

Immersion Cooling for Data Centers Market Forecasts to 2034 – Global Analysis By Cooling Type (Single-Phase Immersion Cooling and Two-Phase Immersion Cooling), System Component, Coolant Type, Data Center Type, Rack Density, Application, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Immersion Cooling for Data Centers Market is accounted for \$3.1 billion in 2026 and is expected to reach \$14.7 billion by 2034 growing at a CAGR of 21.5% during the forecast period. Immersion cooling is an advanced thermal management technology that submerges IT components directly in dielectric fluid, enabling superior heat transfer and support for extreme rack densities. The market encompasses single-phase and two-phase immersion cooling systems using mineral oils, synthetic fluids, fluorinated fluids, and engineered dielectric fluids. System components include immersion tanks, dielectric fluids, heat exchangers, pumps and circulation systems, coolant distribution systems, monitoring and control systems, and server and rack integration systems. These solutions serve hyperscale, colocation, enterprise, and edge data centers across cloud service providers, hyperscale operators, enterprises, government institutions, and financial services. Growing AI adoption, extreme rack densities, and sustainability requirements are key drivers of market expansion.

Market Dynamics:

Driver:

Extreme rack densities and thermal management requirements for AI workloads

The rapid increase in AI computing density and associated thermal management requirements is a primary driver for the immersion cooling for data centers market. AI accelerators generate heat fluxes that exceed the capabilities of even advanced air and liquid cooling solutions. Immersion cooling offers superior heat transfer by directly submerging components in dielectric fluid. The technology enables rack densities exceeding 100 kW while maintaining component reliability. As AI infrastructure deployments accelerate and rack densities increase, demand for immersion cooling expands, supporting sustained market growth.

Restraint:

High implementation costs and operational complexity

The significant costs associated with immersion cooling systems and operational complexity represent a major restraint for the market. Immersion cooling requires substantial investment in tanks, dielectric fluids, and facility modifications. Dielectric fluids represent ongoing operational costs. Server modifications may be required for immersion compatibility. Operational complexity increases with immersion cooling systems. These cost and complexity barriers may constrain market growth, particularly for smaller data center operators.

Opportunity:

Development of sustainable and efficient immersion cooling solutions

Continuous innovation in sustainable and efficient immersion cooling technologies presents significant opportunities for market expansion. Single-phase immersion offers simpler operation with lower fluid costs. Two-phase immersion provides superior heat transfer for extreme densities. Heat reuse applications enable district heating and other sustainability benefits. As sustainability concerns grow and efficiency requirements increase, innovative immersion cooling solutions capture growing market share.

Threat:

Technology maturity and market adoption challenges

The relative immaturity of immersion cooling technology and market adoption challenges pose significant threats to market growth. Immersion cooling is less established than traditional cooling approaches. Limited deployment experience may affect reliability perceptions. Standards and best practices are still developing. These maturity and adoption challenges may slow market growth.

Covid-19 Impact:

The COVID-19 pandemic accelerated immersion cooling for data centers market growth as AI and HPC adoption increased. The pandemic highlighted the importance of advanced computing infrastructure. Supply chain disruptions affected component availability. Post-pandemic, continued AI advancement and data center expansion have sustained strong demand for immersion cooling solutions.

The Single-Phase Immersion Cooling segment is expected to be the largest during the forecast period

The Single-Phase Immersion Cooling segment is expected to account for the largest market share during the forecast period, driven by its established technology, simpler operation, and lower fluid costs compared to two-phase systems. Single-phase immersion cooling uses dielectric fluid circulated without phase change, offering reliable operation with less complexity. The segment benefits from growing adoption in AI and HPC applications. As data center cooling requirements increase, single-phase immersion maintains the largest cooling type segment share.

The Two-Phase Immersion Cooling segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the Two-Phase Immersion Cooling segment is predicted to witness the highest growth rate, fueled by its superior heat transfer efficiency, ability to handle the most extreme heat fluxes, and growing adoption for demanding AI workloads. Two-phase immersion cooling uses phase-change fluids to absorb heat through boiling, offering exceptional thermal performance. The segment benefits from declining fluid costs and growing deployment experience. As AI densities increase, two-phase immersion delivers the fastest cooling type segment growth.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, supported by the concentration of AI and HPC data centers, advanced cooling technology providers, and significant investment in immersion cooling infrastructure. The United States leads regional growth with substantial deployment of immersion cooling in hyperscale and AI data centers. High concentration of technology innovation drives adoption. Well-established data center ecosystem supports market

growth. With technology leadership and strong investment, North America maintains its dominant market position.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, driven by rapid AI adoption, expanding data center infrastructure, and increasing investment in advanced cooling technologies across China, Japan, South Korea, and Southeast Asia. The region's large and growing digital economy creates substantial demand for immersion cooling solutions. Government initiatives promoting AI development support market growth. As AI adoption and data center capacity expand, Asia Pacific delivers the fastest immersion cooling for data centers market growth globally.

