

Immersion Cooling Market by Type (Single-Phase, Two-Phase), Application (High Performance Computing, Edge Computing, Cryptocurrency Mining), Cooling Fluid (Synthetic Oil, Mineral Oil), Component (Solutions, Services), and Region - Global Forecast to 2031

https://marketpublishers.com/r/I4B2D78905EEN.html

Date: December 2023

Pages: 240

Price: US\$ 4,950.00 (Single User License)

ID: I4B2D78905EEN

Abstracts

The immersion cooling market is projected to grow from USD 0.4 billion in 2023 to USD 2.1 billion by 2031, at a CAGR of 24.1% from 2023 to 2031. The development of more efficient and effective immersion cooling technologies is driving the market's growth, as these advancements enable better performance and reduced temperature increases, which are crucial for maintaining optimal system performance.

Immersion cooling technology is being used in various industries and applications where there is a need to efficiently cool electronic components, particularly in high-performance computing environments.

"By type, the single-phase segment is estimated to be the largest segment of the immersion cooling market from 2023 to 2031."

By type, single-phase are estimated to be the largest segment in the immersion cooling market in 2022. The driving force of the market is the efficiency of single-phase immersion cooling in dissipating heat. The dielectric liquid used in single-phase immersion cooling has a high heat capacity and thermal conductivity, allowing it to efficiently absorb and transfer heat away from electronic components. This results in enhanced cooling performance, enabling high-performance computing systems to operate at optimal temperatures, ultimately boosting overall system efficiency and



longevity.

"By application, the high performance computing is estimated to be the largest segment of the immersion cooling market from 2023 to 2031."

By application, the high performance computing is to lead the immersion cooling market. The technology's ability to address the heat dissipation challenges associated with HPC, coupled with its energy efficiency, environmental sustainability, and ongoing technological advancements, positions immersion cooling as a key player in the evolving landscape of data center cooling solutions.

"By cooling fluid, the synthetic fluids is estimated to be the largest segment of the immersion cooling market from 2023 to 2031."

By synthetic fluid, the synthetic fluids is to lead the immersion cooling market. Energy efficiency is a significant driver for the growth of the immersion cooling market with synthetic fluids. Synthetic fluids often exhibit better heat transfer characteristics than traditional cooling methods, leading to improved energy efficiency. By efficiently absorbing and dissipating heat from electronic components, synthetic fluids enable data centers to achieve better overall energy performance and reduce operational costs associated with cooling.

"Asia Pacific immersion cooling market is projected to witness the greatest during the forecast period."

During the forecast period, North America is projected to be the most significant market for immersion cooling. North America's emphasis on sustainability and energy efficiency has played a pivotal role in the rising popularity of immersion cooling solutions. As data centers strive to minimize their environmental impact and reduce energy consumption, the efficiency gains offered by immersion cooling become particularly attractive. By directly submerging hardware components in a dielectric liquid, these systems eliminate the need for traditional air conditioning, leading to significant energy savings and aligning with the region's commitment to green technologies.

Profile break-up of primary participants for the report:

By Company Type: Tier 1 – 40%, Tier 2 – 30%, and Tier 3 – 30%

By Designation: C-level Executives – 60%, Directors – 20%, and Others – 20%



By Region: North America – 30%, Europe – 30%, Asia Pacific – 30%, South America – 5%, Middle East & Africa – 5%

The immersion cooling market report is dominated by LiquidStack (Netherlands), Fujitsu (Japan), Green Revolution Cooling Inc (US), Submer (Spain), Asperitas (Netherlands), Midas Green Technologies (US), Iceotope Technologies Ltd (US), LiquidCool Solutions (US), and DUG Technology (Australia).

Research Coverage:

The report defines, segments, and projects the size of the immersion cooling market based on application, type, cooling fluid, components and region. It strategically profiles the key players and comprehensively analyzes their market share and core competencies. It also tracks and analyzes competitive developments such as expansions, product launches, partnerships, collaborations, agreements, and joint ventures undertaken by them in the market.

The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the automotive immersion cooling market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Reasons to Buy the Report:

The report is expected to help the market leaders/new entrants in the market by providing them the closest approximations of revenue numbers of the immersion cooling market and its segments. This report is also expected to help stakeholders obtain an improved understanding of the competitive landscape of the market, gain insights to improve the position of their businesses, and make suitable go-to-market strategies. It also enables stakeholders to understand the pulse of the market and provide them information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

• Analysis of key drivers (Adoption in cryptocurrency mining & blockchain, Growing density of servers, growing need for eco-friendly data center cooling solutions, and Increasing demand for compact and noise-free cooling solutions), restraints (Susceptibility to leakage, Air cooling remains dominant cooling technology),



opportunities (Adoption in low-density data servers, Emergence in AI, high-performance electronics, telecom, and other technology, Development of cooling solutions for deployment in harsh environments, High density cooling requirements), and challenges (High investment in existing infrastructure, Retrofitting immersion cooling solutions in large and medium scale data centers) influencing the growth of the immersion cooling market.

- Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the immersion cooling market.
- Market Development: Comprehensive information about lucrative markets the report analyses the immersion cooling market across varied regions.
- Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in immersion cooling market.
- Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading as well as other players in the immersion cooling market.



