

# Wind Energy Technology Developers Announce Deals

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## energy evolution

Four strong winds may blow strong in Alberta, but Ontario appears to be where the most leading-edge small wind power technologies are being developed, if Ottawa-based Magenn Power Inc. and Mississauga-based Cleanfield Energy Corp. are any indication.

Magenn, which uses a lighter-than-air tethered, rotating device that borrows from the simple idea of the kite and Cleanfield, which has developed a patented modular, vertical-axis wind turbine that can be mounted on a pole or silo and can use the existing wiring in a home or business, recently made announcements that suggest both technologies are approaching commercial scale.

Although Magenn and Cleanfield are aiming at different markets -- Magenn wants to sell its wind technology to companies or governments hit by natural disasters like Hurricane Katrina or to oilfield operators who need power for short periods of time, while Cleanfield is aiming at rural areas with no connection to power grids or where back-up power is needed, both are considered "small wind" providers.

In each case, says Cleanfield President and CEO Tony Verrelli, the market is very large.

"In the U.S. there are 220,000 homes off the grid, but the potential beyond that is huge," he says. "At least two billion people in the world don't have power and it would cost trillions of dollars to extend transmission lines to them.

"The first phone call they get is on a cell phone and wind may be their first power source."

Cleanfield, a developer, manufacturer, marketer and distributor of alternative energy products, with a focus on its vertical-axis turbine (VAT) rooftop-mounted wind system, announced in late January it had entered into a letter of intent with Vancouver-based Strike Resources Ltd.

Cleanfield will become Strike's qualifying transaction that will allow it to graduate from the junior capital pool category of the Toronto Venture Exchange.

Strike and Cleanfield will negotiate a formal share exchange agreement no later than Feb. 28 under which Strike will issue 11 million common shares for the securities of Cleanfield. As part of the qualifying transaction, Strike will repay \$100,000 in debt to major shareholders of Cleanfield. In conjunction with the transaction, Strike said it would complete a private placement of up to five million shares at \$1, for minimum and maximum proceeds of \$2.5 million and \$5 million, respectively. Further proceeds will be used to further develop, market and sell the VAT system. The companies said the Strike name will disappear and the new company will be called Cleanfield Alternative Energy Inc.

In the case of Magenn Power, the Ottawa-based company recently announced a distribution agreement with Kansas City-based Krystal Planet Corp., a leading marketer of clean power products and technology with 1,600 distributors worldwide, to have it sell its patented Magenn Air Rotor System (MARS) tethered wind generator, which uses technology first developed for airships.

Magenn CEO Mac Brown says his privately-owned firm's MARS wind device, which can deliver up to four kilowatts (kW) of power at a cost per kilowatt-hour much lower than conventional wind turbines mounted on towers, is aimed at a different market than Cleanfield's wind technology.

"We're going after the disaster and emergency markets," he says.

"For instance, our wind turbine would have been perfect for Katrina relief because we don't need infrastructure. We could have had 20 or 30 of our MARS units there complementing diesel generators to remove the water [that flooded New Orleans and other areas]."

Brown says the MARS turbines, which will eventually be sized up to four kW, are now designed to provide one to two kW of power, units it will continue to market.

He says MARS turbines would be ideal for remote oilfield or mining operations or for military applications.

"We're more targeted at the mobile markets."

That's because the MARS technology is based on the principle of a kite and an airship. In fact, Magenn started life, in the 1980s, as an airship manufacturing company.

"Essentially the MARS wind generator is a sophisticated kite that spins," says Brown.

"Our first product was the Magenn airship, which was designed to lift up to 60,000 pounds and was built as part of the Star Wars project [an ill-fated U.S. government initiative]. It was built as part of an \$8 million (US) contract."

When that project died company founder and engineer Fred Ferguson started searching for other airship markets, making some sales in Brazil and in other areas.

The airship division has been spun off as a separate company, while Magenn concentrates on its wind technology, which Brown says provides "huge opportunities."

The wind system borrows heavily from the airship concepts, he says.

