

Requirements for the Construction and Installation of Cold Aisle Computer Rooms



AI Overview

Cold aisle installation requires proper aisle width, containment, airflow management, and service clearances to ensure efficient cooling and safe operation.

Aisle Layout and Dimensions

Cold aisles are formed between the front faces of two rows of IT equipment racks, where the coolest air is supplied to the equipment intake. To maintain optimal airflow and accessibility:

- Aisle Width:** Minimum 1.2 meters (allowing two full floor tiles between rack fronts) for standard access; wider aisles may be needed for ceiling heights above 3.7 meters to accommodate lifts and overhead systems.
- Maximum Aisle Length:** 16 meters for continuous rows; if one end is closed or lacks an exit, limit to 6 meters for safe access and evacuation.
- Raised Floor Depth:** At least 300 mm to allow underfloor air distribution, with perforated tiles directing cold air to rack fronts.

Airflow and Cooling Considerations

Cold aisles rely on underfloor air plenums or direct floor slab supply to deliver conditioned air to equipment intakes. Perforated floor tiles should be positioned in front of racks to direct airflow efficiently. Ensure sufficient airflow under both normal and abnormal operating conditions to prevent hotspots and maintain equipment performance. Consider the impact of aisle frames or containment structures on airflow to avoid interference with cooling efficiency.

Containment Systems

Physical containment can enhance cooling efficiency by separating cold and hot air streams. Options include:

- Rack-mounted modular systems with sliding doors and roof panels for uniform aisles.
- Full aisle containment to prevent mixing of hot and cold air, improving thermal performance and energy efficiency.

Containment partitions should be self-supporting and not attached to racks for structural integrity.

Service and Safety Requirements

Maintain service clearances for equipment maintenance and emergen...

Article Content

Best Practices Guide for Energy-Efficient Data Center Design

Hot aisle/cold aisle configurations can be served by overhead or under-floor air distribution systems. When an overhead system is used, supply outlets that “dump” the air directly down should be used in

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Cold aisle containment encloses the cold aisles to ensure only cold air is supplied to servers. This approach is normally used with in-row cooling and raised floors and is more common in retrofits.

IMPROVING DATA CENTER EFFICIENCY AND CAPACITY WITH AISLE

The fundamental difference between Hot Aisle Containment and Cold Aisle Containment is their respective abilities to increase efficiency and capacity in a particular type of data center.

Cold Aisle Containment

How Cold Aisle Containment Works The cold aisle containment system encloses the cold aisle and prevents the mixing of cold air with hot exhaust air. This lets hotter

Data Center Cooling Best Practices

However, an existing legacy computer room that does not utilize a Cold Aisle/Hot Aisle configuration can still benefit from improved airflow management. Perforated floor tiles providing

Tate Cold Aisle Containment System

A Cold Aisle Containment (CAC) system encloses the cold supply air within the aisle, preventing it from mixing with hot exhaust air. This ensures servers receive a consistent supply of cooled air, improving

Hot vs Cold Aisle Containment: Which Datacenter Cooling Strategy Is ...

Additionally, cold aisle containment integrates seamlessly with overhead cooling systems and can be implemented with various ceiling heights, offering flexibility for different datacenter

Data Center Aisle Containment Systems | Profile IT Solutions

Data-center airflow catalogue Keep cold air focused. Send heat where it belongs. Specify complete aisle containment systems for data centers, edge facilities and high-density compute rooms. Compare

Hot & Cold Aisle Containment: Implementation Guide 2026

Learn how to implement hot and cold aisle containment in existing data centers — HAC vs CAC comparison, PUE optimization, compliance standards, and cost analysis.

Cold Aisle Containment in Data Centers | Subzero

Cold aisle containment systems use doors at aisle ends, ceiling panels or lids above racks, and structural frames to create enclosed zones where cold supply air

FOCUSED COOLING USING COLD AISLE CONTAINMENT

As an addition to a conventional precision cooling system, cold aisle containment consistently separates cold and warm areas without requiring structural changes to the data center.

Cold Aisle Containment Systems | Server Room Environments

Our Projects team provides a complete design, installation, and maintenance service for cold-aisle containment pods. Please contact us or complete our design enquiry form for a project review.

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This solution captures many requirements typically placed on the building shell and places it closer to the equipment. This includes busway, conveyance, docking, and other ancillary items.

Cold Aisle Containment: The Ultimate Guide To

Additionally, cold aisle containment tends to be easier to implement compared to hot aisle containment, as it typically requires fewer modifications to the existing

Aisle Containment Systems Physical Containment Systems ...

Aisle Containment Systems by Vertiv™ Aisle Containment is the logical extension of the hot aisle/cold aisle concept of data center design. It is a best practice solution that separates hot and cold air

Cold Aisle Containment: Complete Implementation Guide for Data

Complete cold aisle containment guide for data centers. Learn CAC benefits, implementation steps, and achieve 35% cooling cost reduction.

Hot Aisle Containment: How It Works and What It Costs

How hot aisle containment cuts cooling bills, how it compares to cold aisle, and what a retrofit costs. A clear guide for anyone planning a data center

Data Center Design: Hot Aisle & Cold Aisle – Length and Width ...

Proper aisle planning isn't just about airflow—it's about optimizing safety, serviceability, and system efficiency. By adhering to these length and width standards, data center designers can enhance

Hot Aisle Containment vs. Cold Aisle Containment:

Implementation of both hot and cold aisle containment does not reduce the volumetric flow rate of bypass airflow in a computer room. When cold

FOCUSED COOLING USING COLD AISLE CONTAINMENT

While either hot aisle or cold aisle containment systems can be installed and are both capable of increasing efficiency and cooling today's high heat data centers, meaningful differences exist in how

Data Center Hot/Cold Aisle Containment Systems | Eaton

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

Cold Aisle Containment in Data Centers | Subzero

With cooling provided through a raised floor, this cold aisle containment project uses rigid wall panels in conjunction with the Polar Cap 2 roof system to provide

Aisle Containment | Modular Cleanroom & Data Center Containment ...

Depending on your facility's layout, Armstrong Aisle Containment Solutions offer both Hot Aisle Containment (HAC) and Cold Aisle Containment (CAC) systems to suit new builds or retrofit

A DEEP DIVE INTO THE WORLD OF HOT & COLD AISLE

AISLE CONTAINMENT Aisle containment is a crucial strategy in data center management. It involves the use of physical barriers or enclosures at the end of server aisles to separate hot and cold

Contact Us

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