Contents

1 INTRODUCTION

- 1.1 STUDY OBJECTIVES
- 1.2 MARKET DEFINITION
- 1.3 INCLUSIONS AND EXCLUSIONS

TABLE 1 IMMERSION COOLING MARKET, BY TYPE: INCLUSIONS AND EXCLUSIONS

TABLE 2 IMMERSION COOLING MARKET, BY COOLING FLUID: INCLUSIONS AND EXCLUSIONS

TABLE 3 IMMERSION COOLING MARKET, BY COMPONENT: INCLUSIONS AND EXCLUSIONS

TABLE 4 IMMERSION COOLING MARKET, BY APPLICATION: INCLUSIONS AND EXCLUSIONS

TABLE 5 IMMERSION COOLING MARKET, BY REGION: INCLUSIONS AND EXCLUSIONS

- 1.4 MARKET SCOPE
 - 1.4.1 IMMERSION COOLING MARKET SEGMENTATION
 - 1.4.2 REGIONS COVERED
 - 1.4.3 YEARS CONSIDERED
- 1.5 CURRENCY
- 1.6 STAKEHOLDERS
- 1.7 SUMMARY OF CHANGES

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 1 IMMERSION COOLING MARKET: RESEARCH DESIGN

- 2.1.1 SECONDARY DATA
 - 2.1.1.1 Key data from secondary sources
- 2.1.2 PRIMARY DATA
 - 2.1.2.1 Key data from primary sources
 - 2.1.2.2 Key industry insights
 - 2.1.2.3 Breakdown of primary interviews
 - 2.1.2.4 Primary participants
- 2.2 MARKET SIZE ESTIMATION
 - 2.2.1 BOTTOM-UP APPROACH

FIGURE 2 MARKET SIZE ESTIMATION: BOTTOM-UP APPROACH



2.2.2 TOP-DOWN APPROACH

FIGURE 3 MARKET SIZE ESTIMATION: TOP-DOWN APPROACH

2.3 CALCULATION OF BASE MARKET SIZE

2.3.1 SUPPLY-SIDE APPROACH

FIGURE 4 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 1 (SUPPLY SIDE)

2.3.2 DEMAND-SIDE APPROACH

FIGURE 5 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 2—BOTTOM-UP (DEMAND SIDE)

2.4 DATA TRIANGULATION

FIGURE 6 IMMERSION COOLING MARKET: DATA TRIANGULATION

2.5 GROWTH RATE ASSUMPTIONS/GROWTH FORECAST

TABLE 6 FACTOR ANALYSIS

2.6 ASSUMPTIONS

2.7 RISK ASSESSMENT

TABLE 7 LIMITATIONS AND ASSOCIATED RISKS

3 EXECUTIVE SUMMARY

FIGURE 7 HIGH-PERFORMANCE COMPUTING TO ACCOUNT FOR LARGEST SHARE OF IMMERSION COOLING MARKET

FIGURE 8 SYNTHETIC FLUIDS SEGMENT TO DOMINATE IMMERSION COOLING MARKET DURING FORECAST PERIOD

FIGURE 9 SINGLE-PHASE IMMERSION COOLING SEGMENT TO LEAD IMMERSION COOLING MARKET

FIGURE 10 SOLUTIONS SEGMENT TO ACCOUNT FOR LARGER SHARE OF OVERALL IMMERSION COOLING MARKET

FIGURE 11 NORTH AMERICA TO ACCOUNT FOR LARGEST SHARE OF IMMERSION COOLING MARKET

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE OPPORTUNITIES FOR PLAYERS IN IMMERSION COOLING MARKET

FIGURE 12 ADOPTION IN CRYPTOCURRENCY MINING AND GROWING SERVER DENSITY DRIVING GROWTH

4.2 IMMERSION COOLING MARKET, BY REGION

FIGURE 13 ASIA PACIFIC IMMERSION COOLING MARKET PROJECTED TO WITNESS HIGHEST CAGR FROM 2023 TO 2031



4.3 NORTH AMERICA IMMERSION COOLING MARKET, BY APPLICATION AND COUNTRY

FIGURE 14 CRYPTOCURRENCY MINING ACCOUNTED FOR LARGEST SHARE OF NORTH AMERICA IMMERSION COOLING MARKET

4.4 IMMERSION COOLING MARKET, BY MAJOR COUNTRIES

FIGURE 15 IMMERSION COOLING MARKET IN CHINA PROJECTED TO WITNESS HIGHEST CAGR FROM 2023 TO 2031

5 MARKET OVERVIEW

5.1 INTRODUCTION

FIGURE 16 IMMERSION COOLING MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

- **5.1.1 DRIVERS**
 - 5.1.1.1 Adoption in cryptocurrency mining & blockchain
- 5.1.1.2 Growing density of servers

FIGURE 17 AVERAGE SERVER RACK DENSITY, 2016-2020

5.1.1.3 Growing need for eco-friendly data center cooling solutions

TABLE 8 CARBON FOOTPRINT OF AIR-COOLING VERSUS IMMERSION-COOLING FOR DATA CENTERS

- 5.1.1.4 Rising need for cost-effective cooling solutions
- TABLE 9 AIR-COOLING VERSUS IMMERSION-COOLING FOR DATA CENTERS
 - 5.1.1.5 Increasing demand for compact and noise-free solutions

