

ENERGY EFFICIENCY

Green lighting initiative brightens the way toward electricity savings, employee satisfaction

Challenge

- Evaluate current and alternative warehouse lighting systems
- Identify solution that provides real value
- Minimize disruption to operations

Solution

- Upgrade existing lighting system with new high-output lamps
- Partner with electric utility for best practices and incentives
- Extensive proof of concept testing

Results

- 2.3 gigawatt hours of electricity saved per year
- 20 percent drop in electricity consumption
- Reduced maintenance costs, improved employee productivity



Companies around the world are researching and implementing programs to reduce energy consumption and engage in environmentally friendly practices. The green movement clearly has the potential to evolve from its place in the spotlight to a new standard for businesses. But reducing corporate carbon footprints is challenging — programs need to achieve real value for both the environment and company bottom lines.

Illustrating this point, Exel and its EV Logistics joint venture partner, Versacold, identified a green opportunity for one of western Canada’s largest grocery retail chains in 2006. EV Logistics operates two warehouses for the customer in the Lower Mainland of Canada; one is a 478,000-square-foot ambient dry storage facility.

“The opportunity was a facility lighting project that offered the potential to conserve electricity, reduce carbon emissions and save on utility costs — highly important metrics for us,” said Jim Gehr, president of Exel’s Retail business unit. “But we also viewed this initiative as a pilot program that could be extended to other Exel facilities in North America.”

→ The Challenge

Lighting performance is a key component for the efficient and safe operation of warehouses. This facility’s existing lighting system consisted of 895, single element 400-watt high-intensity metal halide lamps. These lamps burned all day, every day. The effort to test and evaluate more efficient options would require a significant investment of time, money and manpower. Even more, the warehouse was one of the largest of its kind in British Columbia. Initially, this was an investment the retailer wasn’t sure it could make.

However, given the inviting benefits new state-of-the-art lighting systems offered, EV Logistics and the retailer decided to explore a number of alternative systems. A new system had the potential to reduce overall operating costs by conserving electricity, extending lamp life, improving safety and increasing productivity.

→ The Solution

To begin the research and testing phase, EV Logistics consulted BC Hydro, British Columbia’s largest electric utility. The team set up a demonstration that tested seven high-bay lighting options in the warehouse for technical and financial feasibility. Sensors were also evaluated to activate or deactivate lighting based on occupancy.

“After substantial testing, the results clearly demonstrated that installing T5 high-output (HO) fluorescents would dramatically reduce electricity consumption and costs,” said Dave Martin, director of operations at EV Logistics. “We also qualified for financial incentives through BC Hydro’s Power Smart program, which cut the cost of implementation and reduced payback time to less than one year.”



Retail

Dynamic Inventory Control

In 2006, the United States consumed almost 4 trillion kilowatt hours of electricity. In 1980, consumption levels were at 2 trillion — half what they are today.

-U.S. Department
of Energy's Energy
Information Administration

In addition, the new HO fluorescents delivered 24,000 to 30,000 operating hours compared to 20,000 hours for the previous lamp (based on 12-hour continuous operation). And, a HO lamp spreads its lighting over a much wider area for better light distribution.

EV Logistics shared the cost models with the customer, and the team decided to move forward with a new lighting system. The retrofit took three months and included the following:

- Replace 895 existing 400-watt pulse start metal halide lamps with 895, 228-watt, four-lamp T5 HO fluorescent high-bay lamps throughout the warehouse
- Install two occupancy sensors in each aisle of the warehouse

→ The Results

The lighting retrofit has been so successful that EV Logistics is pursuing re-lamping projects in other locations. Delivered benefits include:

- 2.3 gigawatt hours of electricity saved per year; this translates to more than 400 metric tons in CO₂ emission reductions per year
- 20 percent drop in electricity consumption
- Reduced labor and maintenance costs due to longer-lasting lamps
- Improved employee productivity and working conditions due to brighter and more uniform lighting distribution

"The collaboration on this project has led to tremendous results," Martin said. "The program paid for itself within one year from the energy savings alone."



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