MOE

Ministry of the Environment, Green Education Kiosks

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Enermodal Engineering is Canada's premier LEED consultant. Enermodal is responsible for 40% of all LEED Canada NC certified buildings.

Enermodal Engineering is Canada's largest green building consulting firm and Canada's premier LEED consultant, responsible for 40% of all LEED Canada NC certified buildings. In 2009, Enermodal became the LEED, Measurement & Verification, and Green Education Program Development consultant on the Ontario Ministry of the Environment's newly renovated Queen's Park head office.

Located on the 10th and 11th floors, the MOE office is a LEED CI Platinum candidate, showcasing Ontario materials, an energy-efficient lighting design, superior indoor air quality, and best practices in operations. The new office is expected to receive thousands of visitors each month – including Ministry employees from other offices, project partners, members of the public, and government officials from Ontario and around the world. Thus, the office is designed to demonstrate what can be accomplished in an existing, tenanted government office in terms of environmental responsibility as well as the Ministry's commitment to sustainability.

To communicate the sustainability features of the MOE office as well as provide employees with an understanding of their office's current energy use (and how their actions have an impact on this result), Enermodal created two green education kiosks. The electronic, 22", touchscreen kiosk screens are located in the 11th floor lobby, mounted on salvaged wood skids. Enermodal provided both the hardware and software for the kiosks, including the html display and energy meter interface.

