

# SMALL WIND, BIG POTENTIAL

In many ways small wind can be seen as an opportunity for average citizens to familiarize themselves with the concept of wind energy, in which case everybody wins.

By Amy Berry



Amy Berry is the director of marketing for Windspire Energy, formerly Mariah Power, which is developer of the Windspire vertical axis wind turbine. She can be reached at [aberry@windspireenergy.com](mailto:aberry@windspireenergy.com), or go to [www.windspireenergy.com](http://www.windspireenergy.com).

**AS THE GIANTS OF THE WIND INDUSTRY** gather for WINDPOWER 2010, the American Wind Energy Association (AWEA) is projecting that this year's show will be the biggest yet. Walk the show floor and you will no doubt be overwhelmed by the size of the booths, the scale of the equipment within them, and the huge interest shown by industry members. Given that the event takes place in Texas, it should surprise no one that BIG is a major theme, but what about small... as in the small wind industry?

Lurking among these literal giants is the small wind industry. Generally referred to as turbines with 100kW capacity and less, the small wind industry is enjoying incredible growth as homeowners and businesses around the country take advan-

tage of an uncapped 30-percent federal tax credit and improved technologies that make harnessing your own clean energy easier than ever before. AWEA reported that the U.S. small wind market grew by 78 percent in 2008, and it is expected to release similar figures for 2010. How do these two dichotomies of the industry go together? Is it possible that small wind can actually help big wind?

Few members of the industry realize that AWEA was founded by a group of small wind enthusiasts in the seventies during a time of incredibly high oil prices. The first conference was timed to coincide with the World Energy Conference in Detroit, Michigan, and was attended by 20 people. AWEA's first president, Allan O'Shea, reminisces about the early days when the industry focus was on small



Loundy, vice president of Devon Bank in Chicago, Illinois. Loundy installed six 1.2kW vertical axis wind turbines at the bank's newest retail branch to help with energy costs and to make a statement to the community about the bank's commitment to being green. "When it's out in a field it's what some other guy is doing. Until you see it on a regular basis, it's an abstraction," he says, adding that he even installed benches below the turbines to encourage the community to interact with the technology.

This accessibility of small wind turbines gives the public the opportunity to live with the technology on an everyday basis. This can lead to a better understanding of how wind power works, while at the same time addressing classic concerns such as noise, wildlife, and the visual impact that often hamper large wind installations. Acceptance of wind power on a small scale can lead to acceptance of wind power on a big scale. Think of it as traditional product sampling done by packaged good marketers. The concept is to give a taste test that is so satisfying the consumer will want more.

Spirit Lake, Iowa, is an example of a community that used small wind to "taste test" future wind power development. The community started with the installation of a 250 kW system at a local school in 1993. In 2001 the school district installed a 750 kW system based on the success and community support for the original turbine. The community eventually welcomed multiple large wind farm developments. Not surprisingly, Iowa now hosts 22 MW of locally owned and 814 MW of commercial-scale wind.

"You go into any township and put in a small wind system and that ends the whole discussion about bird kill, fall zone issues, tower height, and sound," O'Shea says. "All of the things that big wind has to deal with."

#### SMALL WIND, BIG CONSERVATION

Few will debate that larger turbines are a more-efficient way to generate energy. But installing small turbines at the site of energy consumption, as you can uniquely do with small-scaled turbines, can create benefits that make up for any loss in efficiency.

A welcome side effect of on-site installations is that having energy generation right outside an office or home can impact energy consumption within the building. Suddenly energy doesn't come from a switch or outlet in a wall, it comes from the turbine spinning just outside. Once people start thinking about where their energy is coming from they tend to start thinking about their use of this energy, and ways to conserve.

In fact, building operators and energy providers are using visible small wind installations as a tool to encourage building occupants to conserve the energy they can see being produced outside their windows. Leading software company Adobe Systems of San Jose, California, recently installed 20 vertical axis wind turbines at its corporate headquarters. "Adobe

wind. "When we—me and 15 other founding fathers—started AWEA it was under the premise that small wind begets big wind," he says. "We got together and put up a wind-powered billboard welcoming the World Energy Conference, because at the time they were only talking about oil."

While big wind is generally sited far away from the urban and suburban centers of most communities in order to avoid noise pollution and height restrictions, with shorter towers and quieter systems small wind turbines are designed to be installed in the heart of communities. By having turbines on display in inhabited areas, more people within the general community gain firsthand exposure to wind power.

