

Tour tries to demystify solar energy

Homeowners thrilled to see their system feed the power grid

BY JANE MARSHALL, FREELANCE JUNE 19, 2010

Solar arrays, photovoltaic, solar thermal and passive solar. Combine these terms with the swanky look of solar panels and their accompanying high technology, and the average person is left reeling, overwhelmed by information.

But solar doesn't have to be intimidating. In fact, the concept is simple. And it's something the world is catching on to -- with many developing countries already using simple solar technology. So why are we so afraid?

The Eco-Solar Home Tour in early June included five demonstration sites in Edmonton in an effort to raise awareness of solar and to dispel the myth that it's too complicated.

Jon Bakker, project manager at Duxton Windows, met visitors at the Belgravia NetZero house to describe the nature of passive solar.

"Windows on the south side have a high solar heat gain," he explains. "The higher the better when it comes to the solar heat-gain coefficient. The windows on the north side have a lower solar heat gain but a higher R-(insulation)value.

"So it's always a compromise between R-value and solar heat gain. The biggest thing is getting the appropriate location for each window."

Bakker notes that to gain the best solar heat-gain coefficient, windows should be placed on the south or southeast sides of the home. "You wouldn't want too many windows on the west side because you would literally cook the house with late afternoon sun."

Transforming energy from the sun into electricity that powers a home seems almost revolutionary. But Peter Amerongen of Habitat Studio and Workshop helped to break down the details of solar PV (photovoltaic) energy for visitors to the Belgravia project.

"It's really very simple. These boxes turn the sun's rays into ordinary household current. The solar arrays are tied into a breaker, and then the energy goes into the grid. The electricity has no choice -- it's like putting water in a hose; it's got to go somewhere.

"So it gets used either at the house or at the neighbours' -- wherever. Electricity flow is measured, and the homeowner either gets credit for the energy or they can pull energy from the grid. In the winter, when you are using more electricity than you can take from the sun, you just pull it from the grid. It's that simple."

Amerongen point outs that using a solar array to generate electricity doesn't make sense unless conservation (ultra-insulating the walls and windows) is done first.

"It's much cheaper to conserve energy. This (referring to the solar PV system) is what you do when you've done everything else," he says. "Saving is just as valuable, in fact more valuable, than generating energy."

Initial startup costs for the Belgravia home's solar PV system were about \$40,000. "It's the single greatest component of extra cost in the house," Amerongen says.

Another net-zero home on the tour, located in Mill Creek, uses solar energy not only to generate electricity, but to also heat the water.

"Water goes into a 1,200-litre tank and it picks up heat along the way through coils," says Ken Hemmerling, a friend of the homeowners who also uses a solar thermal system in his home.

"There is a sensor on roof and a sensor in tank. So the system brings hot water into the tank if needed," says Hemmerling. "And if the sun isn't providing enough heat, there is a water heater -- it's really just a backup."

We are standing in the basement, looking at the panels that read how much electricity is being generated. "It's kind of complicated looking, but conceptually, it's quite simple," he says.

The Mill Creek home also has a solar electric system with fixed collectors on the roof, and new movable awnings with arrays will be installed in the near future.

"The movable awnings will maximize efficiency; by turning a crank, the homeowners will be able to angle the awnings to take advantage of the sun. And the awnings also serve as window shades," he says.

Hemmerling paid off the mortgage of his 1964 home and wanted to see how solar might fit in with his lifestyle. So he invested in a solar thermal system.

"I bought solar thermal collectors and am in the process of getting those up on my house. I know my house is - -an energy pig, so it made sense to do the thermal collector. It's not - - it's common sense. You can go so far on - -to net zero without buying all this fancy stuff," he says.

Andy Smith of the Solar Energy Society shows people milling through the Mill Creek home a photo of what the future movable solar array will look like once it's installed.

"Seasonally, the arrays will change their orientation," Smith explains. "This system will increase efficiency by about 16 per cent from what model tells us." He notes that the homeowners will move the arrays three or four times a year.

He feels that solar is the way of the future. "Our arrays are lasting 30 years plus, and the cost of photovoltaics continues to drop. Gas is going nowhere but up. So we think that energy from the sun -- and wind, also -- is the way to go."

Rechel Amores, the homeowner, and her husband, Conrad Nobert, are happy to be building green.

"When this property came up for sale, we got in contact with Peter Amerongen. The solar has been good and it's neat seeing the meter go backwards when it's feeding into the grid. It's great for children (ages six and four) to see. When the sun shines you can hear the solar thermal gurgling."

"The kids are very environmentally savvy. They've been here from the get-go, and they even remind us to turn off lights."

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SOLAR STUFF

- To learn more about solar energy in Alberta, go to solaralberta.ca
- To review the Eco Solar Homes tour: ecosolar.ca/index.html
- To learn more about NetZero and Habitat Studios: habitat-studio.com

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