

Magenn Power sets sites high to generate clean energy with flying wind turbines

Magenn Power uses helium-filled spheres 1,000 feet in the sky to capture the power of wind and airstreams that conventional wind turbines cannot reach to generate electricity

Fast facts Corporate profile

The helium filled MARS is a buoyant turbine made of vectran – a bulletproof material that is stronger than steel of the same thickness – and is connected to the ground by an insulated conductive tether. The unit can rise to a height of 300 to 1,000 feet to take advantage of the more constant and higher wind speeds at higher altitudes that conventional wind turbines are unable to reach.

Why Ottawa

In addition to city-wide bike trails, 35 annual festivals and having the second-highest percentage of people who speak both French and English of any major Canadian city, Ottawa is also the most highly educated city in Canada – with 50% of Ottawa residents holding post-secondary degrees or diplomas. In fact, both Ottawa universities – Carleton University and University of Ottawa – offer aerospace engineering programs that could provide Magenn Power with employees in the near future as the company continues to grow.

Business advantage

Magenn wind turbines can be placed almost anywhere – as opposed to conventional wind turbines that can only be installed on about 15% of the world's land mass where wind is strong enough at lower altitudes. Magenn Power units operate quietly and are bird and bat-friendly, unlike conventional wind turbines.

As oil companies drill deeper in search of new reserves, Ottawa-based Magenn Power Inc. is looking high in the sky for energy with its Magenn Power Air Rotor System (MARS) – a lighter-than-air buoyant device that rotates in response to wind, generating clean renewable electrical energy.



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In 1980, Fred Ferguson, founder of Magenn Power, patented the Magnus Airship – a large spherical envelope that was filled with helium. As the sphere rotates during forward motion, lift is generated equal to the airspeed flowing over the sphere – proving that wind lifts and rotates objects. His invention received many awards, including the Canadian Government Award of Excellence in 1984, and he was even invited to exhibit the original Magnus Airship permanently at the Smithsonian Institute.

In 2002, after reading an article about using traditional kites to generate electricity, Ferguson was inspired to look back at his Magnus Airship research and in 2004 he formed Magenn Power with an updated, energy-generating version of his previous work.

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While in the sky, the MARS turbine spins in the wind, generating electricity. The current is transferred down the tether for battery storage or transmitted to a power grid.

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Magenn Power turbines can offset expensive diesel generated power in locations where conventional wind turbines do not work. Given diesel electricity costs between \$0.50 and \$0.99 per kWh, Magenn Power units could pay for themselves within only a few years. Magenn Power units are ideal for a wide range of remote areas, and can lower pollution and greenhouse gas emissions while also reducing handling, transporting and storage costs of diesel.

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Ottawa also has a number of research institutions and government labs that Magenn Power can tap into for

support including the National Research Centre wind tunnel and the Canada Institute for Scientific and Technical Information – a key resource for Ottawa's research community with access to most of the world's research literature and information in all areas of science and engineering.

Business advantage

Conventional wind turbines require land, wide roads and heavy machinery for assembly. MARS units removes these limitations because the units do not require cranes or special roads for installation. Furthermore, given that winds are strong almost anywhere at altitudes of up to 1,000 feet, MARS units can be deployed close to demand centres – including both remote locations and urban centres – reducing infrastructure problems and transmission line costs. Finally, the units operate quietly and are bird and bat-friendly, unlike conventional wind turbines.

Magenn Power units will sell for a price per watt comparable to conventional wind turbines. However, given the ability to access stronger winds at higher elevations, Magenn Power will generate electricity for the lowest cost per kWh in the industry. In remote locations the true Magenn Power competitor is diesel power, estimated to cost between \$0.50 and \$0.99 per kWh – compared to Magenn Power units operating costs of \$0.20 to \$0.30 per kWh for small turbines and \$0.07 to \$0.10 per kWh for larger turbines. A combined wind and diesel solution is ideal for remote areas with high diesel consumption, lowering pollution and greenhouse gas emissions while also reducing handling, transporting and storage costs of diesel.

Future growth plans

Magenn Power has received serious customer inquiries from island nations and large companies that have remote power requirements. Magenn Power expects to enter the market with a 100kW unit in 2009.

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