Addressing Data Center thermal capacity with Rear Door Heat Exchangers

The Cisco-DeepCoolAI alliance addresses heat management in high-density deployments through rear door heat exchanger technology. The integration incorporates liquid cooling solutions mounted directly on cabinet rear doors, efficiently removing heat from dense compute and switching installations while reducing overall energy consumption.

Partner Alliance Solution Brief

Cisco, a global leader in networking and AI computing platforms, and DeepCoolAI, a pioneer in advanced cooling solutions, are joining forces to address the growing demands of modern data centers. This strategic alliance leverages the strengths of both companies to deliver innovative, energy-efficient cooling solutions that enhance the performance and sustainability of data centers.

Cisco's AI computing platforms are at the forefront of technological advancements, driving significant computational power and efficiency. However, the increasing density and power consumption of these platforms pose substantial cooling challenges. DeepCoolAI's RDHx (Rear Door Heat Exchange) product line offers a cutting-edge solution to these challenges. The RDHx technology efficiently removes heat directly from the server racks, reducing the reliance on traditional air conditioning systems and significantly lowering energy consumption.

About Cisco

Cisco (NASDAQ: CSCO) is the worldwide leader in technology that powers the internet. Cisco inspires new possibilities by reimagining your applications, securing your enterprise, transforming your infrastructure, and empowering your teams for a global and inclusive future

About DeepCool AI

DeepCoolAI (DCAI) is a company specializing in cooling systems for AI and high-performance computing sectors. They offer integrated hardware and software solutions designed to enhance energy efficiency and sustainability in data centers.

The Challenge

Energy Efficiency: The alliance addresses the critical challenge of energy consumption in data centers. RDHx technology significantly reduces the need for traditional air conditioning, leading to lower energy usage and costs.

Heat Management: Effective heat dissipation is crucial for maintaining optimal performance of AI computing platforms. The RDHx system provides superior cooling, ensuring reliable and efficient operation of Cisco's high-performance data center solutions.

The Solution: Rear Door Heat Exchanger

DeepCoolAI offers passive and active RDHx up to 200kW capacity and in 42U, 48U and 52U sizes (600mm and 800mm wide). Power Supply can be 208-277VAC or 48VDC. DeepCoolAI can customize the RDHx design based on client's requirements.

Key Features:

- Special thickened copper pipe, strong corrosion resistance, high pressure bearing capacity, and high reliability.
- The bottom is equipped with casters to help distribute the load when opening and closing the door
- The hinge has been designed to safely support the additional load of the radiator and fan system
- Up to 57KW cooling
- Top or bottom clamp connection options
- It can be retro-fitted onto existing racks
- 18x integral hot swappable variable speed fans provide full cabinet ventilation
- Can be connected to a local BMS system
- Dew Point control
- Smart valve system

DeepCoolAI
CDAI-RDHX-60

Key Benefits

Temperature Management
RDHX systems can remove up to 100% of the heat generated by server racks

Increased Lifespan
Few moving parts enable a much longer product lifespan, ensuring high cooling availability for years

Energy Efficiency
RDHx cooling can potentially reduce cooling energy consumption by up to 70% compared to traditional air-cooling methods [2].

Peace of Mind
Non-condensing heat exchanger reduces the risk of damage to critical IT equipment, providing peace of mind to IT managers

Alignment with NetZero Goals
Reduced Carbon Footprint: Lower energy consumption directly translates to reduced carbon emissions.
Support for Sustainability Initiatives: Helps organizations meet corporate and regulatory environmental targets.

Return on Investment (ROI)
While specific to each implementation, industry estimates suggest ROI periods of 2-3 years for liquid cooling solutions in high-density environments [4].

Sources: [1] ASHRAE. "Thermal Guidelines for Data Processing Environments." 4th Edition. [2] Vertiv. "Liebert DCD - Rear Door Heat Exchanger." Product Datasheet. [3] Lawrence Berkeley National Laboratory. "Data Center Energy Efficiency Study." 2019 Uptime Institute. [4] 451 Research. "Datacenter Cooling Market" Report. 2021.