

Coolant Distribution Units

ME-CDU

Mitsubishi Electric Coolant Distribution Unit
operating from 700 kW to 1200 kW

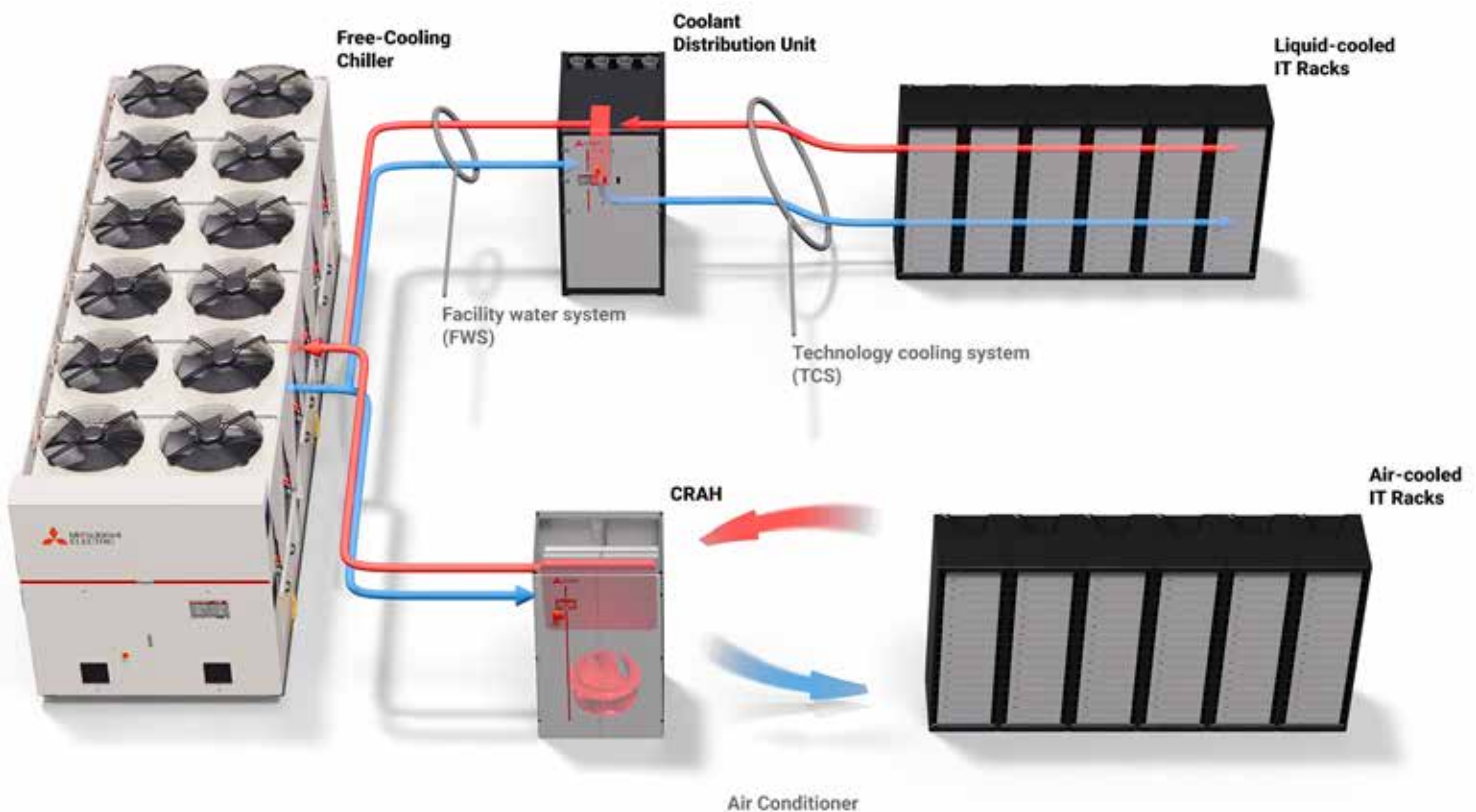


ME-CDU

Engineered for the AI era

ME-CDU is the new compact coolant distribution unit from Mitsubishi Electric, engineered to ensure reliable and efficient heat transfer in Direct-to-Chip (D2C) applications.

