

## The house of the future is almost complete

At one time, it was thought that the house of the future would look like something from the Jetsons – all utilitarian, stainless steel surfaces and unusual appliances for every need. Well, the house of the future is here, and on the surface it looks just like a contemporary family home with no shiny walls or robots in sight. However, most of the energy-saving appliances, systems, and technologies incorporated into the Archetype Sustainable House (ASH) will be just as groundbreaking and innovative for the public and building professionals. ASH, a project of the Toronto Region Conservation Authority (TRCA), demonstrates experimental and on-the-market environmental products, and will be complete by the end of this year. The project will be among the first projects to apply for LEED® for Homes certification.

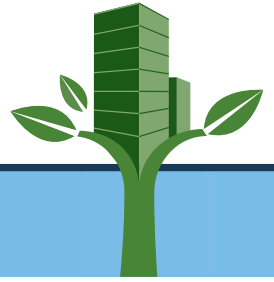
Hoping to showcase available eco-products and test prototype technologies, TRCA hosted a competition for design teams that began in 2005. Twenty-three teams participated, with the winning design chosen by a jury of industry and public representatives. The winning design team has designed a three-storey duplex currently being constructed at TRCA's Kortright Centre in Vaughan, Ontario. One home in the duplex is designed to achieve the prestigious LEED Platinum (the highest level of LEED certification awarded), while the other is set to achieve LEED Gold.

Enermodal Engineering's Randy Van Straaten, who is heading up the mechanical/electrical team for the ASH project, said, "From a systems design prospective, I can feel for contractors who are hesitant to try new ideas – generally, they take great confidence in the products and systems they commonly work with. But the status quo of design needs to evolve. Even items which today have a marginal payback should be considered, because of the rapidly rising energy prices through the life the project as well as consumer demand."

"The idea behind the archetype house is that if visiting contractors and owners acquire technical familiarity with a variety of sustainable technologies, then the technologies are more likely to be used commercially," he added. One of the experimental systems used in the ASH is a high-efficiency cogeneration unit that generates electricity and heat at the same time—the heat is a waste product from generating the electricity. Mr. Van Straaten believes Ontario's coal power plants would not need to be turned on in the summer if this technology becomes mainstream. However, since this is one of the first applications of this technology in Ontario, today's electricity market is not structured to recognize the peak load reduction benefits of this system. It is hoped that will change as this type of product becomes more popular.

New ways of looking at water will also decrease energy use over a traditional home. Heat recovered from water going down domestic drains will be re-used to pre-heat incoming water. The entire water heating system is based on demand-based hot water recirculation. Occupant location sensors indicate when hot water will be needed in the upper floors of the home, so the pump only runs when needed, instead of a typical system, in which hot water is constantly circulated throughout

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the house.

To fulfill its mission of educating the public about environmental sustainability, TRCA will host workshops, tours, educational programming, and exhibits in the ASH for the public and for building professionals. The hope is that people will see how small decisions made in their own homes can have a big impact on the environment. The ASH project will have continued value as the building is configured to allow for the addition of ever-new technologies.

It's not surprising that TRCA is taking the lead in creating the home of the future. Located in an area experiencing a massive housing boom, there is significant local interest in green homes. Also, TRCA's Restoration Services Centre in Vaughan achieved LEED Platinum certification, with Enermodal Engineering serving as the LEED consultant.

"TRCA is really stepping up their role as an environmental steward with this project. They've made a very clear choice to increase the scope of their work to include environmental impacts beyond water management," Mr. Van Straaten said.