NEWS RELEASE

Commencement of Sale of Immersion Cooling Fluid "ENEOS IX Series" Which Contributes to Reducing Environmental Load
~Environmentally Friendly Technology for the Future of Data Centers~

ENEOS Corporation (Representative Director: Tomohide Miyata) is pleased to announce today that it has commenced the sale of the Immersion Cooling Fluid for servers, "ENEOS IX Series," by the end of FY2023, which will contribute to the realization of a carbon neutral society.

In recent years, due to the rapid advancement of digitization technologies such as cloud computing, 5G, and generative AI, the number of data centers that can process large amounts of data at high speeds has increased, and the performance of servers has improved.

With this increase in performance and demand, the amount of power consumption and heat generation of servers in data centers are increasing rapidly. Efficient and reliable cooling is essential to prevent servers from breaking down due to heat generation. Reducing the power consumption of cooling equipment is a challenge for data centers. Immersion cooling, with its high cooling efficiency compared to conventional air cooling, is expected to contribute to energy conservation.

Global Predictions of Data Traffic Volume and DC Power Consumption

ZB : 10^{21}Byte
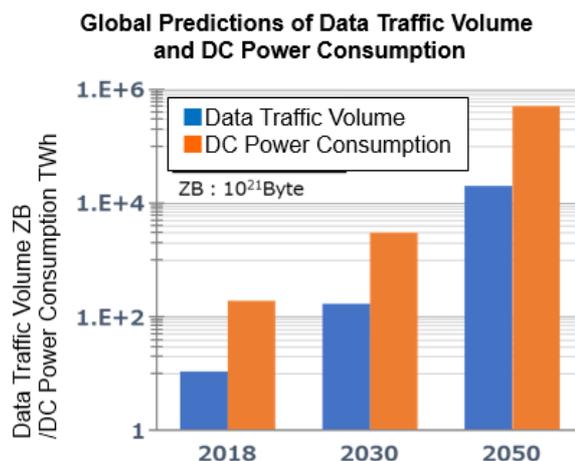
Source: Center for Low Carbon Society Strategy, Japan Science and Technology Agency

As part of our initiatives to realize a carbon neutral society, the company has focused on single-phase immersion cooling[1], which efficiently absorbs the heat generated by servers and achieves high cooling efficiency. We have also worked with related companies[2] to jointly develop products meeting the needs of the market, which has led to the launch of the Immersion Cooling Fluid "ENEOS IX Series."

Due to additive formulation technology, this product has high oxidation stability for a long usage period and is available in three lineups to meet various needs, with the aim of a global rollout.

[ENEOS IX Series Lineups]

1. **Type J** High flash point products: Products that pursue a cooling efficiency while having a flash point of ≧250 ℃, taking into account Japan's strict Fire Service Act

2. **Type H** High cooling efficiency products: Products that maximize cooling efficiency while having an ignition point of >300 ℃, which is the global standard

3. **Type B** Bio-based products: Products that are made from plants and can contribute to the further reduction of CO_2 emissions

In line with the ENEOS Group Long-Term Vision of achieving both a stable supply of energy and materials and a carbon neutral society, the company will contribute to the realization of a carbon-neutral society through the development and sale of lubricant products with high energy-saving performance.

*1 Schematic diagram of the single-phase immersion cooling method

https://datacenter-solution-forvice.com/iceraq/?hl=en
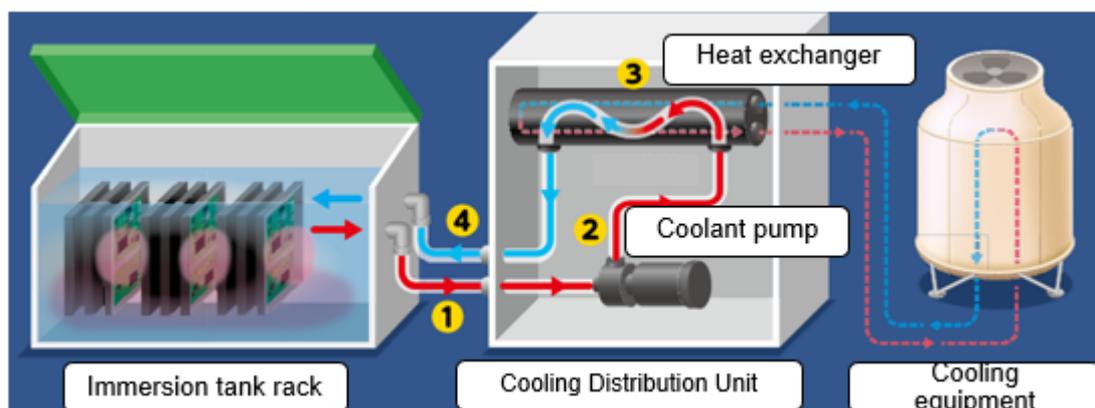
1. The immersion cooling fluid warmed by the exhaust heat from the server.
2. Circulate the immersion cooling fluid through the Cooling Distribution Unit (CDU).
3. Heat exchange using water cooled by a cooling tower, Dry Cooler, Chiller, or beneficial re-use system.
4. The cooled immersion cooling fluid returns to the rack.

*2 Related companies: KDDI, Intel, GRC

ENEOS Corporation [E'-ne-ohs]   **ENEOS Group** Japan's Premier Energy and Materials Corporate Group

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<Related Information>

・Participation in Phase 3 of KDDI demonstration experiment

Liquid cooling of servers in data centers, achieving a 94% reduction in cooling power

https://news.kddi.com/kddi/corporate/english/newsrelease/2023/03/06/6669.html

・Participation in the joint Intel and KDDI demonstration experiment

The two companies implemented the proof of concept test with the aim of verifying conditions such as reliability, material compatibility, and thermal efficiency of the Intel® Xeon® Scalable Platform in a liquid immersion environment.

https://networkbuilders.intel.com/docs/networkbuilders/intel-collaborates-with-kddi-to-drive-sustainable-immersion-cooling-data-center-solutions-1680176811.pdf

・Participation in GRC "ElectroSafe Fluid Partner Program"

https://www.grcooling.com/grc-eneos-immersion-cooling-fluids/

・A White Paper on immersion fluid was issued jointly by GRC and ENEOS

Whitepaper:grc_eneos_enhancing_data_center_performance.pdf

・Participation in the Open Compute Project (OCP) Community since September 2023

OCP is an open-source hardware project initiated by Meta with the aim of realizing energy conservation and cost reductions in data centers by open sourcing hardware and software. Many companies and organizations, including Meta, are participating in the project and working together to open source data center hardware, including liquid immersion cooling.

https://www.opencompute.org/