



fifthlight
technology

CASE STUDY

Honda Canada Headquarters

180 Honda Blvd,
Markham, Ontario

August 2010

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Background

The newly built Honda Canada Headquarters located in Markham, ON consists of three buildings; a four-storey LEED® certified head office, a center for research and development, engineering and training and a parts distribution facility. The complexity of this multi-use, multi-building campus made Fifth Light Technology the clear choice for lighting controls. The indoor and outdoor lighting fixtures included HID, linear fluorescent, and compact fluorescent lamp types.

Project Objectives

The Fifth Light Solution was designed to meet several key project objectives, as listed below:

- Maintain task-appropriate light levels at desk height while adjusting for ambient natural light
- Provide dimming and on/off control for multiple lighting types at different voltages with a single common open communication network
- Consolidate campus wide energy consumption data and lighting control to a single website

Solution Overview

To meet these challenges, Fifth Light's Signature Lighting Solution was chosen. This Solution consists of the following components:

- 1,400 DALI dimmable 2 lamp 32WT8 ballasts (120V)
- 450 DALI relays (347V/20A)
- 50 low voltage momentary switches
- 200 low voltage occupancy sensors
- 30 low voltage daylight sensors
- 5 Lighting Control Panels
- 1 multi-user web based Lighting Management Software application



Project Highlights

Lighting energy consumption reduced by

56%

A Centrally Controlled DALI Network of

2,135 Devices

10 Year Life Cycle Cost Savings of

\$500,000

Consolidated energy reporting and lighting control for a

Unified Campus Network



The key lighting management features provided in this project include:

1 Daylight Harvesting with gradient dimming. A network of daylight sensors adjust lighting levels in response to ambient lighting conditions. A gradient dimming algorithm allows for a single daylight sensor to dim the first row of light fixtures closest to the window more than the second row, which is dimmed more than the third row.

2 Wall Mount Control with device specific profiles. Each momentary switch is assigned a set of fixtures and a response pattern through software. Virtual lighting zones allow for the set of fixtures controlled by a given momentary switch to be modified at anytime without rewiring. Dynamic time limits, virtual minimum and maximum levels allow the facility manager to customize the behavior of each momentary switch.

3 Automatic Tube Fault Detection and Dispatch. The operational status of each DALI ballast and lamp is automatically checked every 2 minutes. An electronic notification that illustrates the location of the fixture to be serviced is emailed to the facility management team.

4 Web based control. The facility team is given password protected access through an internet browser.

5 Unified Campus Network. Energy management data and lighting control for the entire campus is consolidated to a single web site. Users login through a web browser to see how much energy is saved in the entire campus, a specific building or any user defined group. Energy savings reports are emailed regularly to the facility team.

Results

The results of this project have been determined by creating an energy model that compared the Fifth Light Solution to a typical non-dimmable, efficient lighting system.

- Floor light level: 40-45 foot candles
- Energy savings: 56%
- 10 year life cycle savings: \$500,000
- Payback period: 3.8 years
- Greenhouse gas reduction: 350 tonnes CO₂ eq/year ¹

This case study is based on data produced upon completion of the installation.

¹ Canadian Energy Research Institute, *Comparative Life Cycle Assessment of Base Load Electricity Generation in Ontario*, October 2008.