Upgrade Data Center Cooling with EC Fan Arrays



By Bhavnesh Patel, Infinitum

As power densities surge and energy efficiency becomes a paramount concern, retrofitting legacy systems with EC fan walls emerges as a transformative solution. These modern fan walls, equipped with Infinitum Aircore EC motors, promise up to 25% energy savings while delivering precise airflow control and reduced harmonic issues. By embracing this innovation, data centers can significantly lower their Power Usage Effectiveness (PUE), thus enhancing their sustainability initiatives and extending the life of existing infrastructure. This guide will walk you through the step-by-step process of implementing a modular fan wall design, offering engineers and facility managers a clear path to achieving superior energy efficiency and cooling optimization.

Understanding EC Fan Wall Retrofits

Retrofitting data centers with EC fan walls is a game-changing strategy for enhancing cooling efficiency and reducing energy consumption. This section explores the importance of EC fan walls and how to evaluate retrofit opportunities.

Importance of EC Fan Walls

EC fan walls represent a significant leap forward in data center cooling technology. These systems utilize electronically commutated (EC) motors, which offer superior efficiency and control compared to traditional AC motors.

EC fan walls (https://www.tcf.com/wp-content/uploads/2024/11/EC-Plenum-Fans-Marketing-Brochure.pdf) provide precise airflow management, allowing data centers to maintain optimal temperatures while minimizing energy waste. This precision is crucial in high-density computing environments where heat management is a constant challenge.

By implementing EC fan walls, data centers can achieve substantial energy savings, often reducing cooling-related power consumption by 20-30%. This not only lowers operational costs but also contributes significantly to sustainability goals and improved Power Usage Effectiveness (PUE).



Evaluating Retrofit Opportunities

Assessing the potential for an EC fan wall retrofit requires a comprehensive evaluation of your current data center infrastructure. This process involves several key steps:

- 1. Analyze existing cooling systems for age, efficiency, and performance.
- 2. Calculate current energy consumption and cooling costs.
- 3. Assess the physical space available for retrofitting.
- 4. Determine specific cooling requirements based on IT load and density.

When evaluating retrofit opportunities, consider the long-term benefits:

- Improved energy efficiency
- Enhanced cooling capacity
- Better airflow control
- Reduced maintenance costs
- Extended lifespan of existing infrastructure

Infinitum's retrofit services (https://goinfinitum.com/retrofit/) can provide expert guidance in assessing your data center's specific needs and potential for improvement through EC fan wall upgrades.

Designing Your EC Fan Wall Upgrade

Designing an effective EC fan wall upgrade requires careful consideration of various factors to ensure optimal performance and efficiency. This section covers key design parameters and the selection of appropriate EC motors.

Key Design Parameters

When designing an EC fan wall upgrade, several critical parameters must be considered to ensure optimal performance and efficiency:

Airflow Requirements: Determine the total airflow needed based on your data center's heat load and layout. This calculation should account for both current and future IT equipment demands.

Static Pressure: Assess the static pressure requirements of your cooling system. EC fan walls must overcome the resistance in air distribution pathways to maintain proper airflow throughout the data center.



Ready to Start Your Retrofit Journey

Retrofitting to a modular EC fan wall is one of the highest-ROI upgrades available — and one of the most practical for aging CRAHs, CRACs, and AHUs. Infinitum offers:

- Proven fan wall and fan array expertise
- Aircore EC motors purpose-built for critical cooling
- Design resources like Fan Cube & Fan Array Design Guide (https://goinfinitum.com/fan-array-design-guide/)
- Key considerations guide to help engineers select the right motor
- A complete Retrofit Services Team (https://goinfinitum.com/retrofit/) to support your project from concept through commissioning

Talk to our retrofit experts

We'll help you design and execute a retrofit that maximizes ROI and supports your long-term cooling strategy.