It's essentially a helium-filled (or hydrogen-filled) envelope, with generators on each side.

Because it's tethered to the ground, it needs no towers or other infrastructure and it can reach elevations of 1,000 feet or higher, where wind speeds are higher and more constant.

Its portability makes it ideal for mobile applications, he says.

But it may also find its way into more conventional applications because of that portability.

"With our wind generator there's no concern about the Not in My Backyard (NIMBY) factor,"

Brown says.

"Wind farms tend to be located near water and that tends to be high-priced land, where landowners don't want a wind farm located near them."

It's also more cost-effective than conventional wind technology, which usually requires towers to be built, Brown says.

Magenn has four different prototypes, with its largest, four-kW unit stretching 13 feet in diameter and 40 feet in height. It will start building the units later this summer or fall, at a plant in Ontario.

Perhaps the biggest advantage of the MARS wind machine is its cost, Brown says.

He says the company believes it can sell the four-kW units for as little as \$10,000 (US) each.

It also estimates it can provide power for 10 cents per kilowatt-hour, versus 20 to 50 cents and up for diesel generators, the most likely alternative to its units.

"Diesel generators won't go away, but this is a very important complement to them," he says.

He estimates the potential demand for the MARS wind turbine could represent hundreds of thousand of units, especially if its use spreads beyond emergency and resource industry applications to rural areas worldwide, since much of the world lacks transmission and other facilities for conventional power.

While Cleanfield's technology is more conventional -- if that can be said about any small wind technology -- the company's prospects are probably larger, according to chief executive Verrelli.

"We're not even going after the large wind farm market, although we are working on a larger, 60-kW system," he says.

But the small wind market is large enough to keep the company very busy, says Verrelli, who says the company will retain its Mississauga head office location under its new name.

It will begin aggressively marketing its existing 1.5-kW, two-kW and 2.5-kW units this June, and plans to start manufacturing them in the fall at plants in Ontario and Romania.

Why Romania?

"Most of our engineering talent graduated from universities in Romania and we worked with the University of Timisoara [in Romania] in developing the technology," he says.

Its initial target market will be the farm country of southern Ontario and the U.S., where the existence of often unused storage silos makes for easy adaptation of its VAT system.

"If you don't need a tower -- and farms with existing silos won't -- it makes it much more cost-effective to install our system," Verrelli says.

However, he adds that Cleanfield is working on the design of its own tower.

The VAT system, developed over the last three years, involves the use of a vertical axis, with only one moving part.

With traditional turbines there are more moving parts and they are limited in how they use the wind, since they can only capture it at some locations.

“With the vertical design it’s always hitting the wind, so it’s much more reliable,” he says. Verrelli says the VAT system is also quieter than a horizontal unit and isn’t a threat to birds, an increasing concern among even wind power advocates.

“Because it’s a simpler design, with fewer moving parts, there are fewer issues with it.”

He says the units will be sold for about \$14,000 (US) each.

At this point the technology can’t be adapted widely for residential use, since most residential roofs aren’t flat and so don’t allow for easy installation.

However, where there is already a silo or a tower, or where there are flat roofs, the device can be easily adapted.

“The commercial market is very large,” he says. “For instance, shopping malls or offices would be ideal.”

The company believes the “off grid” market in the U.S., where there are 220,000 homes without access to a central power system, will be large.

U.S. states such as California and New York have incentives that would cover more than half of the cost of installing a VAT system, which means it could cost as little as \$6,000 (US) to install one.

Verrelli says, while the VAT system won’t provide 100% of the power needed by a homeowner, farm or office, it will come close.

Cleanfield estimates the system can provide 5,000 to 9,000 kilowatt-hours of power a year on average.

“But if you add another renewable power source, such as solar, the two together could provide 100% of your power,” he says.

The average home consumes about 9,400-9,600 kilowatt-hours a year of power.

While many of the off-grid markets worldwide where the system could be used don’t have the financial wherewithal to afford the system, he says financial assistance programs from the World Bank and others may lead to the wider use of its technology.