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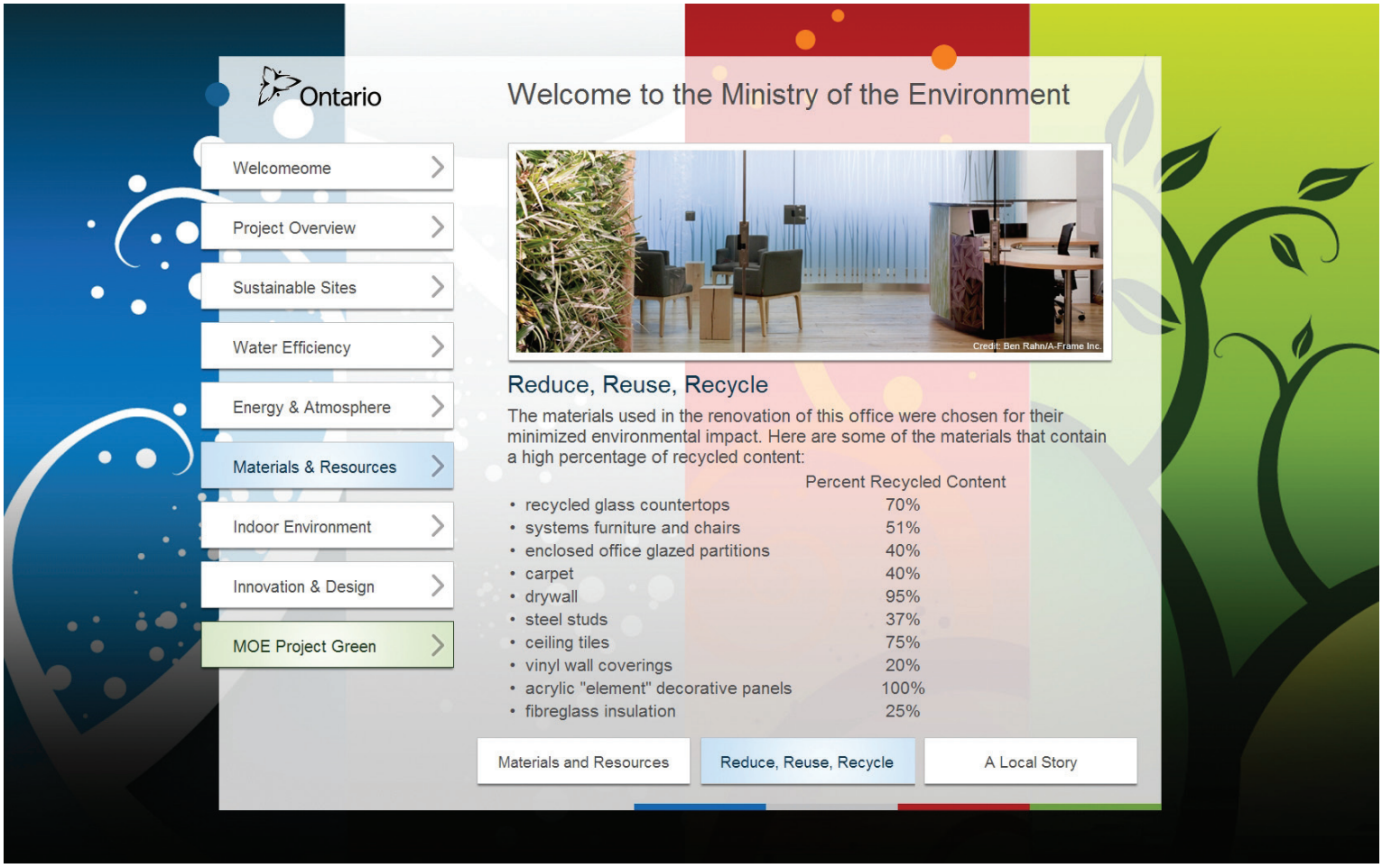
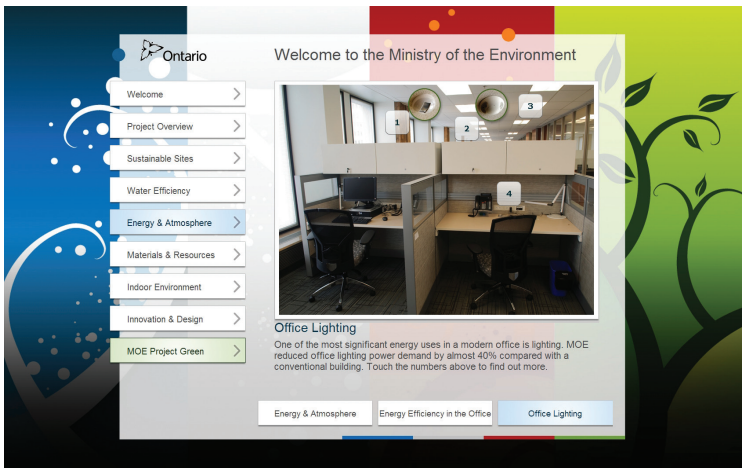
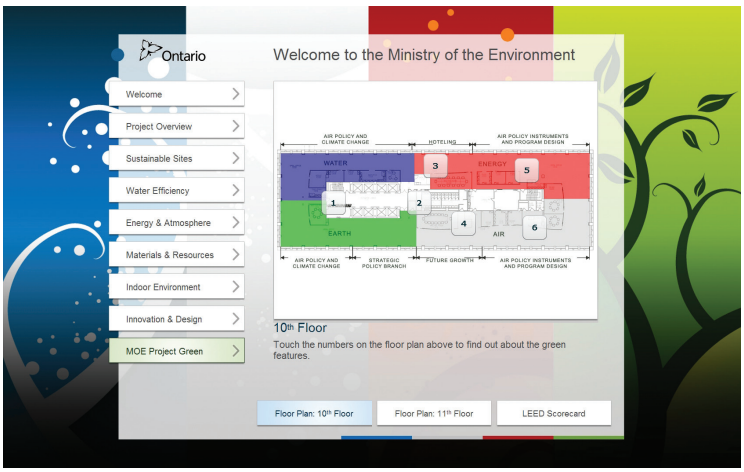






INNOVATION & COMPLEXITY

The LEED (Leadership in Energy and Environmental Design) Canada 1.0 green building rating system provides up to 70 points to buildings the meet certain environmental criteria in their design. There are five Innovation & Design points available for going above and beyond the requirements of the main point categories. One innovation point available is Green Building Education. The intent of this point is to explain to visitors how the building is green with the idea that these visitors will then be more educated about the specific building and about sustainable design in general.

To meet the requirements of the innovation point for green education, the green education plan must include an "active" and a "passive" portion. Enermodal developed its Signature Green Education Kiosks to meet the active portion of the requirement. (For the Ministry of the Environment, Enermodal provided the brochures as the passive portion of the credit.)

To meet the requirement of active education, the Enermodal kiosk is a touchscreen (rather than a presentation that plays on its own without user interaction) and has flash animated videos that explain green building features (rather than static diagrams or text-only explanations).

