

Magnetic Bearing Compressor

What is this Technology?

Magnetic bearing compressors are essentially frictionless, and their speed is controlled by a variable frequency drive. Eliminating the friction in these compressors greatly increases their efficiency at part load conditions. These chillers have just recently been introduced to the commercial market.

Why is GSA Interested?



ENERGY EFFICIENCY Data centers are highly energy intensive. Demand for data center services—and associated energy costs—continues to rise. To address this issue, OMB requires agencies to consolidate data centers and move to cloud based solutions. Remaining locations must achieve significant energy savings through best practices that reduce the proportion of energy expended on non-IT loads (e.g. cooling and power conditioning). Preliminary assessments suggest savings of between 20 and 35 percent on cooling loads through implementation of a dense network of wireless temperature sensors that provide real-time monitoring and optimization of data center conditions.



COST EFFECTIVENESS Because data centers are highly energy intensive, even relatively modest energy cost savings can be life-cycle cost effective. Manufacturer cost data projects simple payback of under 4 years, even in markets with low energy costs.



OPERATIONS & MAINTENANCE Once initial findings are identified and implemented, the technology provides active monitoring data that supports taking preventative action before a problem occurs. The mesh network approach means it should be easy to modify or expand the monitoring system in response to changes in the data center. Monitoring and correcting hot spots should reduce IT failures and extend equipment life. This should reduce operations and maintenance (O&M) and improve IT reliability.



APPLICABILITY The technology is specifically aimed at monitoring data centers for the purpose of identifying energy-efficiency opportunities and validating the result upon implementation. In theory, the technology could be applied to other building functions where active, real-time monitoring of environmental conditions would be of benefit.

Measurement & Verification

The Green Proving Ground program has commissioned the Pacific Northwest National Laboratory to perform measurement and verification (M&V) on magnetic bearing compressors at the George Howard Jr. Federal Building in Pine Bluff, Arkansas. Findings from that investigation will be available in September 2012.