

# Earth Rangers Centre

## Energy management upgrades help this environmental showcase qualify for LEED Platinum certification



### CUSTOMER BENEFITS

- Effective performance reporting
- Identification and justification of energy projects
- Year-over-year energy reductions of 20%
- 90% more efficient than energy code model
- 2011 year-to-date savings (vs. prior year):
  - GHG savings: 444.2 tons CO<sub>2</sub>
  - Water recycling savings equal to 0.5 Olympic sized pools

### PROJECT AT A GLANCE

**Project Type:**

Green Building EcoStruxure Solution,  
Energy Management

**Location:**

Woodbridge, Ontario, Canada

**Number of Buildings:**

One 60,000 ft<sup>2</sup> (1,486 m<sup>2</sup>)

**Green Certifications:**

LEED® Gold; Platinum Rating in Review

**Applications:**

HVAC Controls (Andover Continuum Building Management) — 1000+ sensors  
Lighting Controls (PowerLink/Clipsal)  
Power Monitoring (PowerLogic Meters/ ION-Enterprise) — 84 metering points  
Lighting Fixtures (Juno)  
UPS (APC)  
Security (Pelco Cameras)  
Dual EV Charging Stations  
Energy Management Information System (Energy Advanced)

**Partners:**

MCW Consulting and TA Canada



The Earth Rangers Centre is an advanced green building, certified Gold under LEED® for New Construction. Through school shows, community events, and online programs, Earth Rangers™ makes children aware of the impact that humans have on the environment, inspiring them with a lasting passion to build a green future.

Located on the Kortright Living City Campus in Woodbridge, Ontario, Canada, the Centre is a showcase of cutting edge building technology such as energy metering, smart automation and controls, innovative water and wastewater management, solar generation, green roofs, and geothermal heating and cooling.

The Centre is proof that a building can be operated effectively and efficiently, while minimizing impact to the environment.

### Challenges

“The fact that our building is 80% below the national average energy usage of a standard building sets an outstanding example of the mindset we want to encourage in children,” says Peter Kendall, Executive Director, Earth Rangers. Indeed, green building design students and professionals from around the world visit the facility to study its energy-efficient design and operation. “But, if we want to set the standard for how to operate a truly energy efficient, ‘green’ building, it’s vitally important that we continue to reduce our facility’s energy usage.”

In order to take an already efficient building to the next level of performance, Earth Rangers required an energy management information system (EMIS) that centralized key energy data and provided the ability to:

- identify, analyze, and report energy savings and sustainability initiatives

- validate energy efficiency projects, document return on investment, and ensure savings
- animate building energy performance during facility tours with a user-friendly display kiosk
- perform utility bill verification and reporting of energy provided back to the grid through on-site generation

In 2009, Earth Rangers set two goals for their facility: LEED Platinum status and CO<sub>2</sub> reduction. As a non-profit organization, Earth Rangers was seeking a donation from key suppliers that offer the solutions required to assist them in achieving these goals.

MCW, a consultant in the Toronto area, approached Schneider Electric with this request in 2008. Following several meetings with MCW and the leadership team at Earth Rangers, Schneider Electric was selected as their supplier for building automation, metering, and lighting controls. During the initial phases of this project, Schneider Electric worked closely with MCW Consulting and TA Canada (a Schneider Electric Building Automation Partner).

### Solution

In the initial phase of the project, Schneider Electric donated equipment and systems worth \$375,000 to help Earth Rangers make their facility both energy and carbon neutral, and to upgrade their LEED certification from Gold to Platinum. Documentation for LEED Platinum status has been submitted and is under review.

This first installation included Schneider Electric building automation hardware and software, power monitoring and energy management tools, Juno lighting, Pelco cameras, and PowerLink/Clipsal lighting controls. An electrical vehicle charging system was eventually added to the overall solution.

Though the initial project enabled significant energy savings, the customer wanted to achieve higher levels of building performance. This was accomplished in July of 2011, when Schneider Electric installed its Energy Advanced EMIS at Earth Rangers Centre. By adding Energy Advanced as

“To upgrade our building from LEED Gold to LEED Platinum, we’re going to have to continue to reduce energy usage. Schneider Electric’s building automation/energy management system will help us achieve this goal. It will give us a much better view of where energy is being used in our facility and the intelligence to help us optimize energy usage to the point where we are completely self-sustainable.”

—Peter Kendall, Executive Director,  
Earth Rangers

part of the overall energy management solution, Earth Rangers now has the tools to easily and efficiently turn energy data into actionable information. This system leverages the downstream real-time monitoring and control systems and offers:

- facility operations personnel the tools to identify, analyze, and report on energy savings and sustainability initiatives
- managers the ability to validate the effectiveness of their energy savings initiatives and investments, helping document the true return on investment in dollars, kWh and CO<sub>2</sub> saved
- an attractive, easy to understand public facing display kiosk to help communicate the Earth Rangers’ mission and energy achievements to visitors of the center and corporate website

The Schneider Electric integrated energy management solution drives maximum energy efficiency and enhances Earth Rangers’ worldwide attraction as a demonstration site for new and emerging environmental technologies. “What’s missing in the marketplace is a site where you can evaluate how a new technology interacts with existing building technologies to drive energy conservation,” explains Mr. Kendall. In addition to providing visibility to Earth Rangers’ building control and energy usage system, the Schneider Electric system enables real-time, online monitoring of the building, creating a virtual center to expand the Earth Rangers’ visibility and learning opportunities.

### The Bottom Line

Energy savings at Earth Rangers Centre are monitored, analyzed, and refined on a continuous basis, utilizing the Schneider Electric Energy Advanced EMIS. Earth Rangers tracks their performance against budget via reports that are distributed to their team on a monthly basis. The EMIS system streamlines the collection, trending and analysis of building energy data. This solution gives Earth Rangers the ability to:

- monitor WAGES (Water, Air, Gas, Electricity)
- empower departments on Energy & Water efficiency targeting
- benchmark the different building/floors and determine best practices

The energy monitoring system has allowed Earth Rangers to target multiple credits under LEED Existing Buildings, namely Energy and Atmosphere Credits 3.2 and 3.3 (system level metering), along with Water Efficiency Credit 1.1 (sub-metering and reporting). Additional spill off credits resulting from the system can be seen in an estimated Energy Star rating of 97.

Schneider Electric's integrated energy management solution delivers the following benefits to Earth Rangers:

- centralized key energy data into a single view for energy monitoring, analysis, and reporting
- early detection of poor energy performance
- effective performance reporting
- auditing of historical operations
- identification and justification of energy projects

- evidence of success of energy initiatives
- support for energy budgeting and management accounting
- year-over-year energy reductions of 20%
- In 2010, the 60,000 square foot Earth Ranger facility was operated 90% more efficient than the original Model National Energy Code for Buildings (MNECB) base design case
- On-site generation through solar PV arrays installed on the roof and in the parking lot have helped ERC become revenue neutral due to the subsidies provided through the Ontario FIT contract for on-site generation
- 2011 year-to-date savings (vs. prior year):
  - o GHG savings: 444.2 tons CO<sub>2</sub>
  - o Water recycling savings equal to 0.5 Olympic sized pools

“Energy Advanced allows us to visualize integrated information from different platforms. At the click of a mouse, up-to-date energy metering and building automation tracking information are brought together into a package that is understandable to a building operator, manager, or the general public.”

—Andy Schonberger, Director,  
Earth Rangers Centre

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