

Cambodia Temperature-Controlled Server Rack Immersion Liquid Cooling



AI Overview

Immersion and direct-to-chip liquid cooling solutions provide high-efficiency, high-density server cooling suitable for Cambodia's data centers, supporting up to 120 kW per rack with precise temperature control.

Overview of Liquid Cooling Technologies Liquid cooling is increasingly adopted in high-performance computing (HPC), AI, and dense data centers due to its superior heat removal compared to air cooling. Two main approaches are used: direct-to-chip liquid cooling and immersion cooling. Direct-to-chip systems circulate coolant through cold plates attached to CPUs, GPUs, and DIMMs, efficiently removing heat at the source. Immersion cooling submerges servers in dielectric fluids, allowing uniform heat dissipation and reducing the need for fans.

Key Benefits

- High Power Density:** Supports racks with up to 120 kW per rack (LiquidRack) or 4 kW per server (LiquidCool Solutions), enabling compact, high-performance deployments.
- Energy Efficiency:** Reduces power usage effectiveness (PUE) to below 1.02, lowers fan noise, and allows heat recovery for other building uses.
- Reduced Fluid Volume:** Modern immersion systems use 1/3 of the fluid compared to traditional tanks, lowering cost and weight while maintaining cooling performance.
- Maintenance-Friendly:** Hot-swappable pumps, pull-out servers, and auto-lift systems simplify servicing without disrupting operations.
- Dielectric Fluids:** Safe for electronics, eliminating risk of damage from leaks and enabling higher outlet temperatures for free cooling.

Deployment Considerations in Cambodia

Climate Adaptation: Cambodia's tropical climate benefits from liquid cooling's ability to maintain stable server temperatures despite high ambient heat. Systems like LiquidRack can achieve outlet liquid temperatures up to 167°F, enabling free cooling even in warm conditions.

Infrastructure Integration: Both direct-to-chip and immersion...

Article Content

An introduction to liquid cooling in the data center

Although air-based cooling options exist for racks drawing more than 20kW, they are often cumbersome to install and maintain effectively, essentially

Case Study: Evaluating the SSD7540 Suitability for Deployment in ...

Case Study: Evaluating the SSD7540 Suitability for Deployment in Immersion Liquid-Cooled Server Rack Applications Deploying servers in physically challenging environments, such as regions prone

Vertiv™ CoolCenter Immersion | High Density Solutions

The Vertiv™ CoolCenter Immersion Cooling system utilizes a liquid cooling method in which servers and other rack components are submerged in a thermally

Datacenter Cooling Methods | Datacenter cooling best

Liquid Immersion Cooling implies using a dielectric coolant fluid to gather the heat from server components. Using dielectric fluid means that we can put it in direct

Immersion Cooling: Top 5 Design and Deployment

During the evolution of liquid cooling, we saw direct-to-chip liquid cooling solutions. Today, high-density, modular single-phase immersion cooling

Water-Cooled Servers Common Designs, Components, and

With more water-cooled IT products arriving in the marketplace, ASHRAE TC 9.9 felt the need to outline some of the common processes, parts, and materials for focus in use for future water-cooled designs.

A review of the immersion liquid cooling technology for high ...

Immersion liquid cooling (ILC) is analyzed as a critical solution for high-density data center. Two coolant types and three system configurations are evaluated, correlating them with applicable

LiquidCool Solutions: Immersion-Cooled Rack Servers

Meet soaring compute demands efficiently with LiquidCool Solutions" versatile, immersion cooling for high-performance GPU dense servers. Perfect for data centers, AI, edge computing, and tough

Liquid and Immersion Cooling Options for Data Centers

Long proven for mainframe and gaming applications, liquid cooling is expanding to protect rack-mounted servers in data centers worldwide. Vertiv has created a

Immersion Cooling for Data Centers: A Comprehensive

Immersion cooling is a cooling technique where servers and other data center hardware are submerged in a special liquid that does not conduct

Immersion cooling systems: Advantages and

Immersion cooling (see Figure 2) is a liquid cooling method in which servers and other rack components are submerged in a thermally conductive

Liquid and Immersion Cooling Options for Data Centers

As a result, data center operators are investigating their liquid cooling options. Liquid cooling leverages the higher thermal transfer properties of water or other fluids to

Immersion Cooling Is Ready for its Big Moment in the

Single-phase immersion cooling uses a thermally conductive dielectric liquid or coolant, either an engineered fluid or mineral oil. The servers and other IT

Supermicro Total Rack Scale Liquid Cooling Solutions

Supermicro provides total liquid-cooling solutions including hardware and management software. Supermicro delivers fully tested and validated solutions including servers, racks, networking, and

Computational study of single-phase immersion cooling for high

This study narrows that gap through the computational analysis of the cooling systems for the server rack. Considering the varying impacts of different parameters of the cooling methods, this

Data Center Liquid Cooling: The AI Heat Solution

In two-phase immersion cooling, a server is dunked into a vat of liquid. The liquid actively boils next to the heat-producing

What Is Immersion Cooling for Data Centers? – How It

Two-Phase Immersion Cooling Benefits of Liquid Immersion Cooling 1. Immersion Cooling Uses Less Energy than Air 2. Immersed Servers Do Not

Navigating Liquid Cooling Architectures for Data Centers with AI

These servers are equipped with input and output piping and require an ecosystem of manifolds, CDUs (cooling distribution) and outdoor heat rejection. There are six common heat rejection architectures

Rack-level cooling technologies for data centers – A comprehensive ...

1. Introduction With the rapid development of information technologies, electronics cooling application scenarios, such as communication base stations, enterprise server rooms for data

What is Server Cooling: System Types & How to

Server cooling technology removes excess heat from server rooms/data centers. Explore the different types & learn how to choose the best

How to Pick a Server Cooling Solution?

Discover effective server cooling solutions with in-depth analysis of air, liquid, and immersion methods. Explore key insights to optimize your data

Microsoft is now submerging servers into liquid baths

Microsoft is starting to use two-phase immersion in its data centers to cool servers using liquid baths. The cooling method could improve performance

SpellChecker/dict at main · CaiQiuL/SpellChecker · GitHub

Contribute to CaiQiuL/SpellChecker development by creating an account on GitHub.

Immersion liquid cooling for electronics: Materials, systems ...

The current work systematically reviews the research progress on immersion cooling technology in electronic device thermal management, including the properties of immersion coolants,

Contact Us

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