

Customization Process for Upgraded Cold Aisle Cabinets

Article Overview

Upgraded cold aisle cabinets are customized through modular design, pre-integration, and airflow optimization to enhance cooling efficiency, energy savings, and equipment reliability.

Design and Engineering

The customization process begins with a detailed assessment of the data center layout, including rack alignment, aisle width, and airflow requirements. Engineering teams use 3D CAD modeling and Computational Fluid Dynamics (CFD) analysis to simulate airflow, temperature distribution, and cooling efficiency, ensuring that the cabinets and containment system meet precise environmental conditions (). This step identifies optimal placement of cold aisle enclosures, ceiling panels, and end doors to prevent hot and cold air mixing.

Modular and Pre-Configured Options

Upgraded cold aisle cabinets are often modular, allowing for flexible configurations to fit different rack heights, widths, and row arrangements (). Components such as sliding or bifold doors, removable infill panels, and clear roof panels can be pre-configured or fully customized. This modularity enables future expansion and simplifies maintenance without compromising airflow containment.

Integration and Installation

Customization includes pre-integration of cooling and containment components, reducing the need for field modifications and minimizing installation time (). Cabinets are designed to work with standard rack sizes (42U, 45U, 48U) and can accommodate both new installations and retrofits (). Installation typically involves securing the frame to the floor, attaching roof panels, and installing doors with clear panels for monitoring and security.

Benefits of Customization

Customized cold aisle cabinets provide several advantages:

- o Enhanced cooling efficiency by maintaining cold air within the aisle and preventing hot air recirculation ().
- o Energy savings through optimized airflow and reduced load on air conditioning units.
- o Improved equipment reliability with longer ride-through times during cooling failures.
- o Flexibility to adapt to non-uniform rack heights or future data center expansions.
- o Reduced operational costs by minimizing downtime and avoiding unsafe field modifications ().



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Conclusion

The customization process for upgraded cold aisle cabinets combines engineering analysis, modular design, and pre-integration to create a tailored solution that maximizes cooling efficiency, energy savings, and operational reliability. By leveraging CFD simulations and modular components, data centers can achieve optimal airflow management while maintaining flexibility for future growth and maintenance.

Cold aisle containment can be used with or without conventional raised floor cooling. It is easily retrofitted into existing raised floor

Cabinet Supported Cold Aisle Containment (CAC) Solution The Cabinet Supported Cold Aisle Containment (CAC) Solution by

Hot and cold aisle racks are the configurations used in data centers to optimize airflow and temperature control. The hot aisle

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

While either hot aisle or cold aisle containment systems can be installed and are both capable of increasing efficiency and cooling

Improve data center cooling with flexible air containment solutions that go beyond hot and cold aisle configurations.

The right aisle containment system can have a big impact on your data center's efficiency and the effectiveness of the equipment

Temperature Reduction Both forms of cold aisle containment had a significant impact on the cabinet inflow air

DL Custom has dedicated design, engineering, manufacturing, professional services team that are hard at work delivering

Cold aisle containment systems separate the cold aisle from the hot by capturing the cold air and feeding it directly into

With cooling provided through a raised floor, this cold aisle containment project uses rigid wall panels in



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Cool Shield Aisle containment solutions reduces server row temperatures in active data centers. Learn more about the benefits of hot

Accommodates aisle widths from 36" wide to 96" wide. Can be mounted cabinet-to-cabinet or cabinet-to-wall
Customization of

Legrand hot aisle containment solutions optimize airflow, reduce energy consumption, and ensure peak performance for critical

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

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