



13 MAY, 2025

Optimising heat control: Asia`s data centres face AI`s energy challenge

The Sun, Malaysia



Optimising heat control: Asia’s data centres face AI’s energy challenge

THE Asia-Pacific (Apac) region is rapidly emerging as a global leader in data centre expansion, driven by the increasing adoption of artificial intelligence (AI), cloud computing, and digital transformation initiatives.

Apac’s prominence in data centre growth can be attributed to the region’s rapid digitalisation, expanding internet user base, and supportive government policies. In fact, according to IDC’s report “Datacentre IT Power Capacity in Asia/Pacific to Reach 94.4 Gigawatts in 2028”, the installed data centre power capacity in Asia-Pacific (APAC) is projected to grow at a compound annual growth rate (CAGR) of 14.2%, reaching 94.4 gigawatts by 2028. This surge underscores the region’s pivotal role in the digital economy.

However, this rapid growth presents significant challenges, particularly concerning environmental responsibility. Data centres are substantial consumers of energy, and their expansion amplifies concerns about power consumption and carbon emissions. The increasing demand for high-performance computing necessitates that data centres scale efficiently while implementing strategies to mitigate their environmental impact.

The sustainability paradox: Growth versus Impact

As the world recently celebrated Earth Day 2025, attention was turning to industries with significant energy footprints. With expansion comes urgency. As APAC markets such as China (China’s Road to Net Zero: Reshape the Country and the World), India (Understanding the Future of Net Zero Carbon in India), and Singapore (Our Global Commitment to Climate Change and Sustainable Development) push towards net-zero commitments, the data centre industry must rethink its cooling and energy efficiency strategies

to enable growth without exacerbating existing climate challenges.

While energy consumption has long been a concern, water usage is now emerging as an equally critical issue. Many of the region’s fastest-growing data centre markets—such as Australia (Potential for Historically Unprecedented Australian Droughts from Natural Variability and Climate Change), Malaysia (Can Johor’s US\$1.1 Billion Plan Help It Stop Relying on Singapore for Treated Water by 2030?), and the Philippines (11 Million Families in the Philippines Facing Water Crisis)—are already grappling with water scarcity, making traditional cooling methods increasingly unsustainable in the long term.

The way data centres are powered and cooled in the coming years will define the industry’s environmental footprint. As corporate responsibility expectations rise, companies must adopt more innovative and efficient cooling solutions to reduce energy consumption without compromising performance.

Rethinking cooling: The key to more responsible data centre

With AI workloads driving unprecedented power densities, traditional air-cooling methods are reaching their limits. The industry must now embrace next-generation cooling solutions that improve efficiency while reducing environmental impact. Signaling the increased importance placed on new cooling solutions technology, liquid cooling is emerging as a leading solution as AI workloads exceed the capabilities of conventional air-cooled systems. ST Telemedia Global Data Centres Philippines (STT GDC Philippines), together with Vertiv and Novare Technologies, unveiled the country’s first liquid cooling technology showroom, offering visitors a

hands-on look at how these advanced systems can enhance both energy efficiency and environmental responsibility.

In fact, Singapore’s first tropical data centre testbed- Vertiv Supports Singapore’s First Tropical Data Centre Testbed with Energy-Efficient Cooling Technologies - offers a glimpse into how operators can address cooling challenges unique to Asia’s climate. The use of energy-efficient technologies in this environment demonstrates the potential for alternative approaches that balance thermal management with environmental impact. As AI-driven workloads increase, such innovations will be critical to ensuring data centres remain both high-performing and environmentally responsible.

One solution gaining attention is direct-to-chip immersion cooling. These approaches significantly enhance thermal dissipation, reducing the energy required to keep processors at optimal operating temperature while improving performance. Industry leaders like Vertiv and Oxigen: Building Data Centres for the Future are already deploying liquid-cooled data centres, setting new efficiency benchmarks.

Beyond liquid cooling, other technologies are reshaping how the industry approaches responsible thermal management. Chilled water systems using low-GWP refrigerants are improving efficiency while minimising environmental harm. Heat reuse and energy recycling are also gaining traction, with excess heat being repurposed for applications such as industrial processes and domestic water heating (Redefining Efficiency: How and Why Data Centres Are Embracing Heat Reuse). Meanwhile, hybrid cooling ecosystems - which combine renewable and conventional energy sources - offer operators a more flexible and resilient path to cooling optimisation.

The future of more responsible data centres

As AI continues to drive data centre expansion, the industry must prioritise long-term impact and rethink how facilities are designed and operated. AI-driven cooling systems are becoming smarter and more efficient. By adjusting in real time to changing workloads, they help reduce energy waste and improve overall performance.

At the same time, data centre infrastructure is being reimagined for greater efficiency. According to reports Prefabricated Modular Data centre Report-2023, operators are increasingly adopting modular, prefabricated designs that allow for faster deployment, better energy performance, and a smaller environmental footprint. Many of these next-generation facilities are integrating heat recovery systems, low-emission cooling technologies, and resource management—ensuring that digital growth can scale responsibly.

Powering a more responsible digital future

The choices made today will determine the long-term impact of data centres. As digital infrastructure continues to grow, businesses must act decisively to reduce their environmental footprint while meeting the increasing demands of AI and high-performance computing. By adopting next-generation cooling solutions, integrating AI-driven efficiencies, and embracing alternative energy, data centres can continue to scale without compromising environmental impact. The challenge is significant - but so is the opportunity to lead the global energy transition and, ensuring that scalability does not come at the cost of the planet.

This article is contributed by Vertiv Asia vice-president Paul Churchill.