TABLE 10 COMPARATIVE NOISE LEVEL

- 5.1.2 RESTRAINTS
 - 5.1.2.1 Susceptibility to leakage
 - 5.1.2.2 Dominance of air cooling technology
- 5.1.3 OPPORTUNITIES
 - 5.1.3.1 Adoption in low-density data centers
- 5.1.3.2 Emergence of AI, high-performance electronics, telecom, and other technologies
- 5.1.3.3 Development of cooling solutions for deployment in harsh environments TABLE 11 WATER CONSUMPTION IN AIR-COOLING VERSUS IMMERSION-COOLING FOR DATA CENTERS
 - 5.1.3.4 High-density cooling requirements
 - 5.1.4 CHALLENGES
 - 5.1.4.1 High investments in existing infrastructure
- 5.1.4.2 Retrofitting immersion cooling solutions in large and medium-scale data centers



5.2 PORTER'S FIVE FORCES ANALYSIS

FIGURE 18 IMMERSION COOLING MARKET: PORTER'S FIVE FORCES ANALYSIS TABLE 12 IMMERSION COOLING MARKET: PORTER'S FIVE FORCES ANALYSIS

- 5.2.1 BARGAINING POWER OF SUPPLIERS
- 5.2.2 BARGAINING POWER OF BUYERS
- 5.2.3 THREAT OF SUBSTITUTES
- **5.2.4 THREAT OF NEW ENTRANTS**
- 5.2.5 INTENSITY OF COMPETITIVE RIVALRY
- 5.3 TRENDS/DISRUPTIONS IMPACTING CUSTOMERS' BUSINESSES FIGURE 19 REVENUE SHIFTS AND NEW REVENUE POCKETS IN IMMERSION COOLING MARKET
- 5.4 PRICING ANALYSIS
- 5.4.1 AVERAGE SELLING PRICE TREND OF KEY PLAYERS, BY TYPE
 FIGURE 20 AVERAGE SELLING PRICE TREND OF KEY PLAYERS, BY TYPE
 TABLE 13 AVERAGE SELLING PRICE TREND OF KEY PLAYERS, BY TYPE (USD/L)
 5.4.2 AVERAGE SELLING PRICE OF IMMERSION COOLING FLUIDS. BY
- FIGURE 21 AVERAGE SELLING PRICE OF IMMERSION COOLING FLUIDS, BY REGION

TABLE 14 AVERAGE SELLING PRICE TREND OF IMMERSION COOLING FLUIDS, BY REGION (USD/L)

5.5 SUPPLY CHAIN ANALYSIS

FIGURE 22 IMMERSION COOLING MARKET: SUPPLY CHAIN ANALYSIS

5.6 ECOSYSTEM/MARKET MAP

FIGURE 23 IMMERSION COOLING MARKET: ECOSYSTEM MAPPING

TABLE 15 IMMERSION COOLING MARKET: ROLE IN ECOSYSTEM

5.7 TECHNOLOGY ANALYSIS

FIGURE 24 TYPES OF IMMERSION COOLING SOLUTIONS

- 5.7.1 SINGLE-PHASE
 - 5.7.1.1 IT chassis
 - 5.7.1.2 Tub/Open bath
- 5.7.2 TWO-PHASE
 - 5.7.2.1 Tub/Open bath
- **5.7.3 HYBRID**
- 5.8 PATENTS ANALYSIS
 - 5.8.1 INTRODUCTION
 - 5.8.2 METHODOLOGY
 - 5.8.3 DOCUMENT TYPE

FIGURE 25 NUMBER OF GRANTED PATENTS, PATENT APPLICATIONS, AND LIMITED PATENTS



FIGURE 26 PATENT PUBLICATION TRENDS (2011–2022)

5.8.4 INSIGHTS

FIGURE 27 TOP JURISDICTIONS FOR IMMERSION COOLING SOLUTION PATENTS

FIGURE 28 COMPANIES/APPLICANTS WITH HIGHEST NUMBER OF PATENTS TABLE 16 LIST OF PATENTS PERTAINING TO IMMERSION COOLING MARKET, 2017–2021

TABLE 17 TOP 10 PATENT OWNERS IN LAST 10 YEARS

5.9 TRADE DATA

5.9.1 IMPORT SCENARIO

FIGURE 29 IMMERSION COOLING FLUIDS IMPORT, BY KEY COUNTRIES, 2018–2022 (USD BILLION)

5.9.2 EXPORT SCENARIO

FIGURE 30 IMMERSION COOLING FLUIDS EXPORT, BY KEY COUNTRIES, 2018–2022 (USD BILLION)

5.10 KEY CONFERENCES & EVENTS

TABLE 18 IMMERSION COOLING MARKET: CONFERENCES & EVENTS (2022 & 2023)

5.11 TARIFF & REGULATORY LANDSCAPE

5.11.1 OPEN COMPUTE PROJECT (OCP) - QUALITY & SAFETY REQUIREMENTS FOR IMMERSION COOLING TECHNOLOGY

5.11.2 OPEN COMPUTE PROJECT (OCP) - DIELECTRIC COOLING FLUID REQUIREMENTS FOR DATA CENTER APPLICATIONS

TABLE 19 DIELECTRIC COOLING FLUID SPECIFICATIONS

TABLE 20 DIELECTRIC COOLING FLUID MINIMUM REQUIREMENTS

TABLE 21 HYDROCARBON FLUIDS QUALITY MANAGEMENT TABLE

TABLE 22 FLUOROCARBON FLUIDS QUALITY MANAGEMENT TABLE

5.11.3 IMMERSION COOLING TECHNOLOGY - COUNTRY/REGIONAL

REGULATIONS

5.11.3.1 US

5.11.3.2 Europe

5.11.3.3 China

5.11.3.4 Japan

5.11.3.5 India

TABLE 23 APPROACHES IN INDIAN CONTEXT

5.11.4 REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 24 NORTH AMERICA: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS



