KAORI

Data Center Immersion Cooling Solutions

Low
Carbon Emission

Low
Energy Consumption

Low
Water Consumption

Status of Data Center

Data Centers are crucial in every industry. They provide stable operation and keep the world in order. But when running a data center, it consumes enormous power to operate and maintain servers, networking equipment, cooling systems, and other infrastructure.

According to a report by the U.S. Department of Energy, data centers consume about 2% of the total electricity used in the United States. Immersion cooling is definitely the best way for this issue. It can greatly reduce the energy consumption and create more spaces for data center because it doesn't need any hot & cold aisles, plenum & raised floor and duct network anymore.

Power Usage Effectiveness (PUE)

Power Usage Effectiveness (PUE) is an indicator for measuring the energy efficiency of a data center. The ratio shows the total power consumed by the data center to the power consumed by the IT equipment. Nowadays, the average Power Usage Effectiveness (PUE) is about 1.8.

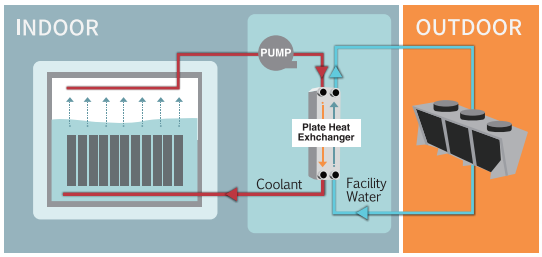
This means that for every watt of power used by the IT equipment, an additional 0.8 watts are used for cooling, lighting, and other overhead. To make the PUE lower, one of the ways is by using a more efficient cooling system, such as immersion cooling.The PUE can then reach 1.1or even lower in this case.

Advantages of immersion cooling for the planet

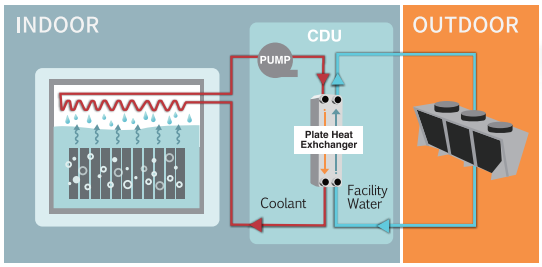
- In line with Green Building Label (EEWH) specifications
- Minimize the power consumption by 70%
- Reduces carbon footprint
- Suppression of air conditioning and air management systems (hot/cold aisles, plenum/raised floor, duct network)
- Reduces data center height requirements
- Up to 60 minutes of safe operation with-out cooling (High Specific Heat property)
- Minimizes server failure rate
- Improves thermal management
- Single rack density over 100kW
- Lower noise level ≦ 50dB
- Lower backup power
- Optimizes Total Cost of Ownership(TCO)

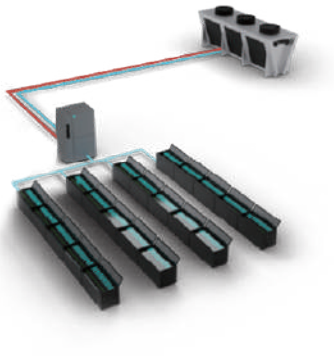
The KAORI Innovative Immersion Cooling Solution

Single Phase Immersion Cooling



Two Phase Immersion Cooling





KAORI has rich experiences for solving the energy efficiency issues and heat dissipating problem since 2017. By implementing this immersion cooling, fans and air conditioners are not necessary. That's how Kaori can significantly reduce the power consumption.

KAORI's data center immersion cooling solution includes Coolant Distribution Unit (CDU) & Tank, to cool down servers with dielectric liquid. KAORI provides 2U & 4U All-In-One solution for laboratory testing and also for the large scale application such as 25U & 42U split designed solution.

Key Features

Design and Manufacture 100% in house
Customized design for Coolant Distribution Unit (CDU), Immersion Tank, Piping Networks and Centralized Temperature Control System.

Key Component
Brazed Plate Heat Exchanger is a crucial part in CDU. KAORI is designer & manufacturer of Brazed Plate Heat Exchanger (BPHE) since 1994.

Capability of Mass Production

Experience in working with Hyperscale Data Center

Fully Support every steps
Installation, deployment, maintenance and warranty

Immersion Cooling for Crypto mining

When operating mining facilities, it consumes a large amount of electricity and extraordinary energy. Noise pollution are also one of the disadvantages. However, if you adopt immersion cooling on mining equipment, the operational environment can also be much quieter and friendly.

