

Solar house has new esthetic

By SAYWARD SPOONER

The quest for renewable energy is getting heated, thanks to the U.S. Department of Energy's bi-annual Solar Decathlon competition. 2009 is the fourth year that 20 university student teams from all over the world have risen to the challenge to design the best, most efficient house powered entirely by the sun. Team North, a partnership between the University of Waterloo, Ryerson University and Simon Fraser University in B.C., is one of only two teams representing Canada in this year's prestigious competition. The other is Team Alberta. The 100 or so people working on the project will build their design in just five days on the National Mall in Washington, D.C. in October of this year, entering it in ten different "events" that will test the quality of the work.

The teams are allowed to design a home for whichever target market they want. For example, explains Maun Demchenko, public relations director for Team North, the team out of Louisiana is designing a low-income solar-powered house specifically for Katrina victims. Team North is taking a different approach. "We are designing a home that's very high-performance, a high-end solar home," says Demchenko. "We had decided that our target market was young professionals," she says. Its intended owners would probably be 30-something-year-olds with active lifestyles and, of course, a passion for the environment. "They could get all of the amenities that they wanted, but also be green," explains Demchenko.

This presents some challenges. The house will be run by a computer system, in keeping with the high-end theme, but the house still has to be "green." The approximately 800 square foot house will be one floor and essentially one big room. "We opted for a flat roof, which is not normally what is done on a solar-paneled roof. But the thing is most solar homes are not for northern living, not for Canadian living," explains Demchenko. There will also be solar panels on the south, east and west walls. But for a chunk of the energy, Team North will also be depending on direct sunlight. "Most of the rest of the house is all glazed. It's all floor-to-ceiling glass," explains Demchenko. The one-room open concept design will allow whatever energy is harvested from the sun to be used more efficiently throughout the home.

But as Demchenko explains, the design is not only based on energy efficiency, but on contest demands. Unlike most homes which are built entirely with the future owners in mind, North House is an experiment designed in part to accommodate the thousands of people that will be touring through it in the coming years. They've had to ask themselves, "How do we move upwards of 10 thousand people per day through it?" says Demchenko.

The demands of the competition are outlined in the 10 separate contests. Seven are worth 100 points. The first tests architecture and how seamlessly solar energy elements are implemented into the overall design. The second is market viability, followed by engineering, which looks at the functionality and reliability of the home. Home entertainment, appliances, hot water (a four-day shower test), and comfort zone, which assesses the comfort level of the temperature in the solar-powered home, make up another four contests. Communications and lighting design are each worth 75 points. The most important contest in the competition is net metering; how much energy does each house put back into the grid? That's worth a whopping 150 points.

According to Demchenko, this is the first year that grid energy has been a factor. "Normally they're battery-powered solar homes, but this is the first year that it's grid-tied," she explains. "Right now our computer model says that we're going to produce twice as much energy as we consume," says Demchenko.