TABLE 25 EUROPE: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

5.12 KEY STAKEHOLDERS & BUYING CRITERIA

5.12.1 KEY STAKEHOLDERS IN BUYING PROCESS

FIGURE 31 INFLUENCE OF STAKEHOLDERS IN BUYING PROCESS FOR TOP THREE APPLICATIONS

5.12.1.1 Buying criteria for cryptocurrency mining

5.12.2 BUYING CRITERIA

TABLE 26 KEY BUYING CRITERIA

FIGURE 32 KEY BUYING CRITERIA FOR TOP THREE APPLICATIONS

5.13 MARKETING CHANNELS USED BY IMMERSION COOLING SOLUTION

PROVIDERS: COMPARATIVE ANALYSIS

5.13.1 B2B MARKETING CHANNELS - COMPARATIVE ANALYSIS

TABLE 27 DETAILS OF DIFFERENT DISTRIBUTION CHANNELS

5.14 PARTNERS OF IMMERSION COOLING COMPANIES

5.14.1 PARTNERSHIPS

TABLE 28 LIST OF PARTNER COMPANIES OF MAJOR IMMERSION COOLING SOLUTION PROVIDERS

5.15 TOTAL COST OF OWNERSHIP

TABLE 29 AVERAGE PRICE OF COOLING FLUID (USD/LITER)

5.16 CASE STUDY ANALYSIS

5.16.1 ASPERITAS AND ITRENEW PARTNER TO BRING SUSTAINABLE, PLUG-AND-PLAY DATA CENTER SOLUTION FULL CIRCLE

5.16.2 DUG REDUCED ENERGY SPENDING IN DATA CENTER BY ADOPTING GRC'S IMMERSION COOLING TECHNOLOGY

5.16.3 MICROSOFT CHOSE IMMERSION COOLING TECHNOLOGY BY LIQUIDSTACK FOR ITS CLOUD SERVERS

5.16.4 BITFURY GROUP ENHANCES DATA CENTER COOLING EFFICIENCY USING 3M'S ENGINEERED FLUIDS

5.16.5 MACQUARIE TELECOM GROUP TO DEPLOY SUBMER'S IMMERSION COOLING SOLUTIONS AT ITS DATA CENTERS

5.16.6 NTT DATA CORPORATION TO ADOPT LIQUIDSTACK'S TWO-PHASE IMMERSION COOLING SOLUTIONS AT ITS DATA CENTERS

6 IMMERSION COOLING MARKET, BY TYPE

6.1 INTRODUCTION

FIGURE 33 IMMERSION COOLING MARKET, BY TYPE, 2023 & 2031 (USD MILLION) TABLE 30 IMMERSION COOLING MARKET, BY TYPE, 2017–2022 (USD MILLION)



TABLE 31 IMMERSION COOLING MARKET, BY TYPE, 2023–2031 (USD MILLION) 6.2 SINGLE-PHASE IMMERSION COOLING

6.2.1 OFFERS EFFICIENT COOLING AND LOW MAINTENANCE

TABLE 32 SINGLE-PHASE IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 33 SINGLE-PHASE IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION)

6.3 TWO-PHASE IMMERSION COOLING

6.3.1 FLUID LOSS REMAINS PRIMARY CONCERN IN TWO-PHASE IMMERSION COOLING SYSTEMS

TABLE 34 TWO-PHASE IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 35 TWO-PHASE IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION)

7 IMMERSION COOLING MARKET, BY APPLICATION

7.1 INTRODUCTION

FIGURE 34 IMMERSION COOLING MARKET, BY APPLICATION, 2023 & 2031 (USD MILLION)

TABLE 36 IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 37 IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

7.2 HIGH-PERFORMANCE COMPUTING

7.2.1 NEED FOR HIGH-EFFICIENCY COOLING TO DRIVE MARKET

TABLE 38 IMMERSION COOLING MARKET IN HIGH-PERFORMANCE COMPUTING, BY REGION, 2017–2022 (USD MILLION)

TABLE 39 IMMERSION COOLING MARKET IN HIGH-PERFORMANCE COMPUTING, BY REGION, 2023–2031 (USD MILLION)

7.3 EDGE COMPUTING

7.3.1 EDGE COMPUTING GAINING TRACTION IN OIL & GAS, DEFENSE, AND TELECOM INDUSTRIES

TABLE 40 IMMERSION COOLING MARKET IN EDGE COMPUTING, BY REGION, 2017–2022 (USD MILLION)

TABLE 41 IMMERSION COOLING MARKET IN EDGE COMPUTING, BY REGION, 2023–2031 (USD MILLION)

7.4 ARTIFICIAL INTELLIGENCE

7.4.1 DIGITAL TRANSFORMATION OF COMPANIES EXPECTED TO DRIVE



MARKET IN AI APPLICATION SEGMENT

TABLE 42 IMMERSION COOLING MARKET IN ARTIFICIAL INTELLIGENCE, BY REGION, 2017–2022 (USD MILLION)

TABLE 43 IMMERSION COOLING MARKET IN ARTIFICIAL INTELLIGENCE, BY REGION, 2023–2031 (USD MILLION)