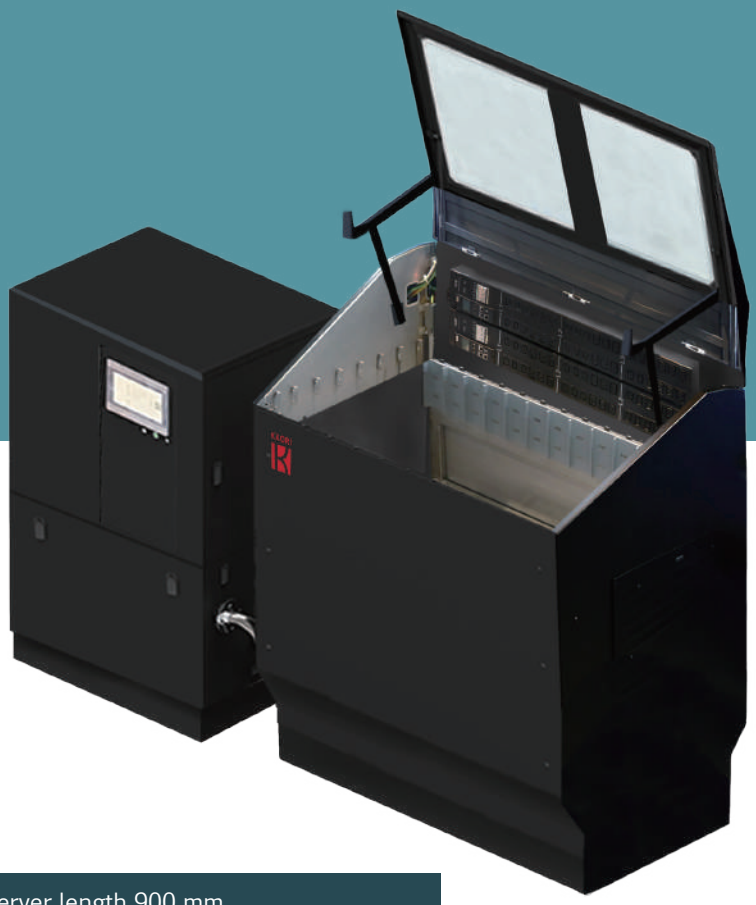
KAORI offers highly customizable immersion cooling to suit your needs.The immersion cooling features are:

- Container type
- Compact designed
- User-friendly (Plug and Play function)
- Easy Installation

Split-Designed Immersion Cooling Solution for Hyperscale Data Center

Features & Functions

- Single-phase & water-cooled
- Suitable for hyperscale data center, high power density server (>1kW/U)
- No chiller is required
- Flexible to design and easy to maintenance
- Remote monitoring tools & management



TANK

IT Hardware Capacity	19", 25U, max server length 900 mm
Liquid Volume	680 L
Dimensions	1280 (L) x 910 (W) x 1490 (H) mm
Weight	Dry: 400kg Wet: 900 kg

CDU

Solution Type	Water-cooled
Liquid Type	Hydrocarbons
Cooling Capacity	90kW, Water 35°C/ Liquid 50°C
Power Input	1Ø 220V 50/60Hz
Dimensions	880 (L) x 650 (W) x 1620 (H) mm
Ambient Temperature	15°C- 40°C
Weight	300 kg

All-In-One Immersion Tank for PoC

Features & Functions

- Single-phase designed
- Design for laboratory testing and demonstration
- Suitable for high power density server application (>1kW/U) and edge application
- These types of tanks can be also designed and placed in outdoor

2U3kW Demo Tank

IT Hardware Capacity	19", 2U, max server length 800mm	19", 2U, max server length 750mm
Solution Type	Air-cooled	Air-cooled
Liquid	Fluorocarbon	Hydrocarbons
Liquid volume	70 L	75 L
Cooling Capacity	3kW, Air 25°C / Liquid 45°C	3kW, Air 25 °C/ Liquid 40°C
Power Input	1Ø 220V 50/60Hz	1Ø 220V 50/60Hz
Dimensions	427 (L) x 856 (W) x 1360 (H) mm	453 (L) x 800 (W) x 1286 (H) mm
Ambient Temperature	15°C - 40 °C	
Weight	Dry: 178 kg / Wet: 305 kg	Dry: 178 kg / Wet: 238 kg

4U7kW Demo Tank

IT Hardware Capacity	19", 4U, max server length 900 mm	19", /OCP ,4U, max server length 1000 mm	19", 4U, max server length 900 mm
Solution Type	Air-cooled	Air-cooled	Water-cooled
Liquid	Fluorocarbon	Hydracarbons	Fluorocarbon
Liquid volume	120 L	200 L	120 L
Cooling Capacity	7kW, Air 25°C / Liquid 40°C	7kW, Air 25°C / Liquid 40°C	7kW, Air 30°C/ Liquid 38°C
Power Input	3Ø 380V 50/60Hz	3Ø 380V 50/60Hz	3Ø 380V 50/60Hz
Dimensions	600 (L) x 1200 (W) x 1480 (H) mm	1200 (L) x 1000 (W) x 1430 (H) mm	600 (L) x 1000 (W) x 1350 (H) mm
Ambient Temperature	15°C-40°C		
Weight	Dry: 250 kg / Wet: 470 kg	Dry: 400 kg / Wet: 580 kg	Dry: 400 kg / Wet: 580 kg

FINTECH
(CRYPTOMINING)

INDUSTRY
4.0

EDGE COMPUTING
(5G & TELCO)

RETAIL &
LOGISTIC

EDA TOOL

SERVER ROOM &
DATA CENTER

HPC / AI/ ML

ENERGY & POWER

SMART
HEALTHCARE

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