Powering the Future of Hyperscale Cooling With Legrand RDHx Solutions at India's Leading Data Center

EXECUTIVE SUMMARY

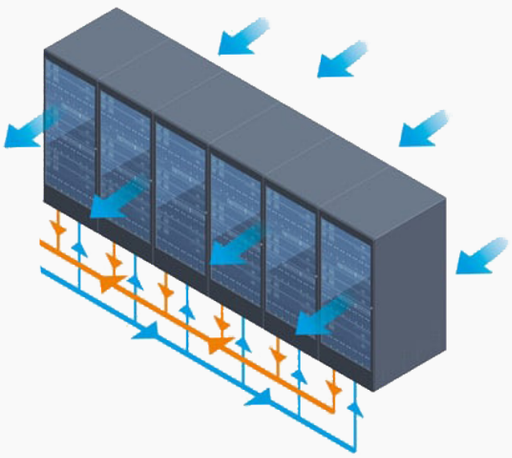
With the rapid rise of artificial intelligence (AI), big data, and supercomputing, businesses today require high-performance infrastructure that can support increasingly dense workloads.

To meet this growing demand and play a key role in India's digital transformation, a **leading data center infrastructure provider** partnered with a global GPU manufacturer to upgrade its facility and expand its AI capabilities. This strategic investment positioned the provider as the first of its kind in India—delivering hyperscale cloud services and enabling the deployment of **India's fastest AI supercomputer.**

Legrand's ColdLogik Rear Door Heat Exchanger (RDHx) solution, from USystems, addressed these challenges head on achieving a **PUE of 1.35**, reducing thermal strain, and enabling the data center to scale with confidence.

INTRODUCTION / BACKGROUND

Located in **Mumbai**, this project was executed for a **Tier IV data center** with a total power capacity of **8.2MW**, operated by one of India's top colocation providers. The facility provides **carrier-neutral connectivity** and access to multiple network, cloud, and service providers—helping customers build high-performance, high-speed communication networks.



PROBLEM STATEMENT

To expand its services in AI infrastructure, the client **collaborated with a global GPU manufacturer** and invested in GPU-as-a-Service capabilities. This made it the first facility of its kind in India, offering AI-ready hyperscale cloud platforms and hosting the **India's fastest supercomputer.**

However, this technological advancement resulted in significantly higher heat output due to intensive GPU utilization. While traditional CPU-based racks typically operate between **5 to 10kW**, GPU clusters ranged from **20 to 50kW per rack** and required **consistent, reliable cooling** during prolonged periods of peak performance.

The client needed a solution that could handle the **increased heat load**, deliver **efficient PUE**, and maintain **performance without infrastructure overhauls.**

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SOLUTION

To meet these needs, the client deployed the **ColdLogik CL20 Active Rear Door Heat Exchangers (RDHx) by USystems**, a Legrand brand. The compact, retrofittable design of ColdLogik made it an ideal choice offering both **space efficiency** and **scalability** for future needs.

A total of **192 RDHx units** were installed:

- **138 units of 42U** with a net sensible cooling capacity of **50kW**
- **24 units of 42U** with a net sensible cooling capacity of **30kW**
- **30 units of 48U** with a net sensible cooling capacity of **20kW**

These units utilize **air-assisted liquid cooling** technology. As hot exhaust air exits the servers, it passes through the RDHx chassis, it moves across internal heat exchange coils. Heat is absorbed by water circulating within the coils, and the newly cooled air is released into the room at or slightly below the ambient temperature set of **22°C**, with coil water temperature of **15°C.**

Each RDHx unit includes **ColdLogik adaptive intelligent controllers** which regulate fan speeds and monitor inlet and return water temperatures, optimizing energy use while ensuring consistent performance.

IMPLEMENTATION

The complete deployment including installation of racks, RDHx units, and wiremesh cable trays was delivered in just **45 days from the delivery date.**

All installation and commissioning including functionality testing, load testing, and integration were carried out by **Legrand Certified Service Partners.**

RESULTS

- Achieved a **Power Usage Effectiveness (PUE) of 1.35,** classifying the facility as energy-efficient
- Enabled racks to run **40kW loads with N+1 cooling** from day one, with scalability up to 59kW
- Reduced cooling infrastructure footprint no need for additional ducting or airflow systems
- Minimized hot spots and airflow challenges, improving equipment lifespan and reducing maintenance costs
- Delivered a **flexible, future-ready cooling solution** with reduced installation and operational complexity

TIMELINE

3 months total
(including supply and implementation)

CLIENT PROFILE

A leading data center infrastructure provider in India offering services in **colocation, cloud hosting, network and connectivity, IT security, and infrastructure management** supporting enterprise and hyperscale clients across industries.

LEGRAND'S VISION

This deployment showcases Legrand Data of **Legrand Data Center Solutions (LDCS)** in action **high performance, energy efficiency & scalability. "Tomorrow's Tech, Today"** by enabling next-generation AI infrastructure with intelligent cooling and sustainable design.

Raritan · Starline · Server Technology · USystems · NUMERIC · NETRACK · MINKELS · allen · zpe

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