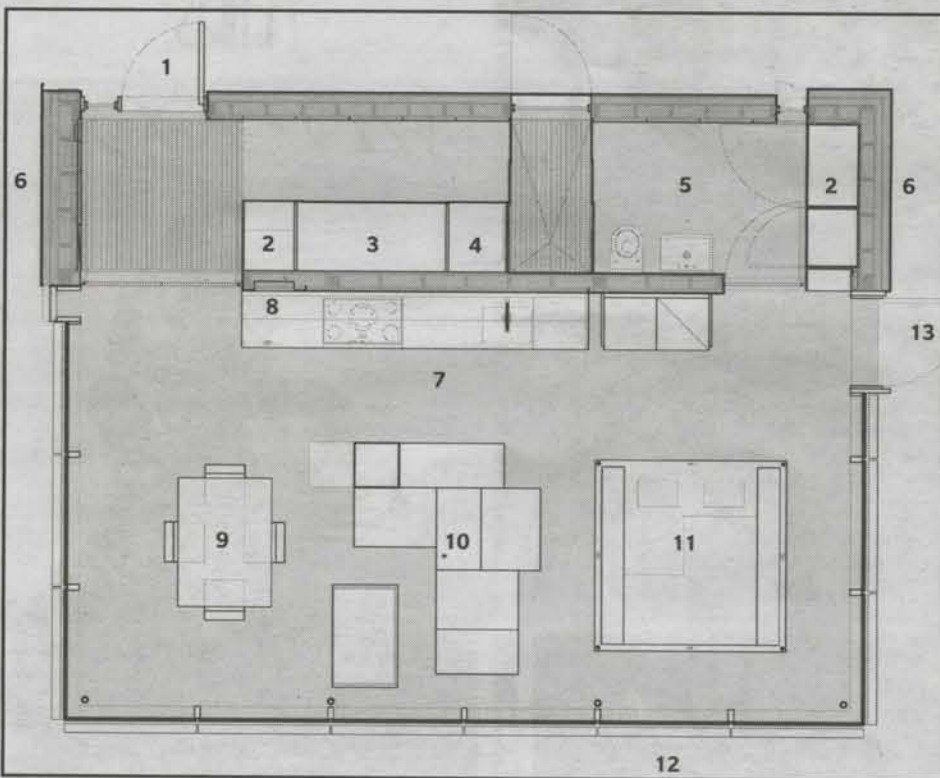
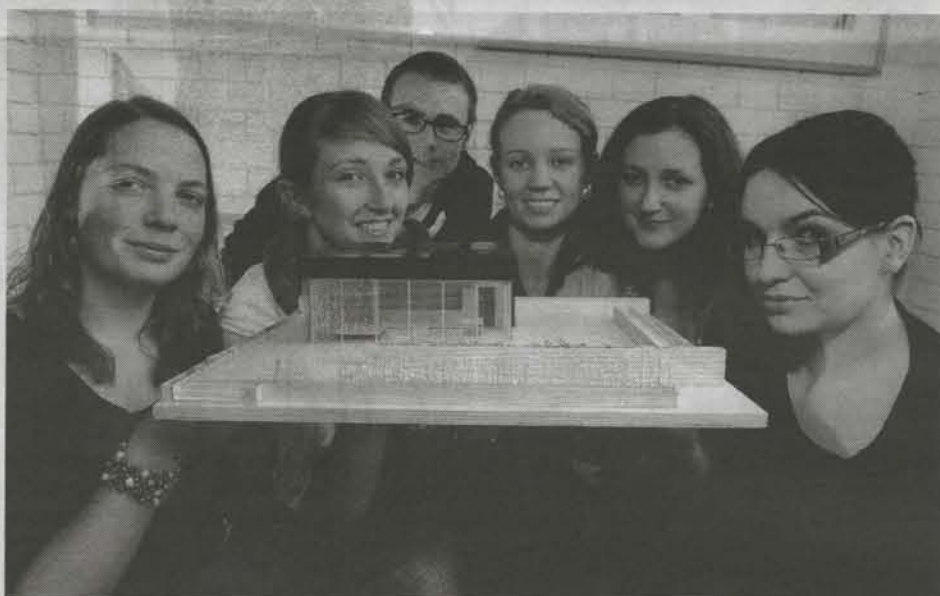
The computer or Adaptive Living Interface (nicknamed Alice) will keep the home-owner informed of the amount of energy consumed as well as produced. For example, explains Demchenko, it might tell you that "at 10 o'clock you've already made all the energy you need for the day." At that point you can decide whether you want to sell it back to the grid for three times the price of what you bought it for. Monetary savings are, after

all, a factor for any home-owner, even an active, financially sound and environmentally conscious one.

