Lockheed Martin Aeronautics, Air Force Plant #4 (Fort Worth, Texas) – 50001 Ready

WHY 50001 READY?

The U.S. Department of Energy's 50001 Ready program is a self-paced, no-cost way for organizations to build a culture of structured energy improvement that leads to deeper and sustained energy and GHG savings. Recognition is available for facilities and organizations that self-attest to the implementation of an ISO 50001-based energy management system without external audits or certifications.

Overview

Lockheed Martin Aeronautics Air Force Plant #4 ("Plant #4"), located in Fort Worth, Texas, specializes in the production of the F-35 fighter aircraft. With approximately 18,000 employees, the plant accommodates various manufacturing facilities, laboratories, and office space.

As a federal site, Plant #4 is bound by federal law, under the Energy Independence and Security Act (EISA) of 2007, to perform regular energy audits. Low-cost overhead energy efficiency projects are typically executed within the calendar year in which they are identified, with capital projects implemented as funding becomes available. Because construction renovation has been ongoing since Plant #4's inception, energy efficiency projects identified during audits are often combined with other projects, meaning that most projects are energy projects. All facility projects are analyzed in the design phase to ensure that best energy engineering practices are applied, and projects are tracked post-implementation to verify energy and cost reductions. These savings are highlighted in Lockheed Martin's annual sustainability report as well.

Going above and beyond EISA requirements, Plant #4 is a part of the Department of Energy's Better Plants program and the Better Buildings Challenge and has four ENERGY STAR-certified buildings totaling over 1.1 million square feet.

Main Entrance to Building 200 at Air Force Plant #4 in Fort Worth, Texas. *Photo credit: Lockheed Martin*

Solutions

In 2017, Plant #4 learned about 50001 Ready at an energy-focused conference. They immediately considered participating in the DOE program, desiring to enhance their existing energy management efforts, which include a sophisticated in-house-developed energy control system. By the time Plant #4 began implementing 50001 Ready, they were well-seasoned at energy management system deployment and required no external assistance with implementation.

"Under 50001 Ready, energy comes first. Every project becomes an energy project."

– BenPaul Gilmore, Principal Engineer
Lockheed Martin

Lockheed Martin is currently ironing out logistics to develop 50001 Ready energy management systems at other facilities as well.

Key Takeaways: Implementing a 50001 Ready Energy Management System

- **An experienced team lead:** When Plant #4 began organizing their 50001 Ready energy program, they looked to their resident principal engineer to guide them. The team lead had many years of experience planning projects, performing calculations, obtaining funding, programming controls, and liaising with corporate management. The team lead is also an ISO-certified energy auditor.
- **Contributing team members:** Team members brought specialized roles and knowledge, from trend-monitoring to system-networking and fault detection to data science management, and played a key role in achieving 50001 Ready status for Plant #4.
- **The importance of structure:** Although Plant #4's energy team had a solid understanding of Lockheed Martin's scope and structure, the 50001 Ready Navigator gave the energy team language with which to communicate those ideas to a wider audience. Having well-defined roles, responsibilities, organizational activities, and maintenance procedures helped to empower others outside the energy team to participate in energy-saving efforts.
- **Smart controls:** With careful oversight and analysis, the energy team was able to identify multiple energy savings opportunities. One such example is the demand control established for Plant #4's chilled water supply, a constant necessity for the aircraft painting process and routine comfort cooling. By leveraging two thermal energy storage tanks, the chilled water system can be turned off or operated at reduced load during the hours of peak utility rates, resulting in up to $4.1 million in annual savings.
- **Electricity provider collaboration:** Plant #4 fosters a close relationship with their electricity provider, an effort that is rewarded with advance warning when prices are expected to increase. This notice allows the plant to most effectively use their smart controls by preparing equipment and systems to use less power (and therefore reduce costs) during peak periods.

BENCHMARKING IN ACTION! – Lockheed Martin provides dashboards for real time power consumption and energy benchmarking. *Photo credit: Lockheed Martin*

Other Benefits

In addition to energy savings, Lockheed Martin's Air Force Plant #4 observed improvements in production quality and elevated awareness among staff regarding energy use optimization and related impacts. They have effectively bolstered their credibility and demonstrated their worth to the Air Force at large, having both qualitative and quantitative evidence to support the intelligence of their investments.

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