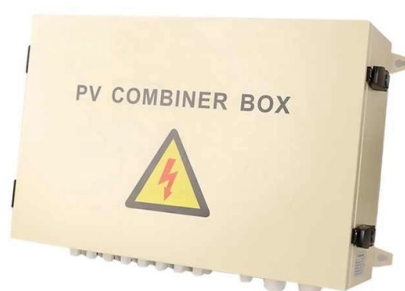


Cost-based cold aisle IP67



Overview

Cost-based cold aisle IP67 Cold aisle containment with hot air return through the ceiling to the Computer Room Air-Conditioning unit (CRAC). Outside aisles.

Key Takeaways

Cold aisle containment (CAC) with IP67 protection offers energy-efficient cooling while ensuring dust and water resistance, though costs vary based on materials, design, and installation complexity.

Overview of Cold Aisle Containment

Cold aisle containment isolates the cold air supply from hot exhaust air in data centers, ensuring servers receive consistent inlet temperatures and reducing energy consumption by 20-35% . CAC systems typically use doors, ceiling panels, and structural frames to enclose the cold aisle, preventing air mixing and optimizing airflow . This approach improves Power Usage Effectiveness (PUE) by 10-20% and can reduce chiller and fan energy costs significantly .

IP67 Considerations

An IP67 rating indicates the containment system is dust-tight and can withstand temporary immersion in water. For data centers, this level of protection is particularly useful in environments prone to moisture, dust, or accidental spills. Incorporating IP67-rated panels or doors increases material and manufacturing costs due to the need for sealing gaskets, reinforced panels, and corrosion-resistant components.

Cost Factors

- **Material and Design:** IP67-rated enclosures require higher-grade plastics, metals, or composites, which are more expensive than standard CAC panels .
- **Installation:** Retrofitting an existing data center with IP67 containment may involve additional labor for sealing and alignment, slightly increasing installation costs .
- **Energy Savings:** Despite higher upfront costs, CAC systems reduce cooling energy consumption, often achieving payback within months to a few years depending on energy prices and utility rebates .
- **Maintenance:** IP67 systems are easier to clean and maintain in dusty or humid environments, potentially lowering long-term operational costs.

Implementation Tips

- **Retrofit-Friendly:** CAC can be installed in existing raised-floor data centers without major structural changes .
- **Sealing and Pressure Optimization:** Ensure doors and ceiling panels are properly sealed to maintain positive pressure and consistent airflow .
- **Monitoring:** Use temperature and humidity sensors to verify that the IP67 containment maintains optimal conditions and prevents hot spots .

Summary

Implementing a cost-based cold aisle containment system with IP67 protection balances energy efficiency, equipment safety, and environmental resilience. While initial costs are higher due to specialized materials and sealing requirements, the system delivers measurable energy savings, improved PUE, and enhanced protection against dust and moisture, making it a strategic investment for high-density or sensitive data center environments .

Article Content

Hot Aisle/Cold Aisle Containment Frame Requirements for Data

The containment frame's top rail was sized to the 48U height with clearance for cable trays above. High-traffic aisle near a loading

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