Key players in the market

Some of the key players in Immersion Cooling for Data Centers Market include Submer Technologies, LiquidStack Inc., GRC, Asperitas, Iceotope Technologies Limited, LiquidCool Solutions, Shell plc, Engineered Fluids, Inc., Vertiv Holdings Co., Schneider Electric SE, Fujitsu Limited, Midas Immersion Cooling, Allied Control Limited, and DCX – The Liquid Cooling Company.

Key Developments:

In September 2026, Submer launched the Corenix modular platform built on NVIDIA reference designs to accelerate turnkey immersion-cooled AI data center deployments across enterprise campuses.

In September 2026, Taiwan's LITEON completed a strategic investment in DCX to scale mass manufacturing and global distribution of its high-density immersion enclosures and CDUs.

In February 2026, Asperitas partnered with UNICOM Engineering to provide validated, turnkey immersion-cooled server appliances under a unified integration and warranty contract.

In February 2026, Trane Technologies entered into a definitive agreement to acquire LiquidStack, expanding its thermal management and immersion cooling footprint for gigawatt-scale AI computing facilities.

Cooling Types Covered:

Single-Phase Immersion Cooling

Two-Phase Immersion Cooling

System Components Covered:

Immersion Tanks

Dielectric Fluids

Heat Exchangers

Pumps and Circulation Systems

Coolant Distribution Systems

Monitoring and Control Systems

Server and Rack Integration Systems

Coolant Types Covered:

Mineral Oils

Synthetic Fluids

Fluorinated Fluids

Engineered Dielectric Fluids

Data Center Types Covered:

Hyperscale Data Centers

Colocation Data Centers

Enterprise Data Centers

Edge and Modular Data Centers

Rack Density Covered:

Below 20 kW per Rack

20–50 kW per Rack

50–100 kW per Rack

Above 100 kW per Rack

Applications Covered:

Artificial Intelligence and Machine Learning

High-Performance Computing

Cloud Computing

Cryptocurrency Mining

Telecommunications Processing

Scientific and Research Computing

End Users Covered:

Cloud Service Providers

Hyperscale Operators

Colocation Providers

Enterprises

Government and Research Institutions

Financial Services

Healthcare and Life Sciences

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY COOLING TYPE

- 5.1 Single-Phase Immersion Cooling
- 5.2 Two-Phase Immersion Cooling

6 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY SYSTEM COMPONENT

- 6.1 Immersion Tanks
- 6.2 Dielectric Fluids
- 6.3 Heat Exchangers
- 6.4 Pumps and Circulation Systems
- 6.5 Coolant Distribution Systems
- 6.6 Monitoring and Control Systems
- 6.7 Server and Rack Integration Systems

7 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY COOLANT TYPE

- 7.1 Mineral Oils
- 7.2 Synthetic Fluids
- 7.3 Fluorinated Fluids
- 7.4 Engineered Dielectric Fluids

8 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY DATA CENTER TYPE

- 8.1 Hyperscale Data Centers
- 8.2 Colocation Data Centers
- 8.3 Enterprise Data Centers
- 8.4 Edge and Modular Data Centers

9 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY RACK DENSITY

- 9.1 Below 20 kW per Rack
- 9.2 20–50 kW per Rack
- 9.3 50–100 kW per Rack
- 9.4 Above 100 kW per Rack

10 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY APPLICATION

- 10.1 Artificial Intelligence and Machine Learning
- 10.2 High-Performance Computing
- 10.3 Cloud Computing
- 10.4 Cryptocurrency Mining
- 10.5 Telecommunications Processing
- 10.6 Scientific and Research Computing

