Solutions market](#) is estimated to grow at a CAGR of 14.7% during the forecast period 2024-2031.

The Global [Data Center Infrastructure Management Market size](#) reached US\$ 2,001.6 million in 2022 and is projected to witness lucrative growth by reaching up to US\$ 4,154.1 million by 2030. The market is growing at a CAGR of 13.8% during the forecast period (2024-2031).

Sai Kumar

DataM Intelligence 4market Research LLP

+1 877-441-4866

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