7.5 CRYPTOCURRENCY MINING

7.5.1 IMMERSION COOLING MARKET TO WITNESS HIGHEST GROWTH IN CRYPTOCURRENCY MINING APPLICATION

TABLE 44 IMMERSION COOLING MARKET IN CRYPTOCURRENCY MINING, BY REGION, 2017–2022 (USD MILLION)

TABLE 45 IMMERSION COOLING MARKET IN CRYPTOCURRENCY MINING, BY REGION, 2023–2031 (USD MILLION)

7.6 OTHERS

TABLE 46 IMMERSION COOLING MARKET IN OTHER APPLICATIONS, BY REGION, 2017–2022 (USD MILLION)

TABLE 47 IMMERSION COOLING MARKET IN OTHER APPLICATIONS, BY REGION, 2023–2031 (USD MILLION)

8 IMMERSION COOLING MARKET, BY COMPONENT

8.1 INTRODUCTION

FIGURE 35 IMMERSION COOLING MARKET, BY COMPONENT, 2023 & 2031 (USD MILLION)

TABLE 48 IMMERSION COOLING MARKET, BY COMPONENT, 2017–2022 (USD MILLION)

TABLE 49 IMMERSION COOLING MARKET, BY COMPONENT, 2023–2031 (USD MILLION)

8.2 SOLUTIONS

8.2.1 GROWING DEMAND FOR HIGH-DENSITY SERVER COOLING TO DRIVE MARKET

TABLE 50 SOLUTIONS: IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 51 SOLUTIONS: IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION)

8.3 SERVICES

8.3.1 ASIA PACIFIC TO WITNESS HIGHEST GROWTH IN SERVICES SEGMENT TABLE 52 SERVICES: IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 53 SERVICES: IMMERSION COOLING MARKET, BY REGION, 2023–2031



(USD MILLION)

9 IMMERSION COOLING MARKET, BY COOLING FLUID

9.1 INTRODUCTION

FIGURE 36 IMMERSION COOLING MARKET, BY COOLING FLUID, 2023 & 2031 (USD MILLION)

TABLE 54 IMMERSION COOLING MARKET, BY COOLING FLUID, 2017–2022 (USD MILLION)

TABLE 55 IMMERSION COOLING MARKET, BY COOLING FLUID, 2023–2031 (USD MILLION)

9.2 MINERAL OIL

9.2.1 ASIA PACIFIC TO BE FASTEST-GROWING MARKET FOR MINERAL OIL SEGMENT

TABLE 56 MINERAL OIL: IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 57 MINERAL OIL: IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION)

9.3 FLUOROCARBON-BASED FLUIDS

9.3.1 FLUOROCARBON-BASED FLUIDS INCREASINGLY USED IN HIGH-PERFORMANCE LIQUID COOLING APPLICATIONS

TABLE 58 FLUOROCARBON-BASED FLUIDS: IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 59 FLUOROCARBON-BASED FLUIDS: IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION)

9.4 SYNTHETIC FLUIDS

9.4.1 LOW CORROSION & LOW FLAMMABILITY FUELING DEMAND

TABLE 60 SYNTHETIC FLUIDS: IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 61 SYNTHETIC FLUIDS: IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION)

9.5 OTHERS

TABLE 62 OTHER FLUIDS: IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION)

TABLE 63 OTHER FLUIDS: IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION)

10 IMMERSION COOLING MARKET, BY REGION



10.1 INTRODUCTION

FIGURE 37 IMMERSION COOLING MARKET IN CHINA TO WITNESS HIGHEST CAGR DURING FORECAST PERIOD

TABLE 64 IMMERSION COOLING MARKET, BY REGION, 2017–2022 (USD MILLION) TABLE 65 IMMERSION COOLING MARKET, BY REGION, 2023–2031 (USD MILLION) 10.2 ASIA PACIFIC

FIGURE 38 ASIA PACIFIC: IMMERSION COOLING MARKET SNAPSHOT TABLE 66 ASIA PACIFIC: IMMERSION COOLING MARKET, BY COUNTRY, 2017–2022 (USD MILLION)

TABLE 67 ASIA PACIFIC: IMMERSION COOLING MARKET, BY COUNTRY, 2023–2031 (USD MILLION)

TABLE 68 ASIA PACIFIC: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 69 ASIA PACIFIC: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

TABLE 70 ASIA PACIFIC: IMMERSION COOLING MARKET, BY TYPE, 2017–2022 (USD MILLION)

TABLE 71 ASIA PACIFIC: IMMERSION COOLING MARKET, BY TYPE, 2023–2031 (USD MILLION)

TABLE 72 ASIA PACIFIC: IMMERSION COOLING MARKET, BY COOLING FLUID, 2017–2022 (USD MILLION)

TABLE 73 ASIA PACIFIC: IMMERSION COOLING MARKET, BY COOLING FLUID, 2023–2031 (USD MILLION)

TABLE 74 ASIA PACIFIC: IMMERSION COOLING MARKET, BY COMPONENT, 2017–2022 (USD MILLION)

TABLE 75 ASIA PACIFIC: IMMERSION COOLING MARKET, BY COMPONENT, 2023–2031 (USD MILLION)

10.2.1 CHINA

10.2.1.1 Rise in number of data centers to drive market

TABLE 76 CHINA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 77 CHINA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.2.2 INDIA