11 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY END USER

- 11.1 Cloud Service Providers
- 11.2 Hyperscale Operators
- 11.3 Colocation Providers
- 11.4 Enterprises
- 11.5 Government and Research Institutions
- 11.6 Financial Services
- 11.7 Healthcare and Life Sciences

12 GLOBAL IMMERSION COOLING FOR DATA CENTERS MARKET, BY GEOGRAPHY

- 12.1 North America
 - 12.1.1 United States
 - 12.1.2 Canada
 - 12.1.3 Mexico
- 12.2 Europe
 - 12.2.1 United Kingdom
 - 12.2.2 Germany
 - 12.2.3 France
 - 12.2.4 Italy

- 12.2.5 Spain
- 12.2.6 Netherlands
- 12.2.7 Belgium
- 12.2.8 Sweden
- 12.2.9 Switzerland
- 12.2.10 Poland
- 12.2.11 Rest of Europe
- 12.3 Asia Pacific
 - 12.3.1 China
 - 12.3.2 Japan
 - 12.3.3 India
 - 12.3.4 South Korea
 - 12.3.5 Australia
 - 12.3.6 Indonesia
 - 12.3.7 Thailand
 - 12.3.8 Malaysia
 - 12.3.9 Singapore
 - 12.3.10 Vietnam
 - 12.3.11 Rest of Asia Pacific
- 12.4 South America
 - 12.4.1 Brazil
 - 12.4.2 Argentina
 - 12.4.3 Colombia
 - 12.4.4 Chile
 - 12.4.5 Peru
 - 12.4.6 Rest of South America
- 12.5 Rest of the World (RoW)
 - 12.5.1 Middle East
 - 12.5.1.1 Saudi Arabia
 - 12.5.1.2 United Arab Emirates
 - 12.5.1.3 Qatar
 - 12.5.1.4 Israel
 - 12.5.1.5 Rest of Middle East
 - 12.5.2 Africa
 - 12.5.2.1 South Africa
 - 12.5.2.2 Egypt
 - 12.5.2.3 Morocco
 - 12.5.2.4 Rest of Africa

13 STRATEGIC MARKET INTELLIGENCE

- 13.1 Industry Value Network and Supply Chain Assessment
- 13.2 White-Space and Opportunity Mapping
- 13.3 Product Evolution and Market Life Cycle Analysis
- 13.4 Channel, Distributor, and Go-to-Market Assessment

14 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

- 14.1 Mergers and Acquisitions
- 14.2 Partnerships, Alliances, and Joint Ventures
- 14.3 New Product Launches and Certifications
- 14.4 Capacity Expansion and Investments
- 14.5 Other Strategic Initiatives

15 COMPANY PROFILES

- 15.1 Submer Technologies
- 15.2 LiquidStack Inc.
- 15.3 GRC
- 15.4 Asperitas
- 15.5 Iceotope Technologies Limited
- 15.6 LiquidCool Solutions
- 15.7 Shell plc
- 15.8 Engineered Fluids, Inc.
- 15.9 Vertiv Holdings Co.
- 15.10 Schneider Electric SE
- 15.11 Fujitsu Limited
- 15.12 Midas Immersion Cooling
- 15.13 Allied Control Limited
- 15.14 DCX – The Liquid Cooling Company

List of Tables

Table 1 Global Immersion Cooling for Data Centers Market Outlook, By Region (2023–2034) (\$MN)

Table 2 Global Immersion Cooling for Data Centers Market Outlook, By Cooling Type (2023–2034) (\$MN)

Table 3 Global Immersion Cooling for Data Centers Market Outlook, By Single-Phase Immersion Cooling (2023–2034) (\$MN)

Table 4 Global Immersion Cooling for Data Centers Market Outlook, By Two-Phase

Immersion Cooling (2023–2034) (\$MN)

Table 5 Global Immersion Cooling for Data Centers Market Outlook, By System Component (2023–2034) (\$MN)

Table 6 Global Immersion Cooling for Data Centers Market Outlook, By Immersion Tanks (2023–2034) (\$MN)

Table 7 Global Immersion Cooling for Data Centers Market Outlook, By Dielectric Fluids (2023–2034) (\$MN)

Table 8 Global Immersion Cooling for Data Centers Market Outlook, By Heat Exchangers (2023–2034) (\$MN)

Table 9 Global Immersion Cooling for Data Centers Market Outlook, By Pumps and Circulation Systems (2023–2034) (\$MN)