According to Demchenko, the house will cost a total of about \$800,000 to make. By the time it is ready to be put on the market, if possible, it's expected to sell for \$450-500,000. That's a lot of money for only an 800 square foot house, which means energy savings has to be a selling point. While each of the 20 teams in the competition is given \$100,000 from the Department of Energy, which is not to be paid all at once, they have to find the rest of the sponsorship money and investors on their own. The Team North house costs a lot more than some of its competitors' simply because it is intended to be high performance. They're using top-of-the-line appliances from a company called Gaggenau

and Tembec, a wood manufacturer out of Quebec, who is helping with some high-tech, energy efficient hardwood floors. Demchenko also sites custom manufacturer MCM 2001 Inc. as being a huge help in the process. "We've had great responses from product sponsors. They've been extremely generous," says Demchenko. Still, she's on the phone every day talking with various companies, hoping to get a few more sponsors.

Team North's participation in the 2009 Solar Decathlon Competition not only presents Canada with a great opportunity to display its young engineering talent to the world, but to work towards what seems to be a global goal for energy efficiency. If all goes well at National Mall in October this year, Team North will have its home on display at the 2010 Vancouver Winter Olympics.



From Top: Artist's rendering of solar-powered North House. Middle: Some of the North House team of University of Waterloo students. (L-R) Andrea Hunniford, Lauren Barhydt, Christopher Black, Natalie Jackson, Chloe Doesburg and Maun Denchenko. Photo by Peter McCusker
Below is a floor plan for the ultimate in greenhouses.

TÜV raises the bar for efficiency and quality

By JAN DEAN

The tougher the economy, the more companies work to distinguish themselves from the competition. One of the ways they do that is to upgrade certifications – and that's good news for TÜV SÜD America Inc.

TÜV is an international company that offers consulting, inspection, testing, certification and training to businesses in industrial, product, and transport sectors. This is the company you'd contact if you wanted to have your company certified as ISO 9001. The person you'd be talking to is Guelph-based TÜV sales manager Chris MacDonald. He has a business degree from the University of Guelph, is an ISO 9001 lead auditor with 20 years of sales experience.

"We certify companies to any number of quality management systems," says MacDonald, "everything from ISO 9001, to ISO 14001 (environmental standards) or ISO 1800 which covers occupational health and safety. Right now the biggest area of growth for us is quality management systems relating to food quality and food safety." That kind of certification is ISO 22000, SQE, and HACCP (Hazard Analysis Critical Control Point).

They also have a test and inspection business where TÜV provides certification for any number of large industrial installed devices, transportable pressure equipment, and industrial machinery.

The product certification division of TÜV certifies everything from coffee makers to implantable medical devices. "We can certify anything from an electric knife to an artificial heart and everything in between," he explains.

MacDonald says that what sets TÜV apart from other certification services is the fact that they're global with worldwide, approximately 13,000 employees, 600 offices, and engineers, auditors and support staff in every major market in the world. The Canadian operation employs about 150 currently.

"We're the single largest automotive certification body," says MacDonald. With few restrictions on the services they can provide, MacDonald says that even in this recession TÜV is having a good year so far. While automotive is not doing well right now in Canada, he says that other industrial businesses are doing well and require TÜV services – including pressure equipment, medical, and food processing/manufacturing sectors.

Because TÜV is global in scope, they can rely on experts in Canada, the United States, and Europe. Right now MacDonald says he has three major projects ongoing. He is working with an outdoor structure manufacturer that is going into the European market for the first time and using engineers in Munich to certify their giant concert tents. Engineers in San Diego are working with MacDonald to certify active implantable medical devices. Then there are a variety of industrial machinery certifications that MacDonald is working on with engineers from Boston, Chicago, or Peabody Massachusetts TÜV North American head office.

In case you're curious TÜV is the acronym for Technischer Überwachungsverein – in English that means Technical Inspection Association. The first TÜV was founded in Bavaria more than 140 years ago as an association to regulate the German steam boiler industry and make sure it was safe.

As technology changed, so did TÜV, adapting to work with and regulate ever-changing systems and industry sectors. The modern incarnation has a strong Canadian branch based in Guelph and it continues to certify and audit businesses for a wide variety of accreditations.

When it comes to implantable medical devices, he says there are many safety standards that can range from electrical safety, electro-magnetic compatibility, to human interaction plus reliability tests.

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