



New cooling solution uses water for single phase direct liquid cooling

## **Rittal develops megawatt cooling for AI**

Herborn, 2024-05-23.

**Artificial intelligence (AI) promises revolutionary benefits. Is the IT infrastructure ready? Data centre operators are breaking new technological ground with their technology partners. Rittal now presents a new cooling solution that delivers over 1 megawatt of cooling output and paves the way for AI. This is because the demand for computing power is growing so fast that a completely new level of scaling, cooling, power distribution and energy efficiency is required. The global system provider is thus entering a new and expanding field of IT cooling, in terms of both performance class and technology.**

The opportunities offered by artificial intelligence appear gigantic. In June 2023, McKinsey predicted that the increased productivity brought about by GenAI could add between USD 2.6 and 4.4 trillion a year to the global economy. "If even a fraction of this is could realised, the IT infrastructure would have to grow as quickly as possible and be technologically rethought in key areas," says Philipp Guth, CTO on Rittal International's Management Board.

The power density for AI applications such as the training and operation of large language models (LLMs) in future data centres or high-performance computing, which is already widespread, will rapidly push current conventional air cooling to its physical and economic limits. The new, ultra-fast graphics processing units (GPUs) produce so much heat that manufacturers are designing them for powerful direct liquid cooling.

In close cooperation with several hyperscalers, Rittal has developed a modular cooling solution that delivers a cooling capacity of over 1 MW with direct water cooling, so achieving the power densities needed. "A high level of standardisation and scalability through modular design and global availability is required to enable rapid infrastructure expansion technically, economically and organisationally," says Guth.

## **Modular platform for single phase direct liquid cooling**

Rittal uses coolant distribution units for single-phase direct liquid cooling with water, designed for particularly easy serviceability.

How does this work? With modularisation and the design advantages of the Open Rack V3, the development of which Rittal has driven forward in the Open Compute Project (OCP): Following the example of the power supply, the server in the rack is connected to the central inlets and outlets of the water circuit via standardised connections. Functional units such as the central controller unit and several coolant conveying units (CCUs) – depending on performance requirements – are completely modular and can be easily slid into the rack. They guarantee high availability through n+1 redundant design. Leakage monitoring begins at the component level. This concept offers a major benefit in terms of service: Components such as controllers, sensors or the pump units of the in-row solution can be maintained during operation and easily replaced via "hot swap". Power is supplied via the rack's standardised DC busbar.

## **Cooling output of over 1 MW**

"The combination options of the platform modules are designed for a high level of flexibility. They complement the Rittal system range as additional building blocks with coordinated modules for all the pillars of the data centre OT, such as rack, cooling, power, monitoring and security," explains Lars Platzhoff, Head of Rittal's Cooling Solutions Business Unit.

The liquid-to-liquid solutions cool as a bayed solution for racks over 1 megawatt; up to 100 kW in a single rack. They are also ideal for reducing the CO<sub>2</sub> footprint through heat recovery. Rittal uses its experience to support data centre planning so that the heat is transported efficiently from the manifold in the rack for further use, for example in district heating networks.

Liquid-to-air variants are also available for data centres without a water connection, which release the heat into the air in the data centre through the rack's rear door or via a side cooler as a closed system.

## Infrastructure directly in the rack

“Increasingly, power, cooling and monitoring are being integrated directly into the standardised rack as fundamental pillars of the IT infrastructure. The main drivers of this trend are multiple hyperscalers and server OEMs, for whom we are their main supplier of racks,” Mr. Guth says: “We are convinced that this concept will soon become the standard for our global IT customers because ever higher performance and rapid scaling will be needed. Besides hyperscalers, it will also become interesting for increasing numbers of colocation.”

Rittal offers its customers flexibility: “We are not limiting ourselves to the Open Rack V3 in 21-inch technology. Variants for our VX IT racks will also follow in 19-inch,” Mr. Platzhoff points out. Full integration into the Rittal system platform is a relevant lever for rolling out the infrastructure needed for AI applications on a large scale – from large hyperscale data centres to small enterprise data centres. “Direct Liquid Cooling is the enabling technology for AI. Our development has been inspired by our major global customers and Rittal’s many years of experience in IT and industry; 20 years of HD IT cooling and more than thirty years of climate control for control systems, circuitry and machines under the most difficult industrial conditions,” Mr. Platzhoff explains: “We want to make the result available to customers – both large and small – as soon as possible.”



**Caption Image 1**

Thanks to direct liquid cooling, the new modular bayed solution delivers a cooling output of over 1 megawatts, ideal for the high power densities of AI applications.



**Caption Image 2**

Philipp Guth, CTO Rittal International: “A high level of standardisation and scalability through modular design and global availability is required to enable rapid infrastructure expansion technically, economically and organisationally.”



### Caption Image 3

Compact rack integration and modular design make the new technology easy to use and maintain in datacentre operations.

May be reproduced free of charge. Rittal GmbH & Co. KG

## Rittal

---

Rittal is a leading global supplier of enclosure systems, automation and infrastructure with its industrial, IT, energy and power, cooling and service units. Rittal products and solutions are used in over 90% of global industries – standardised, customised, and always of the very best quality.

Our approach and methodology: Rittal, Rittal Software Systems (Eplan, Cideon and German Edge Cloud) and Rittal Automation Systems (RAS, Ehrh, Alfra) combine their hardware and software expertise to streamline, optimise and digitalise processes across the entire value chain for our customers including their IT infrastructure – from control and switchgear construction, machine building to factory operators or the energy sector.

Our delivery promise: Rittal standard products are delivered in Germany within 24 hours, and within 48 hours throughout Europe.

### Customer focus

Improving efficiency and increasing productivity through automation and digitalisation is one of the biggest challenges for our customers. This requires in-depth knowledge and expertise, the combination of hardware and software, and cross-sector networking. We are convinced that creating and connecting data rooms is crucial to the success of industrial transformation. And that is exactly our speciality and field of competence.

Eplan and Rittal are driving the development of the digital automation twin, making data accessible and useable in operations as well. Cideon is improving data consistency in the digital product twin context with its CAD/CAM, PDM/PLM and product configuration expertise. German Edge Cloud's ONCITE Digital Production System (DPS) makes production process data transparent, enabling it to be optimised – right through to energy management using digital production twins.

### Sustainability

Environmental and climate protection, social commitment and ethical corporate management are a given for Rittal. We take our responsibility for a sustainable future seriously. Our approach to resource management and conservation involves continuous improvement of our own production processes and ensuring that our products have the lowest possible Product Carbon Footprint. Our solutions support our customers in achieving their own climate targets.

# PRESS



## Family business and global player

Founded in 1961, Rittal is the largest company in the owner-operated Friedhelm Loh Group. The group operates worldwide, with more than 12 production sites and over 95 international subsidiaries. It has more than 12,100 employees and posted revenues of 3 billion euros in fiscal 2023. In 2023, the Friedhelm Loh Group was presented with the "Best Place to Learn" and "Employer of the Future" awards. In 2024, Rittal was awarded the Top 100 Seal as one of Germany's most innovative medium-sized companies for the third time in a row.

For more information, visit [www.rittal.com](http://www.rittal.com) and [www.friedhelm-loh-group.com](http://www.friedhelm-loh-group.com)

---

## Corporate Communications

Dr. Carola Hilbrand

Corporate & Brand Communications

Tel.: 02772/505-2527

[hilbrand.c@rittal.de](mailto:hilbrand.c@rittal.de)

Rittal GmbH & Co. KG

Auf dem Stützelberg

35745 Herborn

[www.rittal.com](http://www.rittal.com)

Follow us:



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES