

Teaching Tips/Notes



From Business to Government to Schools, Wind Power is Creating New Opportunity

Wind power, long used on farms for tasks such as pumping water, is finally moving to the big city. The renewable resource, which is being used to aerate ponds and generate electricity, is producing surprising savings, ROI, and opportunity for a wide range of city folk – from businesses like John Deere dealers; to cities like Montpelier, ID; to schools like Sault College in Ontario, Canada and Autry Technology Center in Enid, OK.

Wind energy is the fastest growing source of electricity in the world. In the United States, a record 2,431 MW of wind power was installed in 2005, capable of producing enough electricity to power 650,000 typical homes. Resource assessments have found that the windy areas (class three and above) in the United States—if fully developed—could supply more than four times the nation's current electricity needs.

Empowering Business

A growing number of businesses are looking to wind power not only to offset rising power costs, but also to present a “green” marketing advantage. State-of-the-art technology improvements have convinced many that now is the time to act.

For the first time, the technology is designed for commercial farms or businesses on the electric grid, not just remote off-grid sites. Unlike traditional windmills requiring a complex DC to AC power inverter prone to breakdown, grid-compatible technology like Endurance's can provide up to 30% more power and greater reliability.

Van Houweling, Perry, Iowa, has installed an S-Series wind turbine by Endurance Wind Power. The unit is capable of producing up to 20,000 kWh per year, about 20% of the site's needed power. A larger unit capable of producing over 200,000 kWh per year is scheduled to produce about 85% of the power needed at his upcoming west Des Moines, Iowa site.

The renewable power provided by the wind turbine, along with other measures taken, helped the new BTI-Greensburg facility become the world's first LEED Platinum John Deere facility. LEED (Leadership in Energy and Environmental Design) is the U.S. Green Building Council's highest certification for sustainable design.

A number of features help users get the most out of the next generation technology: controls and electronics at ground level; a high wind sensor and dual disc brakes that automatically stop and release the rotors when appropriate; and remote monitoring and control of a turbine operation via a wireless interface.”

Empowering Government

While the U.S. Department of Energy's “20% Wind Energy by 2030” report examines the feasibility of using wind energy to generate 20% of the nation's electricity demand by that date, current policies are of more immediate help to those looking at wind power.

As of March 2009, the federal government offers an investment tax credit for the purchase and installation of qualifying small wind electric systems, worth 30% of the value of the system, according to the U.S. Department of Energy Wind & Hydropower Technologies Program website.

Empowering Schools

As schools and communities face volatile energy costs, tight budgets, and a growing need for good jobs, some are harnessing wind power to generate energy and opportunity.

For instance, when Sault College recently installed a 35 kW Endurance wind turbine on-campus, they were the first college in Ontario, Canada to power their Student Life Center using renewable energy, while offering exciting hands-on learning opportunities.

As a learning tool, the turbine is its own classroom. Ironworker apprentices lower the tower as required; civil engineering technicians inspect the tower annually; and mechanical and electrical students learn how to maintain the turbine. Even the process automation students get involved, creating a system to analyze data and show how much power the turbine is producing.

"Because the turbine is essentially a scaled down version of large megawatt units, students get practical hands-on experience they can't get from a book," says Colin Kirkwood, Dean of Sault College's School of the Natural Environment, Technology and Skilled Trades. "Companies with wind turbines have already hired our graduates, and visiting international executives say they're looking for this type of skill set in new hires."

Sault College students are now working on a web-based control system interface that will make the wind turbine a learning tool for the wider community, according to Kirkwood.

"The goal is for prospective students, community members, even elementary, middle, and high school students to track our power generation and carbon credits via our website," explains Kirkwood. "More interactivity means more involvement."

The college's Applied Research Center will also offer applied research with the turbine to companies looking to enter the wind energy market.

"The turbine underlines our commitment to build a better environment," says Trevor Rising, P.Eng, Sault College's Supervisor of Maintenance and Construction. "It not only changed our skyline, it changed our way of thinking."

U.S. schools and technology centers are also taking advantage of wind-powered opportunities.

For instance, Autry Technology Center in Enid, OK, one of the five original technology centers in the state, selected a Model S-250 wind turbine by Endurance Wind Power.

"We chose the Endurance turbine as an economical opportunity to start generating our own power and provide students an actual working model for educational purposes," says Dr. Marcie Mack, Assistant Superintendent of Autry, which is part of the Oklahoma Career and Technology Education system which includes 29 technology centers with over 55 campuses and various programs within Oklahoma high schools.

With Autry's current Mechatronics program, the school teaches the fundamentals of topics such as pneumatics, fluid power, motor controls, industrial electricity, and programmable logic controllers. For students who want to go beyond the fundamentals and specialize as a wind technician, the school collaborates with other technology centers to help them achieve their career goals.

The wind turbine, which is about 126 feet tall and weighs 650 lbs., once generated 720 kilowatt hours in a two-week period, and generates an average of about 1100 kilowatt hours of power for school use each month.

"The wind turbine creates an awareness of the wind industry in our community," says Mack. "Other benefits to our facility are its safety features, quiet mode of operation, and its ability to connect directly to our power source."

While much is said about wind power's potential to produce clean, abundant energy without greenhouse gas emissions, in the near future more will be said about its ability to generate savings, jobs, and opportunity.

For more information about wind-powered energy, visit <http://www.endurancewindpower.com/>.

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