

Fort Hood Leverages Technology to Manage HVAC, Water

Fort Hood, Texas, has leveraged technology and resources to manage installation-wide facilities and utilities through a Web-based system that is the first to be successfully implemented in the Army. The Fort Hood Energy Management Office has been working with the Construction Engineering Research Laboratory (CERL) of the U.S. Army Corps of Engineers (USACE) Engineer Research Development Center to implement an open communications system using LON technology, to serve as a single operating platform for facilities and utilities management. The utility management and control system (UMCS) is the Army's first that strictly adheres to guidelines developed by USACE and serves as the benchmark for the Army.

Through advanced energy technol-

ogies, the energy team is able to use the LON system to log in at a computer workstation and monitor, control and manage the heating, ventilation air conditioning and the water distribution systems on Fort Hood. The technology employs features that allow the operator to set schedules, change operating temperatures, turn equipment on and off, run diagnostics and identify systems that are not operating properly. The operator also receives notification of any alarms when signing in. He or she is alerted when equipment is not operating properly and can navigate through the Web-based system to investigate and take corrective measures.

Fort Hood, like other Army installations, has several different brands of direct digital control (DDC) systems

in its facilities. As buildings were constructed or expanded, multiple proprietary systems were procured. With each proprietary system, additional software and hardware was needed for maintenance and operation making it challenging for Fort Hood to efficiently manage its incompatible systems.

Other options were researched, and USACE looked into an open communications protocol. With an open system information could be transmitted between different controls systems, achieving interoperability.

Fort Hood decided in 2001 to make LON the platform for its control systems. At that time, the post was entering negotiations for an Energy Savings Performance Contract (ESPC) to help conserve and manage energy use. As part of the ESPC, Johnson Controls



installed new controllers with LON technology and a central operating station complete with servers to link facilities to a centralized workstation using the open communications protocol.

In addition to using the ESPC vehicle to improve HVAC controls, the ESPC will serve as a primary tool to achieve the revised energy reduction goals as mandated by Executive Order (EO) 13423, Strengthening Federal, Environmental, Energy and Transportation Management. The new EO requires that agencies improve energy efficiency and reduce greenhouse gases by reducing energy intensity by 3% per year through 2015 or by 30% by the end of fiscal year 2015.

Fort Hood continues to implement LON technology in existing and new facilities. Currently, the installation is managing 37 facilities with Circon, Distech, Honeywell, and Johnson Controls products in the system and is in the process of integrating 56 more buildings.

As part of the ESPC, Fort Hood gained a systems integrator, who works to integrate and transition LON compatible DDC units into the system. The systems integrator is a “no-cost” resource that is paid for by Fort Hood’s energy savings.

Along with managing HVAC systems, the UMCS is serving as the primary collection point for building utilities metered data. This data is used in various ways, such as developing trends for energy use to assist in determining valid energy reduction projects or strategies.

“The data may also be used for billing reimbursable customers and to incite competition among organizations to be the best at conserving energy,” said Bobby Lynn, Directorate of Public Works Energy Management Team leader. “It’s clear that you can’t manage what you don’t measure.”

Fort Hood also worked with CERL to develop a new tool to monitor the

operating times of equipment on the system.

“The operating time is imperative to efficiency for Fort Hood,” said Richard Strohl, DPW engineering technician. Whether equipment is operating when it should or when it shouldn’t, captured data helps to evaluate the energy consumption, the dollar cost and the environmental impact of that consumption.

“The energy team is looking to use that as a tool to measure those impacts and find ways to be more conservative in the operation of our systems,” Strohl said. “Reasonably, within 5 years, Fort Hood should have the majority of its large facilities integrated.

Fort Hood has already started to expand the UMCS to include utilities like water distribution and electric distribution that will also soon be monitored through the Web-based system.”

The open communication system has made the installation very flexible in this arena.

Eliminating supervisory control devices from the building provides Fort Hood with a flat peer-to-peer architecture that is open and interoperable. Integrating facilities and utilities into a single system improves efficiencies that are monitored and measured, and provides information on improving

processes and operations to continue reducing energy consumption and emissions. The LON system allows Fort Hood to measure the reduction of greenhouse gases and track historical data on run time and consumption to improve efficiency.

“This is cutting edge technology that will help Fort Hood not only reduce energy waste and save dollars,” Strohl said, “but it will also provide a standard platform to the Army, which will help reduce the Army’s dependency on proprietary control systems that cost the Army millions.”



Editorial Note: In August 2007 the US Army Corps of Engineers and the Army’s Installation Management Command Headquarters held a 3 day LON workshop hosted at Fort Hood. Dick Strohl and his team demonstrated their LON system to over 55 people from various government agencies including Army, Navy, and the GSA (Government Services Administration). The workshop focused on the best practices for implementing an open, interoperable solution based upon the LON Guide Specs developed by the Army Corps. LONMARK International was invited to address the group as the keynote speaker. I was honored and very pleased to attend this event and see how committed this group is to implementing an open solution. The work Fort Hood has been doing is groundbreaking and is setting a very positive example of how to achieve a fully open system, reduce energy consumption, and provide a competitive bid process for the base. Hats off to Bobby Lynn, Dick Strohl and their entire team for achieving their goals and helping others benefit through their leadership.

Contact:

Christine Luciano
DPW Env. Outreach Coordinator
Tel. +1 254-286-6664