The CaGBC has approved the MOE's green education point during the first certification submittal review (although final certification for the office will likely occur in the fall of 2011).

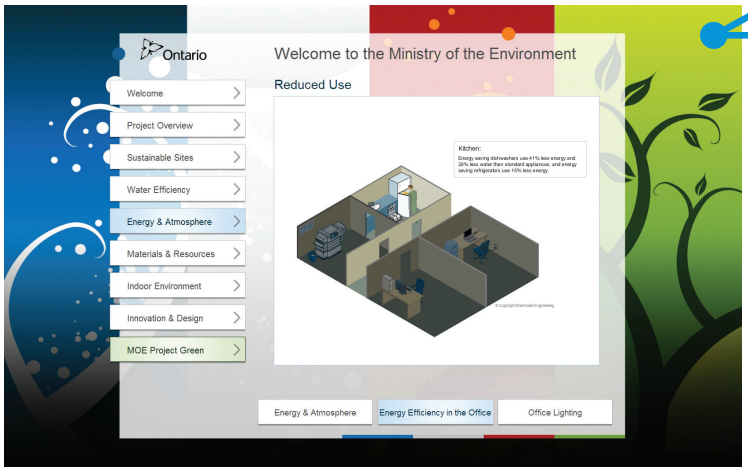
The reason Enermodal and the MOE chose to have two kiosk displays rather than incorporating the two kiosks into one screen, was that the LEED Kiosk content will change little over time – making it more interesting for visitors; however, the Live Data Kiosk changes every 15 minutes, making it of interest for visitors and occupants alike. Both screens are centrally located in the foyer of the 11th floor on salvaged wood skids across from the demonstration living wall.

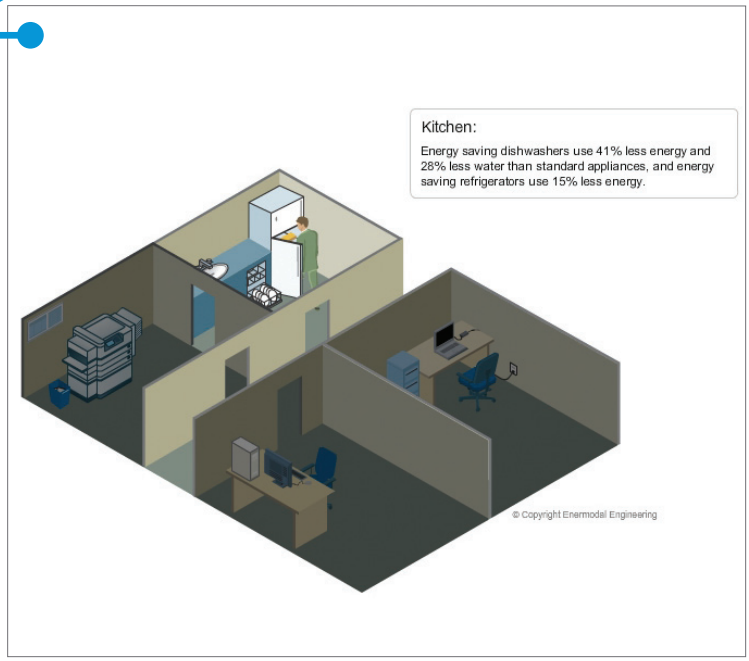
LEED Kiosk

The LEED kiosk focuses on the LEED (Leadership in Energy and Environmental Design) features of the space. The kiosk is created with html coding (like a website), which combines text, images, interactive “flex” graphics, and flash animations. The kiosk is divided into sections, accessed through touchscreen tabs, corresponding to the LEED categories: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation & Design.

The kiosk design was a custom html template based on the MOE’s head office interior design “elements.” The MOE office is divided into four sections: Earth, Air, Water, and Energy. These elements are incorporated into the artwork and colour scheme of the various areas of the office. Likewise, the kiosk colours and background design feature graphic interpretations of these elements.

This LEED kiosk educates the many visitors to the MOE offices about what can be accomplished with a commitment to sustainability, a dedicated design team, and ingenuity. This kiosk also explains sometimes complex green building concepts in a way the everyday person can understand.


