CORIS Energy Control System (ECS) helps Dartmouth College dramatically cut energy costs and reduce energy consumption

Building a "Greener" College

Dartmouth College, located in Hanover, New Hampshire is the nation's ninth oldest college and a member of the Ivy League. With a long tradition of leadership in environmental issues, the College made a commitment to conserving energy and reducing greenhouse gas emissions through individual action, college practices, and energy efficiency and renewable energy infrastructure projects.

Dartmouth is actively reducing its environmental footprint and has an ambitious goal to cut greenhouse gas emissions by 30% by 2030. An important step in achieving this goal is a $12.5 million investment over seven years in energy-saving upgrades to existing buildings.

Following an energy review of its major facilities, Dartmouth identified over 200 energy conservation and efficiency projects. There were clear opportunities to conserve energy in areas such as: lighting, heating, cooling and ventilation, building envelopes, water, energy metering and management, and renewable energy. These conservation projects, when completed, have the potential to save up to 15% of Dartmouth's heating load and 15% of its electrical load.

THE CUSTOMER
Dartmouth College,
Hanover, New Hampshire.

THE NEED
Dartmouth's West Gym, the oldest gym on campus, needed a cost-effective energy efficient lighting control system to automatically adjust lighting usage to reduce energy consumption and save costs.

THE SOLUTION
Dartmouth integrated NetWise's CORIS Energy Control System into their upgraded lighting system to better control lighting usage in the facility.

THE RESULT
CORIS ECS provided immediate and tangible benefits by providing increased flexibility in managing lighting usage – reducing energy consumption by nearly 40%.

Energy Efficient Lighting

As a cornerstone energy conservation project, Dartmouth began upgrading its lighting systems across the campus. To determine the optimal energy saving solution, the College conducted an energy audit of the West Gym – the campus' oldest gymnasium. Steve Shadford, Energy Engineer, Facilities, Operations & Management (FO&M) at Dartmouth oversaw the project.

Dartmouth is proud of its extensive athletics program, with over three-quarters of its undergraduates participating in some form of athletics. The West Gym played a big part in meeting the athletic program needs, with two full size basketball courts, a running track and smaller arenas. Dartmouth needed a solution to save money and conserve energy while optimizing students' experience at the gym.

"One of the biggest challenges we faced was finding an innovative, cost effective and sustainable solution to control energy usage. We wanted an easy to use, simple energy saving solution without costly changes to building infrastructure or major IT burden," said Mr. Shadford.

With the old light fixtures in the gym, the metal halide lamps took a lengthy amount of time to turn on and warm up, and facility managers could not adjust lighting levels or easily turn off portions of lighting. As a result, lights were left on for large portions of the day, evening and during class time when the gym was typically vacant.

The Solution

In December 2010, Dartmouth launched a pilot project in the West Gym to upgrade its lighting systems. As part of this project, the College replaced the old 400 watt metal halide fixtures with high-efficiency fluorescent fixtures, reducing the number of fixtures from 48 to 36. While the older light fixtures had a single lamp, the new fixtures each have six high-efficiency fluorescent lamps powered by three ballasts. The result is that each fixture now has three independently selectable settings (low, medium and high), providing virtually unlimited flexibility in how much light is provided throughout each area of the Gym.

A major part of the lighting upgrade was Dartmouth's decision to partner with J&F Labs and integrate CORIS ECS into their new lighting system. Following a simple installation process, CORIS ECS Lighting Control Modules were connected to each of the new lighting fixtures. The wireless feature of CORIS ECS avoided the need for new lighting control wires and conduits to be run to each fixture, avoiding significant installation expense. Students, faculty and other gym users are now able to easily control the lighting system using a touch screen that sends commands to the CORIS ECS system.

> *"There are always new fitness activities that come up that require specific lighting. For example, yoga classes require low lighting while Ping Pong and Volleyball tournaments require bright lights. With the CORIS ECS system, we can now easily adjust the lighting to provide an optimal experience for students..."*
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> STEVE SHADFORD,
> ENERGY ENGINEER, FACILITIES, OPERATIONS & MANAGEMENT, DARTMOUTH COLLEGE

Authorized facility managers are now able to control the gym's lighting system from any web browser or mobile device – anywhere, at any time. This is especially useful for special event lighting scenarios. Dartmouth also installed vacancy sensors that send a signal to the CORIS ECS if users forget to turn off the lights when they leave – when there is no activity a signal is sent to turn off lights after a set timeframe.

The Results

By upgrading the lighting system in the West Gym and controlling the fixtures with CORIS ECS, Dartmouth expects to see over 80% in energy savings – nearly 40% of those savings are directly related to controlling lighting usage with CORIS ECS.

The results of the CORIS ECS installation are overwhelmingly positive:

- Lighting can now be automatically turned off when the gym is not in use, usually early in the morning, end of night or during class time.
- There is greater flexibility in controlling lighting for specific sports activities and special events hosted in the gym, providing an optimal experience for gym members.
- Authorized users can remotely control lighting fixtures from any web browser or mobile device - managers don't have to be on campus to change settings.
- The wireless feature of CORIS ECS has reduced IT and installation labor costs.
- By controlling lighting, the length of time between bulb changes has increased – bulb-life has been considerably extended.
- CORIS ECS provides increased flexibility which is especially important when managing a gym where activities are constantly changing and usage patterns evolve over time.

CORIS ECS helped Dartmouth College significantly reduce electricity usage and control energy costs, partnering with the College in their efforts to become a more sustainable and environmentally-responsible institution. As a result of this successful pilot project, Dartmouth is looking to upgrade lighting systems in every facility in the school.

NetWise's CORIS ECS provided Dartmouth with an efficient and cost-effective solution that reduces carbon footprint, saves money and optimizes student experience in the West Gym.

Benefits of Using CORIS ECS From NetWise

With CORIS ECS, there is great potential to conserve energy and minimize total costs. CORIS ECS provided Dartmouth with immediate and tangible benefits from the very first day of installation.

Simple to install and easy to use

- No costly changes to building infrastructure
- Facilitated rapid deployment without complex installation, cabling or conduit systems
- No IT burden
- No device programming or configuration

Greater control and flexibility

- Unlimited scheduling options, automatically reducing energy usage
- Single commands simultaneously control multiple CORIS ECS devices in various locations, both on demand and on a scheduled basis
- Web-based interface allows remote control of lighting by authorized users

Remotely control energy usage

- Conserve energy by monitoring and controlling electrical usage using the Internet
- Access devices from any web browser, including computers, smart phones and WiFi handheld devices
- Get default notification and email alerts to ensure timely intervention and optimal operating efficiency