



Active Power Management

Technology Overview

New technologies that can improve equipment performance, such as variable frequency drives, circuit boards, and programmable logic controllers, are vulnerable to fluctuations in the electric supply or “dirty power.” Dirty power can reduce performance and cause electronic systems to fail prematurely. The key to protecting performance is to clean the dirty power before it reaches the equipment. This active power management system regulates incoming power and mitigates sags, swells, over/under voltage, and phase imbalance. It optimizes a building’s power by analyzing the incoming power, determining what correction needs to occur, and correcting it automatically in real time. The system is self-contained; it is sized for modern electrical rooms and is installed where the power feeds the facility. The platform is configured for easy installation and integration with existing buildings.

Why is GSA Interested?

As GSA pursues building electrification, active power management can facilitate the transition by mitigating power quality issues that are more commonly found in renewable energy sources and protecting vulnerable equipment. In the past, GSA has experienced equipment failures due to dirty power, including demagnetized rotors, damaged compressors, and blown fuses. If successful, this technology will reduce the occurrence of those failures. The manufacturer claims this technology should increase equipment life by 15% to 40% and decrease equipment downtime by 20% to 50%.

The benefits of this technology include reduced electricity use and associated costs and decreased greenhouse gas emissions through reduced Scope 2 emissions¹ from purchased electricity.

How Will Success Be Measured?

The testbed will assess three manufacturer claims: 3% to 6% electricity savings, 5% peak demand savings, and payback in less than 3 years.

Deployment Potential

This active power management technology is best suited to existing facilities with more than 50,000 square feet of space that are fed with low voltage power (i.e., 208V, 480V, or 600V) and have an electrical feed range of 400 amps to 5,000 amps. Buildings powered by utilities with renewable generation assets are also particularly well suited since these transmission and distribution systems tend to be more vulnerable to power quality issues.

¹Scope 1 and Scope 2 Inventory Guidance, <https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>, accessed 06-2022.

In collaboration with Oak Ridge National Laboratory, this regional Green Proving Ground (rGPG) evaluation will assess the real-world performance of active power management in federally owned facilities. The technology will be provided by Legend Power Systems