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By James Bow - Business Edge
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Homeowners look to go off electrical grid

Environmental self-sufficiency driving market

Kevin Marwick doesn't tilt at windmills. He builds them.

Marwick owns Cyclone Wind Generators, operating out of his home in Qualicum Beach on Vancouver Island. His turbines are smaller than the megawatt-producing commercial wind farms going up across Canada; they are designed to meet the energy needs of a home.

"I'm not one of those guys who eats nuts and berries, and runs around with hemp clothes or anything," says Marwick. "I'm just a normal guy."

And he prides himself on the quality of his product.



Photo courtesy of solarpanel.ca

Shane Johnson checks out the power inverter that transforms wind and solar energy into power his appliances can use.

"Four years ago, I was buying and selling American windmills in Canada, and I found that they were really crappy," says Marwick. "They overstated their outputs and were somewhat flimsy. They didn't get their full power until 30 miles-per-hour of wind. You get that type of wind one day a month."

As complaints mounted, he started searching for a better design.

"I found a Chinese company who had a windmill that was sturdy, and I tried them out," says Marwick. "These were putting out their full output at 17 to 20 miles-per-hour. So, we

improved things from there."

He supplied design schematics and improvements tested various prototypes and now Marwick's Cyclones are manufactured by the Chinese company. They can produce between 200 watts and 10 kilowatts of power, are ready to be marketed widely.

"We've tested these windmills through customers and we're going to make a serious run in 2007," says Marwick. "They're holding together and producing well. This year, we've made them pretty and streamlined the manufacturing process."

Marwick is entering a growing market for devices designed to power properties that are "off the grid," meaning that they have no access to any electrical supply. Not only do small-scale generators such as windmills or solar power generators provide electricity to people on remote properties, they're finding a market with individuals looking to take their homes off the grid.

"It's about environmental awareness and self-sufficiency," says Shane Johnson, who owns Solarpanel.ca. "A lot of people attending my seminars are spitting mad about the service from their electrical providers. Other people are environmentally aware and just want to go in that direction."

Johnson, of Wabamun, an hour west of Edmonton, sells off-grid systems and teaches seminars on how to get homes off the grid. Despite his company's name, he distributes Marwick's Cyclone wind turbines as well as compact fluorescent lightbulbs, LEDs and other devices designed to reduce a home's power consumption without sacrificing comfort.

"It was never my goal to get into this," says Johnson. "Then my wife and I found this parcel of land that was a 300-foot walk from the end of the road just to get to the corner of the plot. We bought the property, and I asked the rural electric authority how much it would be to provide service. They said: \$27,000 plus construction costs. I thought: I could do better than this."

"It was frustrating at the beginning, because I found that the people who sold the equipment didn't use it themselves," he adds. "After learning through the school of hard knocks, I decided to give a seminar on my experience."

"I put an ad in the paper, and suddenly I'm doing two seminars a month, with people asking me where to get the best equipment. So I started selling the equipment. In my seminars, you get to see a live operating system. I live with what I sell."

Governments and power companies are looking at this small but growing movement. Gordon Shields, co-ordinator of the Net Zero Energy Home Coalition, welcomes these efforts. The Net Zero Energy Home Coalition hopes that, by 2030, all new homes built in Canada will return at least as much power to the electricity grid as it purchases.

"Our goal is not to get houses off the grid," says Shields. "We're looking to diversify the energy market as well as reducing our environmental footprint. This means a whole house approach that includes advanced energy efficient home design and integrated onsite renewable energy technologies."

The coalition has been working with the Canadian government to put together a set of guidelines that the private sector can easily and inexpensively implement.

"Canada Mortgage and Housing Corp. is helping to launch a demonstration phase of six to 12 homes next year. That may not sound like much, but there's a learning curve we have to go through, to put a package together that's simple enough to be copied. We are aiming to see up to 1,500 demonstration net zero energy homes over the next four to five years."

Allowing solar or wind-powered homes to sell back excess power to the grid could allow the power industry to decentralize production rather than relying on new, expensive and disruptive large power plants. Ontario Power Generation has set up the Ontario standard offer program, buying power at set rates for small scale wind and solar power projects. Although intended for commercial producers, individuals including NDP Leader Jack Layton and his wife have been able to sell solar power generated by their own home back to the grid.

Getting off the grid isn't a simple matter. Windmills must be on towers to raise them above such windbreaks as houses and trees. Zoning regulations and concerned neighbours can make installation difficult. "Within Parkland County, where I live, you cannot have anything higher than 49 feet unless you make application," says Johnson.

In addition, each home must be carefully assessed.

"If you have a good wind site, I suggest more turbines and fewer solar panels, because you can make a tremendous amount of power from wind and you can make it in the middle of the night," says Johnson. "It's also cheaper. With our new models, our customers are looking at a \$2,800 investment for a one-kilowatt turbine. To get a kilowatt from solar would cost \$8,000."

Batteries can store excess power for use during peak periods, but with the typical Canadian home consuming between 650 to 750 kilowatt hours a month, conservation is key to a successful wind or solar power installation.

"There is a lot people can do here, even reducing your lighting wattages by going to compact fluorescent, or LEDs," says Marwick. "There are bulbs that can give you 100 watts of light for one watt of power. If you're looking at a windmill that produces 300 watts of power and you can only run three lightbulbs off it, what's the point? But if you can run 300 LED lights off it, that makes a difference."

"Any good installer assesses a customer's power consumption and suggests where one can cut back," he adds. "It ensures their purchase is going to work. That's key to customer satisfaction."

Dan Takahashi, who runs Enersol Solar Products out of Campbellville, about one hour northwest of Toronto, cautions that getting off the grid may not be for most consumers, yet. He sells solar water heaters and pool heaters, which recoup their investment within seven years.

However, with Canadian electricity rates among the least expensive in the world, consumers looking to retrofit their home find it can take 15 years or more to recoup their investment.

"When the cost of electricity goes up, even if it aligns with the North American market, this will change," says Takahashi. "New Yorkers pay 28 cents per kilowatt hour; we're at six to eight cents.

"Everybody's interested in it," he adds. "I get calls every day with people wanting to get off hydro or reducing their hydro bill."

As energy prices increase, Marwick and Johnson believe interest in personal power will grow.

"I don't know the industry numbers, but I'm awfully busy," says Johnson. "I tripled my business from last year, and none of this is government funded.

"If the government were to offer rebates, say, for solar panel systems for homes, as they do in California, then it's going to go crazy."

"It's possible to take houses off the grid right now," says Marwick. "The technology is there, but there is no incentive on the federal level to conserve. This is needed now, and not in 2050. You're going to need fossil fuels for a lot of things in society, like running farm tractors.

"It would be ridiculous to assume that solar and wind will solve all our problems, but there's no reason we need 250 gallons of fuel oil to heat our home. If we get on this now, there may be enough fossil fuels to last the time we need."

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