

Article Overview

High-performance data center racks in the Gulf region are designed with durable, corrosion-resistant materials and coatings to withstand harsh desert climates, high temperatures, and dust, supporting liquid cooling and high-density AI workloads.

Rack Design and Environmental Considerations

Data centers in the Gulf Cooperation Council (GCC) face extreme heat, high dust levels, and humidity fluctuations, which can accelerate chemical and catalytic degradation of standard rack materials. To address this, enclosed cabinets and high-strength racks are commonly used, often featuring powder-coated steel or corrosion-resistant alloys that provide anti-catalytic and anti-corrosive properties, ensuring long-term structural integrity and protection of sensitive IT equipment (Schneider Electric UAE) .

Cooling Integration

Modern Gulf data center racks are increasingly liquid-cooling-ready, supporting Direct-to-Chip (DTC) or immersion cooling for high-TDP AI hardware like NVIDIA H100 and B200 GPUs, which can exceed 700W per chip (ITCTShop) . Liquid cooling reduces thermal stress on rack materials and minimizes the risk of chemical reactions caused by high temperatures, indirectly enhancing anti-catalytic resistance.

Market Trends and Rack Types

The Middle East data center rack market is dominated by full-length 42U enclosed racks, which account for over 74% of deployments, while half-height and micro-modular racks are growing due to edge computing and 5G rollouts (Mordor Intelligence) . Enclosed racks capture nearly 80% of revenue, reflecting their superior protection against environmental factors, including dust, heat, and potential chemical exposure. Tier 3 and Tier 4 racks are preferred for hyperscale and enterprise deployments, offering enhanced structural and environmental resilience .

Key Features for Anti-Catalytic Resistance

- o Material Selection: Powder-coated steel, stainless steel, or aluminum alloys resistant to oxidation and chemical reactions.
- o Sealing and Gaskets: Dust-proof and moisture-resistant seals prevent exposure to corrosive elements.
- o Surface Treatments: Anti-corrosive coatings and finishes reduce catalytic degradation from heat and humidity.
- o Integration with Cooling: Liquid cooling reduces internal temperatures, lowering the risk of chemical

reactions on rack surfaces.

o Modular and Enclosed Designs: Enclosures protect sensitive electronics from environmental contaminants while maintaining airflow and cooling efficiency.

Regional Deployment Insights

Saudi Arabia and the UAE lead in high-density, liquid-cooled rack deployments due to AI initiatives and cloud expansion, while Oman, Jordan, Qatar, and Bahrain are emerging markets investing in edge and sovereign data centers (DC Market Insights) . These deployments prioritize durable, anti-catalytic-resistant racks to ensure reliability in desert climates and compliance with local operational standards.

Conclusion

For Gulf region data centers, anti-catalytic resistance is achieved through material choice, surface treatments, and integration with advanced cooling systems. Enclosed, high-strength racks with corrosion-resistant coatings are standard for AI and hyperscale workloads, ensuring long-term durability and operational efficiency in extreme environmental conditions. These features are critical for maintaining uptime, protecting high-value IT assets, and supporting the region's growing AI and cloud infrastructure.

Abstract Internet data center buildings have great importance for maintaining the post-earthquake functionality of

An Industry Guide To Seismic Data Racks: Part 1 When it comes to protecting an organization's data, the

Supply chains likely to slow rollout New security considerations Appetite for investment in

Delivering optimal performance, easy deployment and scalability for all IT systems and data centers, MMR's racks, cabinets and

Effective airflow management within racks, including perforated doors (typically 70-80% open area), blanking panels,

Introduction Data center physical infrastructure capacity management is defined as the action or process for ensuring power, cooling,

Expert solutions for industrial storage and custom installations in the Gulf region.

Inside a data center, a labyrinth of servers and high-tech networking gear are arranged in specialized racks,

secure cabinets, and

The GCC region led the Middle East Data Center Racks Market in 2025, accounting for over 68% of the total market share due to

Today, even though the sophistication and criticality of the data center has soared, some may still assume that because a rack

Iran is bombing Gulf datacenters to blow up symbols of alliance with the US - bringing the war directly into the lives of

Cloud platforms are rolling out multi-region footprints inside the Gulf to satisfy data-sovereignty rules, and every new

Typical deployment environments include data centers and server rooms located in earthquake-prone regions, telecommunications

What are seismic racks? When an earthquake hits, a data center's server racks could potentially be destroyed if they

Welcome to the Gulf Data Centre Association (GDCA) - a trade organisation designed to

Powder coating for data centers is a thermally cured, solvent-free finishing process applied electrostatically to metal server racks,

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