

New school leads by example

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The David Suzuki Public School will use 24% of the amount of energy a typical school uses.

When you name a school after one of Canada's most famous environmentalists, you'd better know what you're doing about energy efficiency.

Thankfully, the David Suzuki Public School in Windsor, Ont., will be model for what can be achieved when buildings are constructed with an eye to minimizing environmental impacts. The \$13.6-million building, which is set to open its doors next September, will feature such cutting-edge technologies as solar walls, earth tubes and sun pipes.

It will use a fraction of the energy and water that a school constructed to the current building code would use.

In keeping with the Greater Essex County District School Board's new practice of building schools with teachable lesson themes designed into the building, the David Suzuki School is being built around the theme Earth Keepers.

"We wanted to build a school that incorporated leading energy-efficient technologies to show people the possibilities," says Giuliana Hinchliffe, co-ordinator of engineering at the board, noting that she anticipates the school to be 70% more energy-efficient than a typical school.

Here's why: Energy recovery is built into its displacement ventilation systems. The system provides the recommended amount of ventilation and no more, so that the heating and cooling systems only

have to heat or cool a small portion of incoming air. That air then travels along the floor and straight to the breathing zone of the children so it is not wasted.

As well, the main source of heating or cooling is geothermal: A huge bore field in the backyard will allow the school to draw energy from the Earth in the winter and put it back in the summer. This will be used in tandem with heat pumps in the school to provide all the heating and cooling for the entire space. No natural gas will be used, Ms. Hinchliffe says.

The building is positioned to maximize the amount of natural sunlight in each room throughout the school. Light shelves and light panels built into over-sized windows diffuse light further into the rooms.

A green roof helps keep storm water on-site and away from sewers. Highly reflective concrete bounces the heat and sunlight back to keep the building cool. The list goes on.

Learning about these energy-efficiency efforts and deciding on which to use required two years of investigation and the guidance of consultant Enermodal Engineering.

"We are the largest firm that works exclusively on green buildings in Canada," says Stephen Carpenter, president of Enermodal Engineering, which is based in Kitchener, Ont. The company is currently working on 200 projects using the LEED building rating system across developed by the U.S. Green Building Council and adapted by the Canadian Green Building Council to set a standard for the construction industry for environmental sustainability and design.

"It's a reward system that rewards the best in class, the early adopters," says Mr. Carpenter, who co-authored the LEED Canada reference manual and delivers LEED training courses across Canada. He says that LEED is not a building code, which is about minimum requirements. Rather, he says the LEED system is "aspirational" and rewards builders for going beyond code.

It is based on a series of 70 points and there are four performance levels - certified, silver, gold and platinum. The system is divided into six areas: sustainable site development, water efficiency, energy efficiency, materials and resources, indoor environmental quality and innovation and design.

David Suzuki Public School will be the first platinum-certified school in Canada.

"LEED is really about taking a holistic approach to a building ascertaining all of its potential impacts and improvements right from the start," Mr. Carpenter says.

The hallmark of LEED is that there is a third-party certification. "Until LEED came along, people could simply state their building was green with nothing to really back it up," Mr. Carpenter says. "LEED has set a standard and has a third-party review process."

There are about 140 LEED-certified projects in Canada and more than 1,000 registered industrial, commercial and institutional projects in the works.

Brookfield Properties, a major developer, has stated all of its future buildings will be LEED gold. A number of municipalities have also committed to building green.

In fact, adopting LEED principles is becoming increasingly popular, says Susan Clinesmith, manager, High Performance New Construction Program, Enbridge Gas Distribution. "Years ago, if you wanted to talk about building a more energy-efficient building it simply was not on the radar. As we look at all the factors that have converged over the past 10 years or so, the long-term operational aspects of a building are becoming critical," she says.

"If we design in a more sustainable way the building will last longer and will be more operationally efficient longer.

LEED looks at how all the systems interact with each other. If you have a better performing envelope and better windows, your heating, ventilation and cooling load will be less."

Ms. Clinesmith says that LEED, the Ontario Power Authority's High Performance New Construction Program and the gas utility programs encourage people to undertake an integrated design process. Part of that process is to bring designers and construction professionals together and brainstorm the best way to achieve efficiencies, she adds.

That has certainly proven to be the case at the David Suzuki Public School, which will only use 24% of the energy a school built to code uses. There will also be a 73% reduction in water use.

"We do a great job of doing things inefficiently in this country," Mr. Carpenter says. "Everyone thinks that building to code is some great feat and that it represents what is cost effective. It's not. We are getting a 70%-plus savings just through technologies that are on the market today."

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