It ensures the hydraulic separation between the Facility water system and the Technology cooling system through a plate heat exchanger, protecting critical IT equipment and maintaining stable operating conditions.



ME-CDU introduces a new approach to operational continuity, specifically engineered for mission-critical environments where uptime is essential.



Integrated Design

The unit integrates all key components for safe and continuous operation, including pumps, filtration stages, sensors with redundancy, and fluid management.



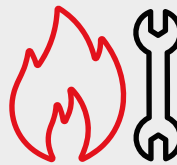
Installation

Designed for indoor installation in technical corridors, ME-CDU is the ideal solution for single-phase liquid cooling systems in advanced data center environments.



Material Quality

Built entirely in stainless steel, it guarantees long-term durability and low water contamination.



Hot-Swappable Serviceability

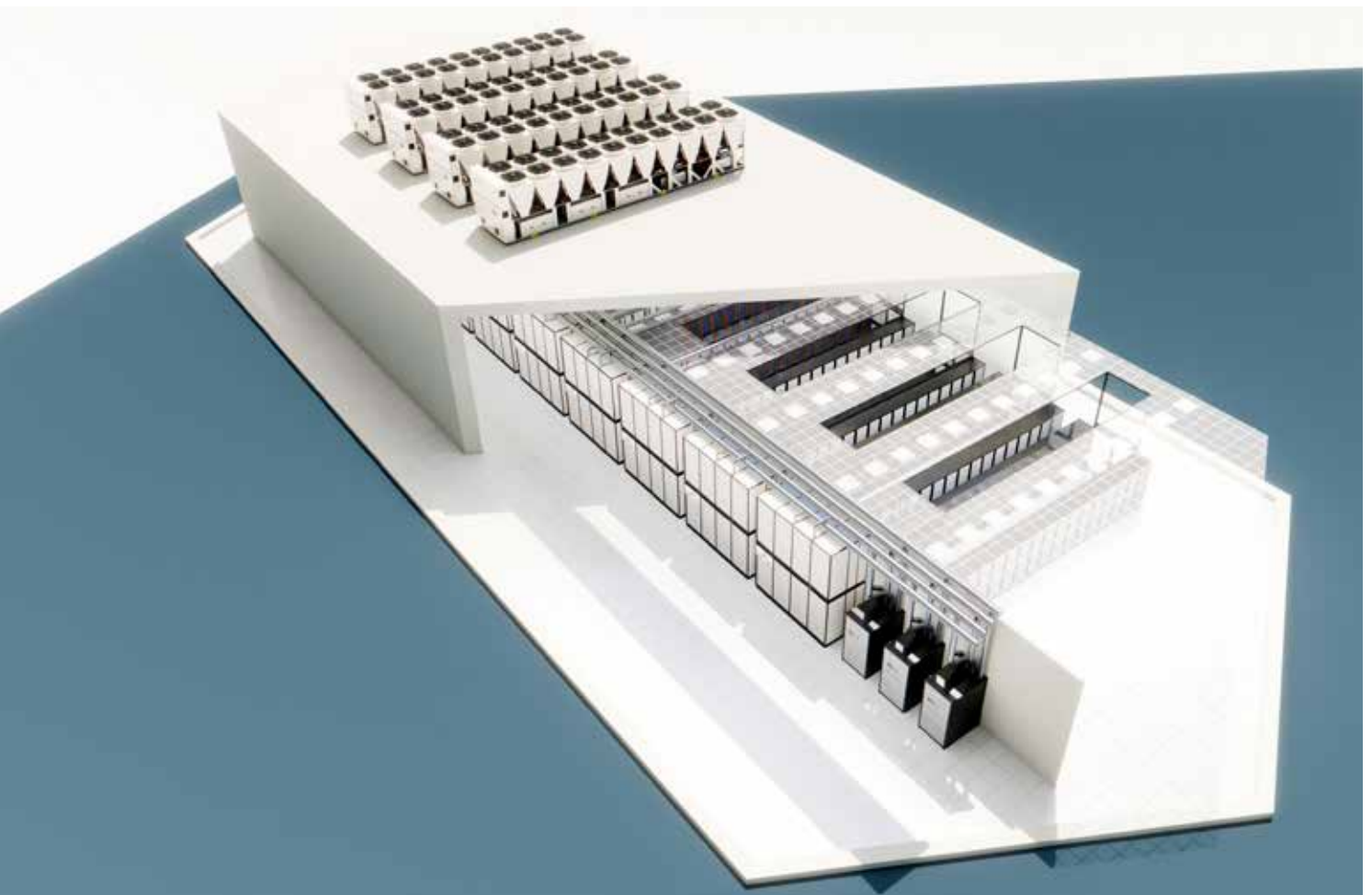
Serviceable and hot-swappable elements enable maintenance activities without requiring shutdown.