10.2.2.1 Surging demand from data centers to boost market

TABLE 78 INDIA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 79 INDIA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)



10.2.3 JAPAN

10.2.3.1 Redesigning of existing data center facilities to drive market

TABLE 80 JAPAN: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 81 JAPAN: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.2.4 SOUTH KOREA

10.2.4.1 Advancements in AI and cryptocurrency mining to drive market

TABLE 82 SOUTH KOREA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 83 SOUTH KOREA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.2.5 THAILAND

10.2.5.1 Expansion of digital hardware infrastructure to fuel market

TABLE 84 THAILAND: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 85 THAILAND: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.2.6 MALAYSIA

10.2.6.1 Rapid cloud service adoption to fuel market

TABLE 86 MALAYSIA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 87 MALAYSIA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.2.7 REST OF ASIA PACIFIC

TABLE 88 REST OF ASIA PACIFIC: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 89 REST OF ASIA PACIFIC: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.3 EUROPE

FIGURE 39 EUROPE: IMMERSION COOLING MARKET SNAPSHOT

TABLE 90 EUROPE: IMMERSION COOLING MARKET, BY COUNTRY, 2017–2022 (USD MILLION)

TABLE 91 EUROPE: IMMERSION COOLING MARKET, BY COUNTRY, 2023–2031 (USD MILLION)

TABLE 92 EUROPE: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 93 EUROPE: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)



TABLE 94 EUROPE: IMMERSION COOLING MARKET, BY TYPE, 2017–2022 (USD MILLION)

TABLE 95 EUROPE: IMMERSION COOLING MARKET, BY TYPE, 2023–2031 (USD MILLION)

TABLE 96 EUROPE: IMMERSION COOLING MARKET, BY COOLING FLUID, 2017–2022 (USD MILLION)

TABLE 97 EUROPE: IMMERSION COOLING MARKET, BY COOLING FLUID, 2023–2031 (USD MILLION)

TABLE 98 EUROPE: IMMERSION COOLING MARKET, BY COMPONENT, 2017–2022 (USD MILLION)

TABLE 99 EUROPE: IMMERSION COOLING MARKET, BY COMPONENT, 2023–2031 (USD MILLION)

10.3.1 GERMANY

10.3.1.1 Attractive investments and growth of data centers to boost market TABLE 100 GERMANY: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 101 GERMANY: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.3.2 FRANCE

10.3.2.1 Rising demand for immersion cooling from cloud providers to drive market TABLE 102 FRANCE: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 103 FRANCE: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.3.3 NETHERLANDS

10.3.3.1 Use of green energy for data centers to propel market

TABLE 104 NETHERLANDS: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 105 NETHERLANDS: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.3.4 UK

10.3.4.1 New eco-design requirements set by European parliament for servers and data centers to drive market

TABLE 106 UK: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 107 UK: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.3.5 RUSSIA

10.3.5.1 Growing demand for computing resources and data storage systems to drive



market

TABLE 108 RUSSIA: IMMERSION COOLING MARKET, BY APPLICATION,

2017-2022 (USD MILLION)

TABLE 109 RUSSIA: IMMERSION COOLING MARKET, BY APPLICATION,

2023–2031 (USD MILLION)

10.3.6 SPAIN

10.3.6.1 Innovations in cloud computing to boost demand for data center solutions

TABLE 110 SPAIN: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 111 SPAIN: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.3.7 REST OF EUROPE

TABLE 112 REST OF EUROPE: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 113 REST OF EUROPE: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.4 NORTH AMERICA

FIGURE 40 NORTH AMERICA: IMMERSION COOLING MARKET SNAPSHOT

TABLE 114 NORTH AMERICA: IMMERSION COOLING MARKET, BY COUNTRY, 2017–2022 (USD MILLION)

TABLE 115 NORTH AMERICA: IMMERSION COOLING MARKET, BY COUNTRY, 2023–2031 (USD MILLION)

TABLE 116 NORTH AMERICA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 117 NORTH AMERICA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

TABLE 118 NORTH AMERICA: IMMERSION COOLING MARKET, BY TYPE, 2017–2022 (USD MILLION)

TABLE 119 NORTH AMERICA: IMMERSION COOLING MARKET, BY TYPE, 2023–2031 (USD MILLION)

TABLE 120 NORTH AMERICA: IMMERSION COOLING MARKET, BY COOLING FLUID, 2017–2022 (USD MILLION)

TABLE 121 NORTH AMERICA: IMMERSION COOLING MARKET, BY COOLING FLUID, 2023–2031 (USD MILLION)

TABLE 122 NORTH AMERICA: IMMERSION COOLING MARKET, BY COMPONENT, 2017–2022 (USD MILLION)

TABLE 123 NORTH AMERICA: IMMERSION COOLING MARKET, BY COMPONENT, 2023–2031 (USD MILLION)

10.4.1 US



10.4.1.1 Surging demand from cryptocurrency providers to drive market

TABLE 124 US: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 125 US: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.4.2 CANADA

10.4.2.1 Increasing digitalization and massive data generation to drive market TABLE 126 CANADA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 127 CANADA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.4.3 MEXICO

10.4.3.1 Big data and automation technologies to drive market

TABLE 128 MEXICO: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 129 MEXICO: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

10.5 MIDDLE EAST & AFRICA

TABLE 130 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 131 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)

TABLE 132 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY TYPE, 2017–2022 (USD MILLION)

