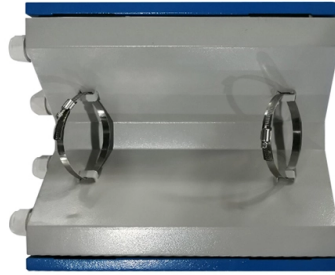


Enclosed Hot Aisle Between Computer Rooms



Overview

How to Make the Right Choice?

Comparison between the Enclosed The most talked-about topic in the industry regarding the hot and cold aisle system is: "Shou.

Key Takeaways

Enclosed hot aisle containment isolates hot exhaust air from server racks, directing it efficiently back to cooling units to improve energy efficiency and maintain consistent equipment temperatures. What is Hot Aisle Containment?

Hot aisle containment (HAC) involves enclosing the aisle where servers exhaust hot air, typically with doors at the ends and a roof or baffles above, so that hot air is directed exclusively toward the return air intake of cooling units like CRACs or CRAHs (). This prevents hot and cold air from mixing, which is a common issue in traditional open aisle layouts, and allows for higher return air temperatures, improving heat exchange efficiency and enabling free cooling opportunities ().

Advantages of Hot Aisle Containment

- **Energy Efficiency:** By isolating hot air, cooling systems operate more efficiently, reducing overall energy consumption ().
- **Improved Cooling Performance:** Hot air is directed to the cooling units without mixing with cold supply air, maintaining consistent inlet temperatures for servers ().

- **Higher Return Air Temperatures:** This allows for better heat exchange and can increase the capacity of cooling systems ().
 - **Equipment Longevity:** Consistent temperatures reduce thermal stress on servers, extending their operational life ().
 - **Scalability:** Suitable for high-density racks and modern data centers with AI or high-performance computing workloads ().
- Considerations and Limitations
- **Air Supply Requirements:** Enclosing the hot aisle may require slightly higher cold air volumes from precision air conditioners to maintain adequate cooling, especially if the heat load per rack is significant ().
 - **Design Complexity:** HAC often requires integration with ceiling return plenums or ducting to ensure hot air reaches the cooling units efficiently ().
 - **Cost and Retrofitting:** While effective, implementing HAC in existing data centers may involve additional architectural modifications compared to cold aisle containment ().

When to Use Hot Aisle Containment

Hot aisle containment is generally preferred in high-density data centers or where return air ceiling plenums are available, as it maximizes cooling efficiency and energy savings (). For lower-density environments or where retrofitting is challenging, cold aisle containment may be more practical ().

Summary

Enclosed hot aisle containment is a strategic approach to data center cooling that isolates hot exhaust air, improves energy efficiency, and maintains consistent server temperatures. Its effectiveness depends on proper design, integration with cooling infrastructure, and consideration of heat loads per rack. While it may require more planning and initial investment than cold aisle containment, it is often the preferred solution for modern, high-density computer rooms.

Article Content

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The most talked-about topic in the industry regarding the hot and cold aisle system is: "Should we arrange the

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Hot Aisle Containment encloses the aisle with the exhaust side of the computing equipment and the return

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A Time-tested Technique The hot aisle /cold aisle data center layout was originated by IBM in 1992 and it is one of the oldest ways to

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Hot aisle/cold aisle configuration is a best practice solution that separates hot and cold air streams. This method raises the

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The Advantages And Disadvantages Of Hot-Aisle, Cold-Aisle

- Hot-Aisle Containment encloses the hot aisles within the data center. The discharge air from the IT equipment

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Hot and Cold Aisle | Effective Aisle Containment

Hot Aisle Containment The objective of the hot aisle containment data center is to enclose hot air masses and redirect

Hot and Cold Aisle Containment: What You Need to Know

Hot aisle containment systems isolate the hot aisle using a similar enclosure system to that of a cold aisle with a sealed

Aisle containment system buying guide

An aisle containment system is a simple way to improve cooling efficiency in hot aisle/cold aisle rack configurations. Essentially

Utilize Containment/Enclosures

The hot aisle/cold aisle layout helps prevent cold “supply” air from mixing with hot exhaust air, resulting in cooling savings from 10 to

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The goal of a hot or cold aisle configuration is to conserve energy and lower cooling costs by managing air

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