Stop & Shop Drives Energy Savings with LED Technology & Commercial Lighting Controls

The Opportunity

The Stop & Shop store in New Bedford, Massachusetts is a 73,000 square foot, full-service grocery store with offices and a smaller mezzanine area upstairs. Originally, the building had fluorescent lighting, and the building owners were interested in the savings potential offered by new LED technology and advanced controls. The task tuning ability was particularly of interest as it ensures quality lighting for the various products, consumers, employees, and tasks in each section.

The Results

Pacific Northwest National Laboratory managed the measurement and verification component of the demonstration and the Cadmus Company completed field energy measurements of the lighting system before and after the upgrade to capture the energy savings of the new LED system. The results show that initial replacement of older fluorescents with LEDs saved 30% of the estimated annual lighting energy use. Energy savings increased by an additional 36% with task tuning and with occupancy and daylight sensing controls. Task tuning was used to set operating light levels according to store management requirements for optimum retail sales conditions. This resulted in post-upgrade light levels that were visually brighter to management but measured lower than pre-upgrade levels. Occupancy sensing was used to set reduced light levels rather than full off in most spaces when the space was not occupied which resulted in an estimated savings of 18,000 kWh/yr.

Total annual energy savings is estimated to be 439,300 kWh, which is a 66% savings over the baseline energy use at this site. The corresponding reduction in facility energy cost is approximately $65,895 annually, and the total project cost, as installed, was $583,061. The payback for the project is calculated to be 7.5 years after the $92,253 EverSource utility rebates are applied.
The Solution

The Current, powered by GE, Daintree ControlScope® Manager (CSM) is a commercial lighting control software solution using Zigbee mesh networking. This networking system can set up fixture groups within the CSM to facilitate localized control.

LED luminaires such as the Cooper Corelite™, Cooper Encounter™, and Precision Paragon™ were shipped with preinstalled Zigbee-enabled controls compatible with the Daintree Control System. All luminaires were set up with built-in occupancy and daylight harvesting sensors and can be task tuned with Daintree software.

The Stop & Shop store departments operate on varied schedules ranging from 6 AM to 12 AM, Monday through Saturday, and 7 AM to 9 PM on Sunday. The new advanced commercial light controls applied differing task tuning levels to accommodate the needs of each department.

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### Energy Efficiency Strategy

#### Total Lighting System Savings*

- **30%** - NEW LED FIXTURE ONLY
- **66%** - NEW LED FIXURE WITH CONTROLS

#### Potential Controls Savings for Typical Lighting Systems**

- **4%** - OCCUPANCY SENSOR SHUTOFF
- (~) - DAYLIGHT HARVESTING
- **47%** - HIGH-END TRIM/ TASK TUNING***

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Current’s Daintree™ Solution Helps Mack Technologies Realize Greater Savings and a Lasting and Sustainable Impact

The Opportunity
Mack Technologies, a leading provider of complex electronic manufacturing services, makes electronic circuit boards for the defense, telecom, and industrial sections in its facility in Westford, Massachusetts. Mack Technologies researched efficient commercial lighting solutions to meet aggressive operational cost reduction goals, but concerns about the initial cost of replacing several thousand fluorescent bulbs made the manufacturer cautious about conversion. Mack Technologies also wanted to be a leader in corporate social responsibility. To do that, the company needed to significantly reduce its energy consumption and enhance employee working conditions while minimizing the cost of investment.

The Solution
Mack Technologies believed that the key to achieving energy efficiency was to leverage transformative technologies. Knowing that LED lighting, along with Daintree intelligent lighting controls, represent a significant innovation in energy efficiency, Mack Technologies sought to retrofit its 108,000-square-foot manufacturing facility in Westford.

To make this goal a reality, the firm brought in Bluestone Energy Services to develop and execute the comprehensive LED lighting and intelligent control project. Realizing the value of Daintree, Mack raised the bar in LED conversion by integrating controls to dramatically improve efficiency and flexibility.

The Results
The Daintree solution from Current, powered by GE, provides a wireless control solution for smart buildings, allowing Mack to transform LED conversion into a greater energy- and cost-savings investment. Daintree controls the new lighting fixtures through a standards-compliant ZigBee mesh network, enabling the driver in each lighting fixture to provide maximum flexibility to lighting control strategies.

Between October and December of 2012, Mack replaced 2,600 T-8 fluorescents with LED fixtures—investing over 3,000 man hours for the installation. The LED fixtures are warranted for five years or 50,000 hours and will not require frequent replacement like the fluorescent lighting fixtures they replaced.

At Mack, each fixture is individually programmed through ControlScope Manager to achieve maximum savings. Mack decreased the lighting intensity in one area from its normal level in 1-percent increments to better understand what levels were important for the tasks being performed. Not until the level reached 50 percent of spec standard did occupants perceive the lighting to be noticeably dimmer. So, while Mack is already saving significant money on its energy bill, it has opportunities to extract more savings from Daintree as the users gain experience with actual usage requirements.

"We were blown away by the information we came across in terms of the energy savings and the positive impact to the environment that we could realize."
—John Kovach
Former President of Mack Technologies

Through ControlScope Manager, Mack Technologies has access to reports that show its energy usage based on its settings. This information enables Mack to discover and implement opportunities to improve the facility’s energy usage, boosting the business profitability. Mack can also use this information to define and refine zones of lighting to be controlled as a group on a schedule, on demand, or on sensor-based occupancy as they see fit.

Want to see how you can make your environment intelligent?
Contact us to get the conversation started.