TABLE 133 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY TYPE, 2023–2031 (USD MILLION)

TABLE 134 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY COOLING FLUID, 2017–2022 (USD MILLION)

TABLE 135 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY COOLING FLUID, 2023–2031 (USD MILLION)

TABLE 136 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY COMPONENT, 2017–2022 (USD MILLION)

TABLE 137 MIDDLE EAST & AFRICA: IMMERSION COOLING MARKET, BY COMPONENT, 2023–2031 (USD MILLION)

10.6 SOUTH AMERICA

TABLE 138 SOUTH AMERICA: IMMERSION COOLING MARKET, BY APPLICATION, 2017–2022 (USD MILLION)

TABLE 139 SOUTH AMERICA: IMMERSION COOLING MARKET, BY APPLICATION, 2023–2031 (USD MILLION)



TABLE 140 SOUTH AMERICA: IMMERSION COOLING MARKET, BY TYPE, 2017–2022 (USD MILLION)

TABLE 141 SOUTH AMERICA: IMMERSION COOLING MARKET, BY TYPE, 2023–2031 (USD MILLION)

TABLE 142 SOUTH AMERICA: IMMERSION COOLING MARKET, BY COOLING FLUID, 2017–2022 (USD MILLION)

TABLE 143 SOUTH AMERICA: IMMERSION COOLING MARKET, BY COOLING FLUID, 2023–2031 (USD MILLION)

TABLE 144 SOUTH AMERICA: IMMERSION COOLING MARKET, BY COMPONENT, 2017–2022 (USD MILLION)

TABLE 145 SOUTH AMERICA: IMMERSION COOLING MARKET, BY COMPONENT, 2023–2031 (USD MILLION)

11 COMPETITIVE LANDSCAPE

- 11.1 INTRODUCTION
- 11.2 STRATEGIES ADOPTED BY KEY MARKET PLAYERS
- 11.2.1 STRATEGIES ADOPTED BY KEY IMMERSION COOLING TECHNOLOGY PROVIDERS
- 11.3 MARKET SHARE ANALYSIS
 - 11.3.1 RANKING OF KEY MARKET PLAYERS, 2022

FIGURE 41 RANKING OF TOP FIVE PLAYERS IN IMMERSION COOLING MARKET, 2022

11.3.2 MARKET SHARE OF KEY PLAYERS

TABLE 146 IMMERSION COOLING MARKET: DEGREE OF COMPETITION FIGURE 42 LEADING PLAYERS ACCOUNTED FOR 60% TO 70% OF GLOBAL MARKET IN 2022

- 11.4 COMPANY EVALUATION MATRIX
 - 11.4.1 STARS
 - 11.4.2 EMERGING LEADERS
 - 11.4.3 PERVASIVE PLAYERS
 - 11.4.4 PARTICIPANTS

FIGURE 43 IMMERSION COOLING MARKET: COMPANY EVALUATION MATRIX, 2022

11.4.5 COMPANY FOOTPRINT

FIGURE 44 IMMERSION COOLING MARKET: COMPANY PRODUCT FOOTPRINT

- 11.4.6 COMPANY PRODUCT TYPE FOOTPRINT
- 11.4.7 COMPANY APPLICATION FOOTPRINT
- 11.4.8 COMPANY REGION FOOTPRINT



11.4.9 COMPANY OVERALL FOOTPRINT

11.5 STARTUP/SME EVALUATION MATRIX

11.5.1 PROGRESSIVE COMPANIES

11.5.2 RESPONSIVE COMPANIES

11.5.3 DYNAMIC COMPANIES

11.5.4 STARTING BLOCKS

FIGURE 45 IMMERSION COOLING MARKET: STARTUP/SME EVALUATION MATRIX, 2022

11.5.5 COMPETITIVE BENCHMARKING

TABLE 147 IMMERSION COOLING MARKET: DETAILED LIST OF KEY START-UPS/SMES

TABLE 148 IMMERSION COOLING MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/SMES

11.6 COMPETITIVE SCENARIO AND TRENDS

TABLE 149 IMMERSION COOLING MARKET: PRODUCT LAUNCHES, 2018–2022

TABLE 150 IMMERSION COOLING MARKET: DEALS, 2018–2022 TABLE 151 IMMERSION COOLING MARKET: OTHERS, 2018–2022

12 COMPANY PROFILES

12.1 KEY COMPANIES

(Business Overview, Products Offered, Recent Developments, and MnM View (Key strengths/Right to Win, Strategic Choices Made, and Weaknesses and Competitive Threats))*

