Ekko Sense | AI

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NSW GOVERNMENT

NSW Health | **Case Study**

Enhancing cooling redundancy at Blacktown Hospital's Data Centre

Real-time monitoring

Capture of real-time thermal and airflow data

Cooling energy saved

Reduction of cooling related energy consumption

Thermal risk reduced

Removal of single point of cooling architecture failure

A joint approach delivered by EkkoSense APAC partner Treske Pty Limited, in collaboration with Ecogreen Electrical & Mechanical, Air Water Power, and Vertiv.

The EkkoSense® Effect

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Blacktown Hospital in Australia, under the Western Sydney Local Health District (WSLHD), operates a 25-rack data centre housing critical IT infrastructure essential to healthcare delivery. After an incident exposed a single point of failure in the existing cooling setup, WSLHD approached Treske Pty Limited to review and improve the data centre's cooling architecture.

The Challenge

Despite a seemingly resilient configuration, the existing cooling system had a critical flaw. Here's what the team uncovered during their initial assessment.

The original cooling system featured the following design elements:

- 3 x 60kW Liebert PEX chilled water units
- Operating in a 2+1 active/standby configuration

Despite redundancy in unit numbers, all three units relied on the same chilled water supply, creating a critical single point of failure. When this common supply failed, the data centre overheated, risking vital hospital services.

"When the chilled water supply failed, the entire cooling system was compromised. We realised the need to design out this risk immediately." Technical Services Manager, Western Sydney Local Health District.

Collaborative Solution Approach

Resolving this issue required seamless collaboration between multiple specialist partners. Together, they devised a robust and future-proof solution.

The project involved the following key contributors and responsibilities:

- Treske Pty Limited – Lead consultant and systems integrator
- EcoGreen Electrical & Mechanical – Electrical installation and power reconfiguration
- Air Water Power – Project management and mechanical installation
- Vertiv – Commissioning of CRAC (Computer Room Air Conditioning) units

System Upgrade Details

To address the risk and build in true resilience, a significant cooling and electrical upgrade was undertaken. The system was re-engineered with a hybrid approach that prioritised redundancy and fault tolerance. The following improvements were delivered as part of the upgrade.

Cooling Architecture Redesign

- Removed 1 x chilled water Liebert PEX unit
- Installed 2 x air-cooled Liebert PEX units
- Developed a hybrid team of 2 (1 x air, 1 x chilled water) in an active/standby configuration
- Integrated through Vertiv iCOM controllers to optimise performance and automate redundancy

Electrical Resilience

Power sources to cooling units were split across two distribution boards, each backed by different substations. This significantly improved electrical fault tolerance and ensured uptime during future electrical works

"Our role was to manage the mechanical and project complexities to ensure timely delivery without disruption. The result is a much more robust cooling ecosystem." George Kyprianou, Managing Director, Air Water Power

"Working in a live hospital environment requires planning and diligence. We ensured all electrical upgrades were carried out with zero unplanned outages and total compliance." Adam Wright, Director, EcoGreen Electrical & Mechanical.

Data-Driven Monitoring with EkkoSense

To ensure ongoing performance visibility and unlock future efficiencies, advanced real-time monitoring was introduced.

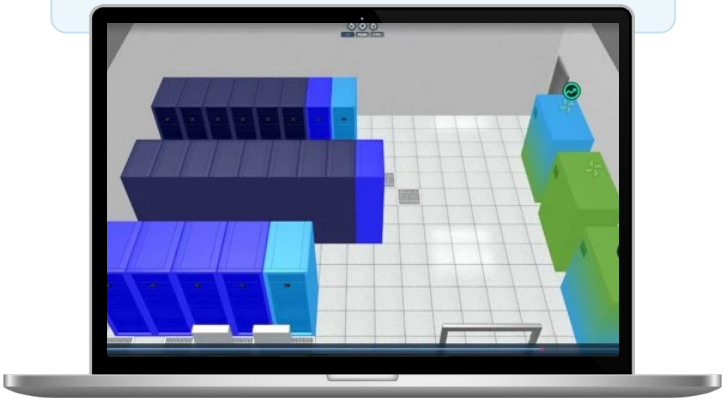
The deployment of EkkoSense brought immediate value through:

- Capture of real-time thermal and airflow data
- Benchmarking of efficiency before and after the cooling upgrade
- Identification of optimisation opportunities to reduce cooling-related energy consumption
- Support for long-term sustainability and operational cost savings

EkkoSense Monitoring – Baseline and Post-Implementation Analysis

"EkkoSense was deployed prior to any changes in the data centre environment to establish a baseline of key operational data. This allowed for a direct comparison following the implementation of the new, fully redundant configuration.

The deployment of EkkoSense brought immediate value.



As expected, the results confirmed that the reconfiguration did not adversely impact performance. With this validation, further analysis was conducted using EkkoSense data to identify additional opportunities for optimising environmental performance and reducing energy costs." Robert Linsdell, General Manager, Ekkosense Asia Pacific.

Delivering in a Healthcare Environment

Upgrading critical infrastructure in a live healthcare setting requires precision, coordination, and care. This project demanded that all works be performed without disrupting essential services.

The following measures ensured safe and seamless delivery:

- Coordinated with WSLHD teams to schedule power works with zero unplanned outages
- Used EcoGreen's healthcare-experienced electricians to perform compliant electrical reconfiguration
- Ensured mechanical integration was tightly managed by Air Water Power's experienced project team
- Delivered full Vertiv commissioning to validate and verify system performance

Project Outcomes

The successful delivery of the project resulted in a range of improvements aligned with WSLHD's operational and sustainability goals.

Key outcomes included:

- Elimination of the single point of failure in cooling architecture
- Deployment of a hybrid cooling system with dual-path redundancy
- Diversification of power supply across two substations
- Ongoing environmental monitoring via EkkoSense with actionable insights
- Seamless execution in a live healthcare environment
- Contribution to long-term energy efficiency and reliability goals

Conclusion

This project showcases the power of strategic collaboration in critical infrastructure. With Treske as the lead integrator, EcoGreen Electrical & Mechanical handling electrical works, Air Water Power delivering precise project management and mechanical install, and Vertiv ensuring system performance, Blacktown Hospital now benefits from a future-ready, efficient, and resilient data centre.

"This was more than just a cooling upgrade, it was a strategic uplift in reliability and sustainability. We're proud to have delivered a solution that will serve WSLHD for years to come."

Daniel Sargent
Managing Director
Treske Pty Limited

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