



A company that developed a vertical axis wind turbine is based in Muskegon. Page 3

# Grand Rapids Business Journal

The Business Newspaper of Metro Grand Rapids, Holland, Muskegon & West Michigan

OCTOBER 25, 2010 VOL. 28, NO. 44



## Grant helps MAREC tenant

### McKenzie Bay's vertical axis 200 kW wind generator installed in Ishpeming.

**Pete Daly**  
Grand Rapids Business Journal

A small Brighton company that developed a midsize vertical axis wind generator but nearly went under over the past 18 months is now based in the GVSU Michigan Alternative and Renewable Energy Center in Muskegon — and the future now looks brighter for McKenzie Bay International Ltd.

McKenzie Bay's first WindStor vertical axis wind turbine was finally installed this summer in Ishpeming after years of delay, and should be producing up to 200 kilowatts of power for the Ishpeming Housing Commission's Pioneer Bluff Apartments by the end of the year, according to McKenzie Bay president/CEO Kevin B. Cook.

More good news came in mid-September when the U.S. Department of Energy announced that Clean Green Energy LLC of Brighton, which will manufacture the WindStor for McKenzie Bay, had received a grant of approximately \$620,000 to accelerate commercialization of the WindStor. The grant was part of \$5 million awarded by DOE to enhance short-term wind forecasting and accelerate development of midsize wind turbines. Only three entities received grants for turbine development; the other two are in Texas and Vermont and are focused on horizontal axis turbines like those cropping up around Michigan.

Cook said CGE has exclusive rights to manufacture the Wind-



**MCKENZIE BAY'S first WindStor vertical axis wind turbine was installed this summer in Ishpeming. Courtesy McKenzie Bay International**

Stor for McKenzie Bay, and he expects production to begin next year. Manufacturing will probably take place in southeast Michigan, he said.

GVSU announced in October that McKenzie Bay had begun leasing business development space at MAREC. The company also has been working on a wireless control system that optimizes lighting efficiency in buildings, called Ethereal Logic. Cook, the sole employee of McKenzie Bay at this time, said a second full-time employee may be added soon as the company continues to develop Ethereal Logic, which he said is better described as "an energy and

asset management system."

The story of McKenzie Bay and its prototype turbine now erected in Ishpeming is a complicated saga of business and technology development and the pitfalls along the way.

Formed 12 years ago as a mining company, McKenzie Bay is a publicly held company; its stock is traded over the counter on the "pink sheets" and last week was trading for two cents a share. In the past it had sold for as much as \$3 a share and had once been listed on NASDAQ, according to Cook. At one time, the company had up to a half-dozen employees.

McKenzie Bay began focusing

on wind turbine technology, and by 2005 was developing the WindStor, its version of the vertical axis generator developed and patented in the 1920s by French engineer Georges Jean-Marie Darrieus. His design, with upright blades forming a bulb shape, has been jokingly referred to as a giant egg beater, but a 4 megawatt Darrieus-type generator built in Canada in 1988 jointly by Sandia National Laboratories and Hydro-Quebec was the largest wind turbine ever built at that time, said Cook.

According to MTI Energy Management of Brighton, the Hydro-

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# McKenzie Bay generates interest

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Quebec VAWT, named Eole, was "the most reliable wind turbine of either a horizontal or vertical configuration," and operated for six years. Hundreds of smaller VAWTs also were built by the FloWind Corp. in the 1970s and 1980s and installed in California, according to MTI.

Although he was not working for McKenzie Bay at the time, Cook said he helped get the Ishpeming project started in 2005 as a consultant with the State of Michigan Energy Office under its Rebuild America program. Cook, 56, said his work in energy efficiency and renewable energy goes back more than 30 years. An East Grand Rapids native who now lives in Hudsonville, he received a Bachelor of Science degree from Michigan State University in building construction management, with emphasis on energy-efficient construction. He later worked for a company that developed energy audits for homes and businesses through utility companies.

The Ishpeming project was supposed to have been completed by 2006 but McKenzie Bay ran into financial difficulties, according to Cook. MTI was originally the sales agent for McKenzie Bay but took over the Ishpeming project and brought it to completion, despite technical issues that had to be resolved.

MTI is led by Bryan Zaplitny, who is also the president/CEO of Clean Green Energy. Although McKenzie Bay owns "a piece" of Clean Green Energy, it is "not a subsidiary. They are a separate company," said Cook.

"I have to give Bryan credit for really taking the company on his back to finish this project," said Cook.

McKenzie Bay, which was involved in lawsuits with creditors

and shareholders over the last few years, underwent "a big change-over" about a year and a half ago, which is when Cook was named to its board. Shortly thereafter, he was hired as president/CEO. The last lawsuit was settled in March.

Cook said the WindStor in Ishpeming will produce about half of the energy required by the 88-unit apartment building. The WindStor is actually owned by MTI; the Ishpeming Housing Commission paid nothing for the installation but will buy the energy it produces when it goes on line.

Cook said the WindStor VAWT has two major advantages over a horizontal axis turbine. One is considerably fewer moving parts. "From a maintenance standpoint, I think it's going to be a little more durable," he said.

The other advantage is greater efficiency because it captures the wind regardless of the direction it comes from, unlike horizontal axis turbines that have to turn to face the wind.

Cook says the VAWT is "really very quiet technology" that does not make "that whooshing sound."

The WindStor in Ishpeming has blades about 110 feet long, which form a circular cage-like shape that is about 90 feet from top to bottom. It is mounted on top of a tower 60 feet high. The generator is on top of the tower, too, at the base of the blade cage.

According to Cook, "it's mounted right next to the (apartment building), so we'll be real interested" if there are any reports of noise. The low sound level of a VAWT and the fact that many have been functional installed on the ground lend it to urban environments, unlike horizontal turbines mounted on tall towers.

The DOE grant requires CGE to meet specific time lines and milestones, said Cook, which he likes, because "it's going to keep us going."

When DOE officials saw the prototype in operation, he said, they became "very excited about it."

"If it generates power as efficiently as we think it can, if it reduces maintenance as much as we think it can compared to traditional wind energy systems, and we can manufacture these for the target price, we will have a technology that can't be ignored in the wind-power sector. Anything short of those objectives and we'll be just another wind turbine. We can still do very well, but that's not what we're shooting for," said Cook.

Cook said he does not know yet what kind of price tag the WindStor will have. McKenzie Bay also is planning to develop a smaller version of the WindStor. Even the smaller version's cost and output, however, would not make it feasible for a single home, he said.

"It's very difficult to have cost-effective, residential-scale wind power — very difficult," said Cook.

While McKenzie Bay will continue to maintain some space in Brighton, MAREC is now the "main office" for the company and will be a launching pad for new developments, said Cook. He added that Jim Wolter of Energy Partners, a new company that moved into MAREC early this year, is a good friend and may be working with McKenzie Bay on projects. Wolter, a retired physicist and professor of business and new product market development at GVSU, was among the faculty members who developed the concept of MAREC in the late 1990s.

Cook said McKenzie Bay shareholders have refused to give up because they are believers in the WindStor and "hungry for information" about its development. The MAREC office, he said, "is going to provide a wonderful avenue for us to be able to provide information."