

Case study

Naval Aviation Depot

Cherry Point, North Carolina



Technology increases efficiencies

Consistent efficiency is vital to operations at the Naval Aviation Depot (NADEP) in Cherry Point, North Carolina. It is one of only three U.S. facilities that provides maintenance, engineering and logistics support on a variety of aircraft, engines and components for every branch of the U.S. Armed Forces, various federal agencies, and 24 foreign nations. The base turned to Johnson Controls to uphold comfortable working environments while maintaining productivity and improving energy efficiency.

The NADEP Cherry Point complex includes more than 100 buildings and employs over 4,000 civilians. The site experienced steady growth throughout the 1990s as other depots closed and moved their work to this Atlantic Ocean inlet. The expansion of facilities and personnel required an improved energy management strategy, but the nature of the site's mission meant production delays were not an option. Precise service schedules for the buildings are necessary because the planes housed in them may be needed overnight for defending American interests around the world.

Single source solutions

NADEP wanted to partner with a single source provider whose scalable technology could seamlessly communicate with equipment from various manufacturers. Johnson Controls and its Metasys® building automation system is providing the solution for the site's energy management needs. Even with NADEP's many facility environments – such as offices, barracks and airplane hangars – Metasys offers the flexibility to not only



optimize comfort conditions within each building but also control mechanical and electrical equipment.

Johnson Controls is a pre-authorized systems integrator that federal agencies can negotiate with directly under the U.S. Army Corps of Engineers Utility Management and Control System (UMCS) contract. Under the UMCS contract, NADEP purchased Metasys to replace a 15-year-old energy management system. By optimizing energy consumption and maintaining production schedules, Metasys ultimately paid for itself through the energy savings it generated.

Real-time adjustments

NADEP, like all federal government agencies, is under presidential executive orders to develop better strategies to reduce energy consumption and provide electrical metering. Johnson Controls placed meters at 72 major utility substations then tied it into Metasys to forecast energy consumption and eliminate shortfalls. Metasys allows energy usage information from more than 100 buildings to be monitored from a central workstation. Real-time adjustments can be made to manage and conserve energy and avoid production disruption. Savings primarily come from improved load-shedding routines, which help avoid price spikes by tailoring energy consumption to the local utility's real-time pricing structure.

Johnson Controls suggested reducing installation costs by using one networking media to centralize the system's integration and provided

a campus-wide Ethernet network. The network communicates energy and operation data to improve analysis and troubleshooting capabilities. Vital information from electrical transformers, chillers, lighting panels, variable speed drives, fire alarm panels, and paint booth filters is communicated in real-time so production schedules are never jeopardized.

For example, power meters at 34 electrical transformers are communicated through Metasys, displaying a real-time view of NADEP's power grid. This helps determine equipment start time so energy spikes won't cause a brownout – a major factor in the ability to meet established production schedules.

Improved operator productivity

Johnson Controls has established a comprehensive maintenance strategy through the Metasys system, which has freed the equivalent of three to four full-time maintenance employees to perform higher-level tasks. The maintenance staff no longer needs to physically inspect temperature controls and paint booth filters in individual buildings. In addition, the engineering staff has real-time monitoring capabilities, and the utility managers receive aggregated information. Furthermore, Metasys sends alarms via maintenance staff pagers when any monitored condition falls outside of a set limit.

"With such a large complex, it's important that our staff's time is efficiently used," says Mike Moore,

"It's critical that we are proactive in maintaining equipment to ensure a healthy workplace environment for our people."

MIKE MOORE
NADEP ELECTRICAL ENGINEER

NADEP electrical engineer. "It's critical that we are proactive in maintaining equipment to ensure a healthy workplace environment for our people."

Operator safety is a vital concern, particularly for those who are involved in spray-paint work. Metasys controls the filtration devices that capture paint booth pollutants, so when differential pressure readings reach critical levels, the system generates a work order to replace the filter. This reduces preventive maintenance manpower and more accurately ensures compliance with EPA pollution reduction guidelines.

The energy management strategy co-developed by Johnson Controls and NADEP has reduced energy costs and increased employee productivity due to the seamless integration of operations.

"We want to be able to control our facility assets with the least amount of resources possible," says Moore. "The only way we can do that is by having the proper information to help make decisions. We finally have that information now thanks to Johnson Controls."



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