Ontario
Welcome to the Ministry of the Environment
Reduced Use
Welcome
Project Overview
Sustainable Sites
Water Efficiency
Energy & Atmosphere
Materials & Resources
Indoor Environment
Innovation & Design
MOE Project Green
Kitchen:
Energy saving dishwashers use 41% less energy and 28% less water than standard appliances, and energy saving refrigerators use 15% less energy.
Energy & Atmosphere
Energy Efficiency in the Office
Office Lighting


Kitchen:
Energy saving dishwashers use 41% less energy and 28% less water than standard appliances, and energy saving refrigerators use 15% less energy.
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Live Data Kiosk

The second kiosk features what Enermodal refers to as “live data.” As the Measurement & Verification consultant on the MOE project, Enermodal had specified the installation of electronic metering for two loads on the east and west wing of each floor: lighting and plug loads (as the project is a CI tenant fit-up, the base building systems could not be metered or calculated for the MOE’s space).

For this second kiosk, Enermodal specified wiring to connect the meters to a central computer located on site. Meter data was collected using software provided by the meter supplier. Enermodal designed and built a system which worked with the meter supplier’s database to pull the energy data and assemble it into visually appealing graphs making use of the MOE’s design “elements.”

Occupants and visitors can view current energy data on the space by load (lighting or plug), by floor, and by date (daily, weekly, monthly, or annually). This energy information is updated from the meters every 15 minutes.

INSERT LIVE DATA HARDWARE SCHEMATIC

Several challenges needed to be overcome when designing MOE's live data kiosk. The system had to read meter data at short intervals, provide security for this data, and dynamically load data onto the kiosk quickly. To address the first issue, the meter manufacturer was already supplying software to read its meters. Enermodal configured this software to read the meters as required by the live data system. The meter supplier also provided the database schema, which Enermodal used to create attach the live data system. To serve the data to the kiosk in real time, two software programs were developed: one on the kiosk and one on another machine in a secure location (the 'server'). The kiosk software provided the graphical display for users while the server software ensured rapid and secure access to data in the meter supplier's database. Finally, as an extra measure of security, Enermodal installed this system on a network created separately from the MOE's network. This ensured potential intruders would not have access to the system remotely.

The intent of the kiosks is that in coming months and years, the MOE can hold various "challenges" to encourage lower energy consumption. For example, the 10th floor could compete again the 11th floor to see which floor can get their lighting energy use the lowest for a given week. In this way, occupants can see how their own actions can have an impact on the office energy use.

ENVIRONMENTAL IMPACT

There are several environmental benefits to the green education kiosks. The primary benefit is, of course, green education. As more building owners and employees are interested in going green, it is important that they understand what type of improvements can be made – even in a tenanted office space that is part of a larger building. By simply explaining green building concepts in general and those implemented at the MOE, Enermodal's LEED kiosk will inspire members of the public as well as educate those involved in the BD+C industry who visit the MOE site (i.e., architects, engineers, contractors, developers).

Research has shown that when people are aware of how their actions directly impact their environmental footprint, they are more likely to take sustainable action. Thus, the live data kiosk – by showing MOE employees the lighting and plug load use of the building – will inspire them to consider how they can reduce their energy use. Specifically, the MOE plans to hold challenges and competitions in the future so employees can actively attempt to reduce their energy use and see the live results.

To dovetail with the energy saving goals of the MOE space, both screens turn on at the start of the workday and turn off at the end. This ensures that the kiosks are noticed during the day, but are also saving power when not in use at night.

SOCIAL AND ECONOMIC BENEFITS

There are several social benefits to the green education kiosks. While an increasing number of Canadian employees work in a LEED or sustainable office, some do not realize what features they see and technologies they make use of every day contribute to the energy and water savings in their office. By educating employees, the LEED kiosk helps inspire, engage, and empower employees to have a better understanding of their global and office environment. The kiosks also explain green building technologies and design features to visitors who might otherwise not know what makes a LEED CI Platinum office unique.

CONCLUSION

The kiosks at the MOE office demonstrate that innovative thinking can create green education that allows for a consistent, accurate message to occupants and visitors and that also makes use to current technology, including computer programming, graphic design, and building metering. And the fact that this type of kiosk green education system can be replicated at other green buildings shows its versatility.

In the end, it can be seen that the green education kiosks are beneficial for people and the environment alike.