Hybrid Cooling Solution

ME-CDU is a key component of a complete hybrid cooling solution designed to meet the evolving requirements of high-density and AI-driven data centres. In this approach, liquid cooling and air-based technologies work together in a fully integrated system, each addressing a specific part of the thermal load.

The CDU enables direct-to-chip liquid cooling, removing heat exactly where it is generated, while water-based air conditioning units manage residual loads and maintain stable environmental conditions within the room. This combination ensures both precise thermal control at component level and overall stability of the white space.



At system level, heat is rejected through high-efficiency chillers with free cooling or external dry coolers, creating a consistent and optimised cooling chain. The result is a solution that improves overall energy efficiency, supports higher operating temperatures and enables greater use of free cooling.

By combining direct heat removal, environmental control and efficient heat rejection within a single architecture, hybrid cooling provides a scalable and future-ready solution, capable of supporting the continuous growth in data centre density and performance requirements.



Unlocking higher tokens per watt

ME-CDU as a performance enabler



The ME-CDU plays a central role in this architecture:

- 1 Ensures stable and precise thermal control at chip level
- 2 Maintains optimal operating conditions for GPUs
- 3 Supports high-temperature liquid loops, enabling free cooling
- 4 Guarantees continuous operation, avoiding performance drops

Result: AI systems can run at full potential, maximising output per unit of energy.

■ Liquid Cooling: unlocking higher tokens per watt

AI workloads are reshaping data centre design:

Power densities are rapidly increasing

GPUs operate at higher thermal loads

Energy efficiency is becoming a critical KPI

In this scenario, liquid cooling is not just an alternative, but an enabler of computer efficiency.

■ With direct-to-chip cooling:

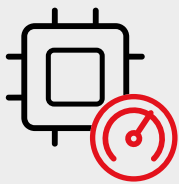
Heat is removed exactly where it is generated

Higher inlet temperatures are possible

Fan energy consumption is reduced

Thermal throttling is minimised

This results in:



Increased compute
utilisation



High rack
density



Improved overall
tokens-per-watt ratio



Flexibility and Serviceability

The ME-CDU range has been developed to maximise operational flexibility and long-term serviceability. Key components are designed to be hot-swappable, allowing maintenance and replacement activities to be carried out without interrupting operation, ensuring continuous uptime in critical environments. At the same time, the unit's open and versatile design supports a wide range of configurations and customisations, making it adaptable to different project requirements.

Particular attention has also been paid to serviceability and accessibility, with a layout that simplifies intervention, reduces maintenance time and improves overall.



Advanced Control Platform

ME-CDU is equipped with a newly developed control platform specifically designed for liquid cooling applications, ensuring precise, reliable and fully dedicated system management. Advanced temperature control regulates the supply temperature to the servers by modulating the primary circuit 2-way valve, ensuring stable and accurate thermal conditions.

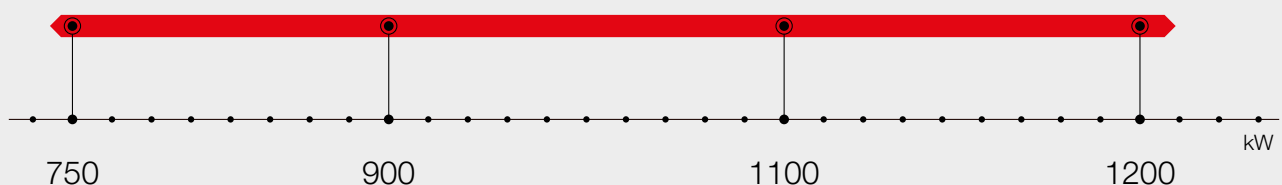
Flexible pump management allows operation based on differential pressure, temperature difference, flow rate or fixed speed, adapting to different system requirements.

