

The intelligent computing center uses a 1000mm deep cold aisle from New Zealand

Article Overview

The intelligent computing center in New Zealand uses a 1000mm deep cold aisle to optimize airflow, improve cooling efficiency, and reduce energy consumption.

Overview of Cold Aisle Containment

Cold aisle containment (CAC) is a data center cooling strategy that encloses the cold air supply zones to prevent mixing with hot exhaust air from servers, ensuring that chilled air reaches IT equipment efficiently. In a typical setup, server racks are arranged in alternating rows with their fronts facing each other across the cold aisle, while the backs face the hot aisle. The 1000mm depth of the cold aisle provides sufficient space for airflow, equipment access, and containment structures such as ceiling panels, doors, or lids above racks.

Benefits of a 1000mm Deep Cold Aisle

- o **Enhanced Cooling Efficiency:** By isolating cold air, the system maintains consistent inlet temperatures for servers, reducing hot spots and improving overall thermal management.
- o **Energy Savings:** Cold aisle containment can reduce cooling energy consumption by 20-35% and improve Power Usage Effectiveness (PUE) by 10-20%. The depth allows for optimal air distribution and pressure management, ensuring uniform cooling across all rack positions.
- o **Operational Reliability:** Maintaining a controlled cold aisle prevents temperature fluctuations, which can extend equipment life and ensure servers operate within manufacturer specifications.
- o **Flexibility and Retrofitting:** A 1000mm deep aisle can accommodate raised or non-raised floor designs and can be retrofitted into existing data centers without major structural changes.

Implementation Considerations

- o **Containment Structures:** Doors at aisle ends, ceiling panels, and structural frames are used to create the enclosed cold zone. The depth allows for proper installation of these components while maintaining accessibility for maintenance.
- o **Airflow Management:** Positive pressure is maintained within the cold aisle to ensure consistent air delivery to all servers. The 1000mm depth supports effective pressure optimization and prevents cold air from bypassing equipment.
- o **Energy Optimization:** Facilities using cold aisle containment can increase supply air temperature setpoints, reducing chiller load and operational costs. For example, some implementations have achieved annual energy savings of hundreds of thousands of kWh.



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Conclusion

Using a 1000mm deep cold aisle in the intelligent computing center in New Zealand provides a balance between efficient airflow, energy savings, and operational reliability. This depth supports effective containment, uniform cooling, and easy maintenance, making it a practical choice for modern high-density data centers .

The surge in power density to 100+ kW per rack in data centers is both an evolution and a

Based in Wuhan, the Central Intelligent Computing Center supercomputer is reportedly built for AI and can train large

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Hot aisle vs cold aisle containment -- compare both strategies, understand the pros and cons, and find the right

Cold aisle containment systems use doors at aisle ends, ceiling panels or lids above racks, and structural

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The fundamental difference between Hot Aisle Containment and Cold Aisle Containment is their respective abilities to increase

Efficient airflow management in data centers relies heavily on proper Hot Aisle and Cold Aisle



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Containment systems are used in modern data centers to isolate the hot discharge air from the cooler supply air,

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