

Cleaner air is blowing in the wind

by Faculty of Engineering
June 22, 2007

Research and development undertaken in the Department of Mechanical Engineering has played a significant role in the official launch of a next-generation wind turbine by Cleanfield Energy.

Faculty and students from the department joined company officials, local politicians, educators and government representatives on Thursday to celebrate the naming of Cleanfield V3.5, a three-metre tall, vertical-axis wind turbine designed to provide electrical power for use by individual homes and businesses.

"McMaster's testing of our VAWT is crucial to our overall product development process and corporate objective of becoming a global leader in the residential and commercial wind turbine industry," said Tony Verrelli, president & CEO of Cleanfield Energy Corp. The testing and evaluation conducted by McMaster led to improvements that resulted in the commercialized 3.5kW unit.

Cleanfield Energy demonstrated the V3.5 at the event. The turbine blades typically operate at a rate of 120 rpm, but can go up to 180 rpm (three revolutions per second) or higher under very windy conditions. The turbine can generate enough electrical energy to power most household needs and feeds extra capacity back into the hydro grid.

"Today's announcement is a perfect example of a successful collaboration between industry, university and government," said Samir Ziada, chair of the Department of Mechanical Engineering at McMaster. "Research results exceeded expectations. We look forward to continued collaboration in further developing this technology and in training future professionals in this field."

Cleanfield Energy's order books are filling up with more than 100 requests for the V3.5. And they are already starting to dot the skyline around Hamilton. Two wind turbines are located on the roof of the former Camco building at the McMaster Innovation Park, where much of the physical testing has been done.

Others are located on the Hamilton Incubator of Technology in Clappison's Corners and Cleanfield Energy's office in Ancaster. Mohawk College is installing two at its Stoney Creek campus and planning for another four at the Fennell Campus. The Hamilton-Wentworth District School Board is installing one on Lawfield Middle School for energy and as a teaching tool.

"We need to get these on Hamilton's city hall first," declared Hamilton Mayor David Eisenberger after hearing that a proposal was being developed to install six of the wind turbines on Toronto's city hall. "Hamilton is an environmental leader and we need to be involved in developing these new technologies and supporting local businesses."

Stephen Tullis, assistant professor of mechanical engineering, is the technical leader of the project and is supported by a post-doctoral student, three graduate students and several summer students. They work closely with Cleanfield Energy's engineers who developed the three-blade, cylindrical-rotating system.



The Cleanfield V3.5 is a three-metre tall, vertical-axis wind turbine designed to provide electrical power for use by individual homes and businesses. Photo courtesy of Faculty of Engineering.