Integrated monitoring and alarm management provide continuous supervision of unit status, supporting safe and reliable operation.

Built-in communication logic enables seamless integration with LAN and BMS systems, ensuring full visibility and control at system level.

From standard to standout: this range lets you tailor design, capacity, and controls to your needs.

■ 4 sizes, 2 versions from 750 to 1200 kW



Technological Choices

Structure

ME-CDU is built on a robust and streamlined design, focusing on reliability and operational simplicity, while integrating advanced features that enhance control, water quality and system durability. All wetted parts, including piping, pump components and the plate heat exchanger, are made of stainless steel, ensuring maximum resistance, durability.

Filters

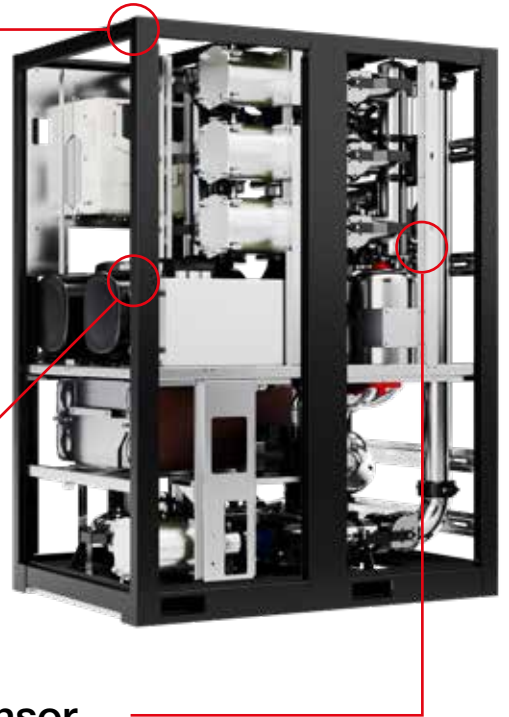
High-efficiency filtration further enhances system cleanliness, safeguarding sensitive components such as cold plates over time.

Control logic

A dedicated HMI has been specifically developed for ME-CDU, combining an intuitive interface with tailored control logic to provide precise management of the unit and simplify daily.

Fluid sensor

The unit can be equipped with additional sensors to continuously monitor fluid conditions, ensuring optimal water quality and protecting the secondary circuit from contamination.



Fluid Integrity, Guaranteed

ME-CDU ensures full control over the cooling fluid reaching the most sensitive components of the system. In the secondary circuit, only stainless steel components are in contact with the fluid, preserving its purity and preventing contamination over time. Advanced monitoring of key water parameters, including pH and conductivity, enables continuous supervision of fluid conditions, while high-efficiency filtration further protects the circuit. This combination of material quality, precise monitoring and effective filtration safeguards the integrity of cold plates and critical IT components, ensuring stable operation and long-term reliability. Integrated redundancy further enhances system continuity, minimizing risks and supporting uninterrupted performance.

Many Options for Many Solutions

A wide range of available accessories enhances the flexibility of the ME-CDU, enabling the unit to be configured according to specific project requirements and operational priorities.



Monitoring and sensing

Remote room temperature sensors to detect sudden temperature spikes and identify potential issues with air-cooled systems. Additional sensor redundancy to increase overall system reliability. Flow sensors on primary or secondary circuits to measure flow rate and display data locally or via BMS. Flood sensors to detect fluid leakage within the unit.



Electrical reliability and power quality

Harmonic filters to reduce distortions in current and voltage and protect connected components. Automatic Transfer Switch (ATS) with fast restart to maintain operation in case of power supply interruptions.



Hydraulic control and optimisation

EPIV 2-way valve with Modbus communication to regulate flow independently of pressure variations and ensure stable operation. Fluid flow meter available on request to provide additional monitoring where required.

Mitsubishi Electric
Hydronics & IT Cooling Systems S.p.A.

Headquarters:

Via Caduti di Cefalonia 1,
36061 Bassano del Grappa (VI) - Italy

Tel. : (+39) 0424 509 500

Mail : info@melcohit.com

Web : www.melcohit.com