

Growing Demand for High-Performance Computing, AI & Edge Computing is Driving the Global Immersion Cooling Market

Global immersion cooling market is expected to reach USD 990.2 million by 2031, growing at a compound yearly growth rate of 22.5% throughout this time period.

WILMINGTON, DELAWARE, UNITED STATES, November 29, 2023

/EINPresswire.com/ -- An ever-

increasing number of data centers, as well as a growing need for cost-

effective and environmentally friendly cooling systems, are driving the growth of the immersion cooling market.

The logo for TNR THE NICHE RESEARCH. The letters "TNR" are in a large, bold, orange font. Below them, the words "THE NICHE RESEARCH" are in a smaller, grey, sans-serif font.

Immersion cooling is a method of cooling computer hardware, typically data center servers and high-performance computing (HPC) systems, by submerging them in a non-conductive liquid coolant instead of using traditional air-based cooling methods. This technology is also sometimes referred to as liquid immersion cooling or liquid submersion cooling.

Despite these obstacles, immersion cooling is gaining popularity in the data center business, particularly for applications requiring high computational power and heat dissipation, such as AI training, cryptocurrency mining, and scientific simulations. Immersion cooling solutions may become more affordable and extensively used as technology advances.

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Global Immersion Cooling Market Snapshot

Market Value in 2022 : USD 239.8 Million

Market Value Forecast 2031: USD 990.2 Million

Growth Rate: 22.5%

Historical Data: 2015-2021

Base Year: 2022

Global Immersion Cooling Market Trends

World data centre power usage in 2021 was 220 to 320 terawatt hours, or 0.9% to 1.3% of world electricity demand, according to a 2022 International Energy Agency research. Increased energy consumption by data centres and the world's top supercomputers has propelled immersion cooling from science fiction to fringe technology to on-the-cusp-of-mainstream.

Immersion cooling is a new technique that is gaining traction in the data centre and high-performance computing (HPC) businesses. Rising processing power and performance needs, along with technological breakthroughs such as artificial intelligence (AI), the Internet of Things (IoT), and machine learning (ML), have resulted in increased temperatures within data centre infrastructure and IT equipment. Immersion cooling is thus widely used to minimise energy usage and cooling costs, matching with worldwide initiatives to reduce data centre carbon footprints.

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Liquid cooling has been widely used in a variety of industries, including a number of the most intense computer centres across various nations. Immersion cooling is used by some of the largest telecommunications companies, government organisations, and supercomputing and search centres. In the previous decade, for example, the United States Air Force (USAF), the National Security Agency (NSA), and various international oil and gas companies have installed immersion cooling systems. Intel, Facebook, and Google have all placed their support to liquid immersion cooling, and business and government are pushing to make it a standard. Thus with the above factors the immersion cooling market will experience tremendous growth in the upcoming years.

Key Highlights from the Global Immersion Cooling Market

- During the forecast period, synthetic based immersion cooling is projected to be the fastest growing segment in the global immersion cooling market. Due to the corrosive effects of numerous naturally occurring sulphur compounds in mineral oil, most prospective users of mineral oil-based cooling systems have shifted to synthetic fluid-based cooling systems in recent years. As synthetic fluids are often compatible with a wide range of electronic components, including servers, GPUs, and other hardware commonly found in data centers and HPC environments. In the forthcoming years, synthetic immersion cooling will highly be incorporated due to its less maintenance, efficient cooling and better thermal performance.
- According to TNR, the high-performance computer category accounts for the largest share of the immersion cooling market. The substantial proportion may be attributed to the fact that high-performance computing (HPC) is gaining popularity in a variety of industries, with businesses aiming to scale up sophisticated applications. Researchers, on the other hand, see higher retrofitting costs of current infrastructure, as well as the need for new specialised equipment, as potential restrictions on the expansion of the immersion cooling industry.

- Asia Pacific region is anticipated to be the fastest growing region in the immersion cooling market during the forecast period 2023-2031. Many Asian countries, including China, Japan, South Korea, and India, are rapidly expanding their data center infrastructure to meet the growing demand for cloud services, artificial intelligence (AI), and high-performance computing (HPC). For instance, KDDI Corporation, a Japanese telecommunications conglomerate, developed a new kind of transportable and environmentally friendly data centres. These "container-type immersion cooling small data centres" use "single-phase immersion cooling" to cut power usage by 43% and drop the PUE to less than 1.07. Furthermore, the market's top player GRC has teamed with Prasa, an Indian provider of data centre solutions, to introduce its cooling systems to the country.

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Competitive Landscape of Global Immersion Cooling Market

The competitive landscape of the global immersion cooling market is dynamic, with ongoing technological advancements, partnerships, and innovations. Emerging trends, changing customer requirements, strategic alliances, and acquisitions all have an impact on the competitive environment, making it a dynamic and developing market. As the market continues to evolve, competition is likely to intensify, leading to further innovations and improvements in immersion cooling technology.

Key Developments in the Global Immersion Cooling Market

- In 2021, Intel announced a partnership with Submer, an immersion cooling industry leader, to develop on Submer-cooled Intel Xeon processors in data centres. Intel announced a partnership with Green Revolution Cooling (GRC) in January 2022 to create and execute proprietary cutting-edge immersion cooling systems in future data centres and edge deployments.
- In September 2022, Cargill, a US food corporation, has developed an immersion cooling fluid for data centres based on plant products. NatureCool 2000 is a dielectric liquid developed for immersion cooling systems in data centres, crypto mining operations, and other industrial uses.
- In August 2022, OneAsia, a prominent provider of cloud-based solutions and data centre services in Asia, has introduced an immersion cooling system. The novel system, the first of its type in Hong Kong, drastically cuts data centre energy usage while also providing more dependable performance.

Major players operating in the global immersion cooling market are

- o 3M
- o Asperitas
- o Cargill, Incorporated
- o Dow
- o FlameIT - Immersion Cooling
- o FUCHS
- o Fujitsu

- o GIGA-BYTE Technology Co., Ltd.
- o Green Revolution Cooling, Inc.
- o LiquidStack
- o Prasa
- o SHELL
- o Submer
- o Other Industry Participants

Global Immersion Cooling Market

By Type

- o Single-Phase Immersion Cooling
- o Two-Phase Immersion Cooling

By Cooling Liquid

- o Mineral Oil
- o Synthetic
- o Fluorocarbon based
- o De-ionized water

By Application

- o High performance computing
- o Artificial Intelligence and Machine Learning
- o Cryptocurrency mining
- o Edge Computing
- o High frequency trading
- o Others

By Region

- o North America (U.S., Canada, Mexico, Rest of North America)
- o Europe (France, The UK, Spain, Germany, Italy, Nordic Countries (Denmark, Finland, Iceland, Sweden, Norway), Benelux Union (Belgium, The Netherlands, Luxembourg), Rest of Europe)
- o Asia Pacific (China, Japan, India, New Zealand, Australia, South Korea, Southeast Asia (Indonesia, Thailand, Malaysia, Singapore, Rest of Southeast Asia), Rest of Asia Pacific)
- o Middle East & Africa (Saudi Arabia, UAE, Egypt, Kuwait, South Africa, Rest of Middle East & Africa)
- o Latin America (Brazil, Argentina, Rest of Latin America)

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