Wind Energy: Umm Leads The Way For American Universities

By Jeanette Joy Fisher

In March 2005, the University of Minnesota−Morris became the first public American university to

install a large−scale wind turbine to help meet the school's electrical needs. Since it was installed, the generator has supplied some 60 percent of the university's power. The rest of the school's power needs are purchased from Otter Tail Power Company's Tailwinds Program.

Those figures mean that whether the electricity is generated on site or purchased off the grid, 100 percent of UMM's electrical power needs are supplied by wind power, but the school's commitment to energy independence doesn't stop there. The university's students have helped the school reach toward its energy goals by reducing electricity, water, and waste needs. The faculty has also gotten into the spirit, as well, placing considerable emphasis on green power and conservation in their classrooms.

The UMM 1.65 megawatt Vestas generator is an impressive sight, with 135−foot blades and a 230−foot tower, making the massive machine stand some 365 feet tall, but its impact on the community and the state of Minnesota goes far greater than that. The generator has become a major tourist and field trip destination in central Minnesota, and has helped raise the awareness of thousands of people, especially school children, since its construction in 2005.

The generator is a model of efficiency, and only takes a breeze of 7−9 mph to begin generating electricity. It takes a 26 mph wind to generate the unit's full 1.65 megawatts. There's a dedicated power line to the UMM campus, and if the University needs more power, the local utility lines provide it automatically, so no one on campus knows if the power is coming from the generator or the grid at any given time. On the other side of the coin, whenever UMM's power needs are less than what the generator is producing, the excess electric energy is directed back into the local utility grid.

All this is impressive, but the university has even more extensive plans for increasing its energy independence. There are plans for the construction of a biomass gasification plant at UMM in 2006, which will be capable of meeting 80 percent of the campus' heating and cooling needs. The plant will use stover (stalk residue) from cornfields in the area, as well as waste wood, other crop residues and various organic stocks as its fuel base.

The United States as a whole is second only to Germany in total production of wind−generated electricity, with California, Texas, and Minnesota leading the way.

Jeanette Fisher, author of interior design and real estate books helps home owners makeover their homes with "green design." For more home environmental issue articles, visit Environmental Psychology

http://www.environmentpsychology.com

An Introduction to Wind Energy

By Peter Lenkefi

About wind energy?

Put simply, wind energy is energy derived from the wind. By using wind turbines we are able to harness the power of the wind and convert it into electricity for use in homes, schools, businesses and any other establishments that require electricity. Originally it was thought inconceivable that we would be able to use wind turbines for anything other than milling flour but this theory has been proven to be very wrong. Our search for renewable sources of energy has led us to consider and develop wind power, solar power and even hydropower as major sources of energy.

How does a wind turbine work?

Wind energy works similarly to a dynamo on your bike? Similarly to the dynamo a wind turbine is rotated by the wind, exactly the same principles as a wind turbine but instead of using our legs to power the pedals, a wind turbine uses wind to turn the blades. Put another way, a wind turbine works the opposite way to a fan. Where a fan would use electricity to turn the blades a win turbine does the opposite and uses the rotating blades to create electricity.

There are two types of wind turbine that are regularly used to create energy on a large scale, and both work on the same basic principles. As the wind travels into and through the blades, they rotate and turn a shaft. In turn this shaft connects to a generator (like a dynamo) that will create the electricity. A two−blade turbine faces away from the wind and a three−blade turbine faces into the wind. Typically, a large number of turbines are combined to create wind farms, capable of powering large numbers of buildings, but there are smaller single turbines available that you can place in your garden and use to power certain aspects of your house.

Wind turbines at home.

Don't kid yourself about this, it is highly unlikely that even with modern turbines you could power your entire house with less than a dozen small wind turbines and without a grid tie system you will still have times of the year when you simply create the power you need because there's no wind. It does

happen and the best way around this is not to rely solely on wind turbines to power your house. If you have the land, get a couple of turbines and combine the power from this with solar roof panels. As a general rule if one method isn't providing power the other probably will; by having both systems you won't find yourself sat in the dark with no heating and no hot water and no way to cook your food. Solar is good for summer days and your turbines will typically produce more power during the winter months. The technology surrounding wind turbines is improving with every passing month so, you never know, one day it may become viable to put up two or three small turbines and be able to unplug yourself from the grid.

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