12.1.1 GREEN REVOLUTION COOLING INC.

TABLE 152 GREEN REVOLUTION COOLING INC.: COMPANY OVERVIEW

12.1.2 SUBMER

TABLE 153 SUBMER: COMPANY OVERVIEW

12.1.3 ASPERITAS

TABLE 154 ASPERITAS: COMPANY OVERVIEW

12.1.4 LIQUIDSTACK

TABLE 155 LIQUIDSTACK: COMPANY OVERVIEW

12.1.5 MIDAS IMMERSION COOLING

TABLE 156 MIDAS IMMERSION COOLING: COMPANY OVERVIEW

12.1.6 FUJITSU

TABLE 157 FUJITSU: COMPANY OVERVIEW FIGURE 46 FUJITSU: COMPANY SNAPSHOT 12.1.7 ICEOTOPE TECHNOLOGIES LIMITED

TABLE 158 ICEOTOPE TECHNOLOGIES LIMITED: COMPANY OVERVIEW



12.1.8 LIQUIDCOOL SOLUTIONS

TABLE 159 LIQUIDCOOL SOLUTIONS: COMPANY OVERVIEW

12.1.9 DUG TECHNOLOGY

TABLE 160 DUG TECHNOLOGY: COMPANY OVERVIEW

FIGURE 47 DUG TECHNOLOGY: COMPANY SNAPSHOT

12.1.10 DCX- THE LIQUID COOLING COMPANY

TABLE 161 DCX -THE LIQUID COOLING COMPANY: COMPANY OVERVIEW

12.1.11 BITFURY GROUP LIMITED

TABLE 162 BITFURY GROUP LIMITED: COMPANY OVERVIEW

12.1.12 3M

TABLE 163 3M: COMPANY OVERVIEW

12.1.13 ENGINEERED FLUIDS

TABLE 164 ENGINEERED FLUIDS: COMPANY OVERVIEW

12.1.14 TEIMMERS

TABLE 165 TEIMMERS: COMPANY OVERVIEW

12.1.15 TMGCORE, INC.

TABLE 166 TMGCORE, INC.: COMPANY OVERVIEW

12.1.16 GIGA-BYTE TECHNOLOGY CO., LTD.

TABLE 167 GIGA-BYTE TECHNOLOGY CO., LTD.: COMPANY OVERVIEW

FIGURE 48 GIGA-BYTE TECHNOLOGY CO., LTD.: COMPANY SNAPSHOT

12.1.17 WIWYNN

TABLE 168 WIWYNN: COMPANY OVERVIEW

FIGURE 49 WIWYNN: COMPANY SNAPSHOT

12.1.18 HYPERTEC

TABLE 169 HYPERTEC: COMPANY OVERVIEW

12.1.19 PEZY COMPUTING

TABLE 170 PEZY COMPUTING: COMPANY OVERVIEW

12.1.20 PRASA

TABLE 171 PRASA: COMPANY OVERVIEW

12.1.21 2CRSI GROUP

TABLE 172 2CRSI GROUP: COMPANY OVERVIEW

12.1.22 KAORI HEAT TREATMENT CO., LTD.

TABLE 173 KAORI HEAT TREATMENT CO., LTD.: COMPANY OVERVIEW

12.1.23 TAS

TABLE 174 TAS: COMPANY OVERVIEW

12.1.24 DELTA POWER SOLUTIONS

TABLE 175 DELTA POWER SOLUTIONS: COMPANY OVERVIEW

FIGURE 50 DELTA POWER SOLUTIONS: COMPANY SNAPSHOT

12.1.25 BOYD



TABLE 176 BOYD: COMPANY OVERVIEW

12.1.26 RSI K.K.

TABLE 177 RSI K.K.: COMPANY OVERVIEW

*Details on Business Overview, Products Offered, Recent Developments, and MnM View (Key strengths/Right to Win, Strategic Choices Made, and Weaknesses and Competitive Threats) might not be captured in case of unlisted companies.

13 ADJACENT AND RELATED MARKETS

- 13.1 INTRODUCTION
- 13.2 LIMITATIONS
- 13.3 IMMERSION COOLING INTERCONNECTED MARKETS
 - 13.3.1 DATA CENTER LIQUID COOLING MARKET
 - 13.3.1.1 Market definition
 - 13.3.1.2 Market overview
 - 13.3.1.3 Data center liquid cooling market, by type of cooling
- 13.4 COLD PLATE LIQUID COOLING
 - 13.4.1 HIGH-DENSITY DATA CENTER INSTALLATION TO DRIVE DEMAND
- 13.5 IMMERSED LIQUID COOLING
- 13.5.1 LOW CARBON FOOTPRINT THROUGH IMMERSION LIQUID COOLING TO DRIVE SEGMENT

TABLE 178 DATA CENTER LIQUID COOLING MARKET, BY TYPE OF COOLING, 2017–2022 (USD MILLION)

TABLE 179 DATA CENTER LIQUID COOLING MARKET, BY TYPE OF COOLING, 2023–2028 (USD MILLION)

14 APPENDIX

- 14.1 DISCUSSION GUIDE
- 14.2 KNOWLEDGESTORE: MARKETSANDMARKETS' SUBSCRIPTION PORTAL
- 14.3 CUSTOMIZATION OPTIONS
- 14.4 RELATED REPORTS
- 14.5 AUTHOR DETAILS



I would like to order

Product name: Immersion Cooling Market by Type (Single-Phase, Two-Phase), Application (High

Performance Computing, Edge Computing, Cryptocurrency Mining), Cooling Fluid (Synthetic Oil, Mineral Oil), Component (Solutions, Services), and Region - Global

Forecast to 2031

Product link: https://marketpublishers.com/r/I4B2D78905EEN.html

Price: US\$ 4,950.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer

Service:

info@marketpublishers.com

Payment

First name:

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/l4B2D78905EEN.html

To pay by Wire Transfer, please, fill in your contact details in the form below:

Last name:	
Email:	
Company:	
Address:	
City:	
Zip code:	
Country:	
Tel:	
Fax:	
Your message:	
	**All fields are required
	Custumer signature

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at https://marketpublishers.com/docs/terms.html



To place an order via fax simply print this form, fill in the information below and fax the completed form to $+44\ 20\ 7900\ 3970$