Energy Saving and Efficient Building Automation Triumph at the Eddie Bauer Groveport Distribution Center/Westmont Data Center

Background

Established in 1920 in Seattle, Eddie Bauer is a specialty retailer that sells high-quality casual sportswear and accessories for the modern outdoor lifestyle. Eddie Bauer products are available at approximately 380 stores throughout the United States and Canada, through catalogue sales, and online at www.eddiebauer.com. The company also participates in joint venture partnerships in Japan and Germany, and has licensing agreements across a variety of product categories.

Logistics, distribution, and computer operations are vital for any retail business. Distribution in the USA is handled at the company's 2 million square foot facility in Groveport, Ohio. The Ohio site is responsible for distributing merchandise to retail stores and direct operations, including direct-to-consumer shipping and return services.

Eddie Bauer's computer operations are housed in a 50,000 square foot facility in Westmont, Illinois, a suburb of Chicago.

The Challenge

Information from the site's different technical building systems needed to be captured and logged in real-time and available over the internet for monitoring and analysis purposes.

This included electrical information, critical fire pump pressures/runtimes, computer room temperature/humidity values, Liebert system status, com pressed air system values, IAQ systems covering CO, CO_2, temperature and humidity reading from nose units. The building automation system therefore needed to be based on open standards that would allow the integration of different subsystems into one control network as well as integration into the company's IT infrastructure.

The choice for an open system would also meet the owner's demands for flexibility and the freedom to select "best of breed" devices from different manufacturers.

"We needed to have multiple vendor product integration in order to ensure we could purchase the most suitable device for our requirements," said Jim Annable, Facilities Director at Eddie Bauer. "We also wanted Web based data logging which was achieved with the LON network."

The Solution

Based on their previous experience with integrating large facilities, Advanced Control Systems, the Ohio-based systems integrator who won the contract for the Eddie Bauer project, suggested a building automation solution based on LON technology. At the core of the new system are the *i*.LON 100 Internet servers from Echelon.

These collect data published on the LON network and provide a web-based interface for monitoring and controlling the building management system.

Facility staff now has access to information from all of the building systems on the LON platform as well as from the Liebert devices on the site's existing MODBUS network.

The project consists of two main structures in geographically different locations, the Westmont Data Center in the state of Illinois and the Groveport Distribution Center in Ohio. Both facilities can share information on the same LON network, a huge benefit for multi-site projects. At the larger Groveport site electrical data is gathered and monitored through the iLon 100's. Kilowatt hours, wattage demand with timestamp and amp

usage are monitored and verified with the utility invoices Eddie Bauer receives.

With the recently completed LON network, the clothing manufacturer can predict electrical bills within a one percent error range allowing them to accurately budget monthly expenses. Furthermore, using the kilo wattage demand data with real time information, Eddie Bauer can target peak energy consumption time frames and work to reduce wattage consumption as well as lower overhead costs.

The solution also focused on to the HVAC system which had the most potential for energy saving for Eddie Bauer. At the Groveport Distribution facility open Echelon Analog Input, Digital Input modules, the distribution facility can monitor critical fire pump pressure, system air compressor runtimes and overall system pressure. The LonPoint AI modules manage system pressure by monitoring the air compressors' cycling in order to prevent faults and provide crucial diagnosis information in the event of a system failure. Honeywell's LONMARK certified T7350 Thermostats are used on all eight of the RTU's at the Westmont site. After installing the thermostats a number of failing air conditioning compressor stages in the HVAC system, which had previously gone unnoticed, were detected and repaired immediately. Additionally, the HVAC system is managed on a schedule to conserve energy during times when the facilities are not in use. As a result, Eddie Bauer was able to improve the efficiency and effectiveness of its HVAC, contributing to lower operational and maintenance costs.

Pure Choice's Nose 5 Monitors were installed to control air quality; Temperature, CO, CO_2, VOC's, and humidity levels in both the Data center, and Distribution center. The levels are monitored and recorded by the *i*.LON 100 LONMARK certified devices to ensure a healthy work environment for Eddie Bauer employees. LONMARK certified EC-Displays by Distech are connected to the Nose 5 devices via two wire bus network in key areas such as the bar code printing department, where humidity can play a significant role in deteriorating package labels causing logistic problems with shipping merchandise. The air quality data collected from the Nose 5's and displayed on the EC-Display are also transmitted over the LON network for further processing. If the Nose 5's detect unhealthy CO or CO_2 levels, or that areas have become too humid the information will be sent over the LON protocol to alert that the ventilation system is not supplying sufficient supply fresh air in the facilities.

With the reduction in energy usage and more efficient controls, Eddie Bauer should see returns on the new system within just one year. The life cycle of the open system will also provide cost savings. Eddie Bauer will benefit from reduced expenses relating to changes, upgrades, and additions to the network as well as the amount saved in utility expenses.

Summary

Eddie Bauer needed a system capable of integrating disparate systems (MODBUS/LON) and log data effectively to verify energy usage and manage the day-to-day operations of a 2 million ft2 facility in an open protocol web based environment.

"This was achieved with the LON network integrated at Westmont and Groveport," explains Jeff DeVore, CEM, Advanced Control Systems Inc. "Using a half dozen different LON manufacturers' products managed through *i*.LON 100's Eddie Bauer now has an open, cohesive BMS that delivers real time data that the company can use to reduce energy consumption and increase comfort levels."

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