Table 10 Global Immersion Cooling for Data Centers Market Outlook, By Coolant Distribution Systems (2023–2034) (\$MN)

Table 11 Global Immersion Cooling for Data Centers Market Outlook, By Monitoring and Control Systems (2023–2034) (\$MN)

Table 12 Global Immersion Cooling for Data Centers Market Outlook, By Server and Rack Integration Systems (2023–2034) (\$MN)

Table 13 Global Immersion Cooling for Data Centers Market Outlook, By Coolant Type (2023–2034) (\$MN)

Table 14 Global Immersion Cooling for Data Centers Market Outlook, By Mineral Oils (2023–2034) (\$MN)

Table 15 Global Immersion Cooling for Data Centers Market Outlook, By Synthetic Fluids (2023–2034) (\$MN)

Table 16 Global Immersion Cooling for Data Centers Market Outlook, By Fluorinated Fluids (2023–2034) (\$MN)

Table 17 Global Immersion Cooling for Data Centers Market Outlook, By Engineered Dielectric Fluids (2023–2034) (\$MN)

Table 18 Global Immersion Cooling for Data Centers Market Outlook, By Data Center Type (2023–2034) (\$MN)

Table 19 Global Immersion Cooling for Data Centers Market Outlook, By Hyperscale Data Centers (2023–2034) (\$MN)

Table 20 Global Immersion Cooling for Data Centers Market Outlook, By Colocation Data Centers (2023–2034) (\$MN)

Table 21 Global Immersion Cooling for Data Centers Market Outlook, By Enterprise Data Centers (2023–2034) (\$MN)

Table 22 Global Immersion Cooling for Data Centers Market Outlook, By Edge and Modular Data Centers (2023–2034) (\$MN)

Table 23 Global Immersion Cooling for Data Centers Market Outlook, By Rack Density (2023–2034) (\$MN)

Table 24 Global Immersion Cooling for Data Centers Market Outlook, By Below 20 kW per Rack (2023–2034) (\$MN)

Table 25 Global Immersion Cooling for Data Centers Market Outlook, By 20–50 kW per Rack (2023–2034) (\$MN)

Table 26 Global Immersion Cooling for Data Centers Market Outlook, By 50–100 kW per Rack (2023–2034) (\$MN)

Table 27 Global Immersion Cooling for Data Centers Market Outlook, By Above 100 kW per Rack (2023–2034) (\$MN)

Table 28 Global Immersion Cooling for Data Centers Market Outlook, By Application (2023–2034) (\$MN)

Table 29 Global Immersion Cooling for Data Centers Market Outlook, By Artificial Intelligence and Machine Learning (2023–2034) (\$MN)

Table 30 Global Immersion Cooling for Data Centers Market Outlook, By High-Performance Computing (2023–2034) (\$MN)

Table 31 Global Immersion Cooling for Data Centers Market Outlook, By Cloud Computing (2023–2034) (\$MN)

Table 32 Global Immersion Cooling for Data Centers Market Outlook, By Cryptocurrency Mining (2023–2034) (\$MN)

Table 33 Global Immersion Cooling for Data Centers Market Outlook, By Telecommunications Processing (2023–2034) (\$MN)

Table 34 Global Immersion Cooling for Data Centers Market Outlook, By Scientific and Research Computing (2023–2034) (\$MN)

Table 35 Global Immersion Cooling for Data Centers Market Outlook, By End User (2023–2034) (\$MN)

Table 36 Global Immersion Cooling for Data Centers Market Outlook, By Cloud Service Providers (2023–2034) (\$MN)

Table 37 Global Immersion Cooling for Data Centers Market Outlook, By Hyperscale Operators (2023–2034) (\$MN)

Table 38 Global Immersion Cooling for Data Centers Market Outlook, By Colocation Providers (2023–2034) (\$MN)

Table 39 Global Immersion Cooling for Data Centers Market Outlook, By Enterprises (2023–2034) (\$MN)

Table 40 Global Immersion Cooling for Data Centers Market Outlook, By Government and Research Institutions (2023–2034) (\$MN)

Table 41 Global Immersion Cooling for Data Centers Market Outlook, By Financial Services (2023–2034) (\$MN)

Table 42 Global Immersion Cooling for Data Centers Market Outlook, By Healthcare and Life Sciences (2023–2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World

(RoW) Regions are also represented in the same manner as above.

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