"It makes it real to people," according to Dan

## SESSIONS DAY 4: WEDNESDAY MAY 26

8:30 am-10:00am:

- Business/Supply Chair Track: Large Wind Turbine Manufacturer Forum-Part 1 (8A)
- Economic Development Track: Moving the Workforce Forward with Education (8B)
- Project Development Track: Wind Project Construction-Meeting New Construction & Site Mobilization Challenges (8C)
- Community/Resource Assessment Track: Financing and Policy Issues for Community Wind (8D)
- Technical/Transmission & Integration Track: Wind Turbine Technology-Structures, Loads & Control (8E)
- Scientific Track: Resource Assessment (8F)

10:30 am-12:00 pm:

- Business/Supply Chair Track: Large Wind Turbine Manufacturer Forum-Part 2 (9A)
- Economic Development Track: What the States Are Doing (9B)
- Project Development Track: Tools and Insights to Power Small Wind Forward (9C)
- Community/Resource Assessment Track: Ways of Supporting Growth for Community Wind (9D)

- Technical/Transmission & Integration Track: Grid Interconnection of Wind Power Facilities (9E)
- Scientific Track: Deepwater Offshore Wind Technologies (9F)

1:30 pm-3:00 pm:

- Business/Supply Chair Track: Manufacturing the Future-Challenges in the Wind Energy Supply Chain (10A)
- Economic Development Track: Beyond RES-Maintaining the Playing Field (10B)
- Project Development Track: Developing the Offshore Wind Industry in the United States (10C)
- Community/Resource Assessment Track: Resource Assessment-Part 1 (10D)
- Technical/Transmission & Integration Track: Challenge & Opportunity for Wind Power Forecasters & the Respective Roles of Public & Private Sectors (10E)
- Scientific Track: Turbine Structures, Loads & Controls (10F)

3:30 pm-5:00 pm:

- Business/Supply Chair Track: Transportation & Logistics-Getting Components from the Factory to the Field (11A)
- Economic Development Track: Wind Power and Economic Development (11B)



- Project Development Track: Regional Challenges for Development of Offshore Wind Farms (11C)
- Community/Resource Assessment Track: Resource Assessment-Part 2 (11D)
- Technical/Transmission & Integration Track: Wind Energy Integration (11E)
- Scientific Track: Inflow, Dynamics & Loads Modeling (11F)

**WIND ENERGY  
EXPERIENCE | EXPERTISE  
EXCELLENCE**

**STRATEGICALLY LOCATED**



**YEAR-ROUND PORT**



**WWW.PORTOFALBANY.US**

**518/463-8763 • Fax: 518/463-8767**  
**E-mail: rhendrick@portofalbany.us**  
**tonyvasl@optonline.net**

A large red lattice-boom crane is shown lifting a white wind turbine tower. The crane is positioned on a flatbed trailer. The background shows a clear blue sky. To the right of the crane, the JPW Riggers logo is displayed in large red letters, with the text 'ONE OF THE LARGEST FLEETS OF MANITOWOC 16000'S IN THE COUNTRY' below it. At the bottom left, there is contact information: 'Dave 800.724.0937' and 'Cell 315.374.5912'. At the bottom right, there is a small graphic for the '2010 WINDPOWER EXHIBITION' with the text 'Booth# 3800 Dallas, Texas May 23 - 26'.

**WWW.JPWRIGGLERS.COM**



Fig. 1: Windspire placements at Adobe headquarters.

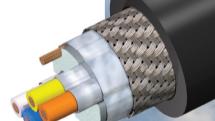
 **Resilience™**  
WIND TURBINE TRAY CABLES

Booth # 2528  
May 22-24  
WINDPOWER EXHIBITION & CONFERENCE

# Getting Wind Turbine Cable Is a Breeze

In as few as five days, Northwire will ship you rugged, custom-configured Resilience Wind Turbine Tray Cables. Engineered for use in the nacelle, Resilience cables are fully tested and proven to exceed your specifications for low-voltage control, data, communication and exposed-run power applications.

- UL and Wind Turbine Tray Cable (WTTC) approved
- NFPA 79 (12.2.2) rated for constant flex
- 6 to 18 AWG; AWM 300V, 600V and WTTC-rated 1000V
- Tray cable, exposed-run rated; WTTC UL 2277 compliant
- Exceeds Northwire's cold-bend test as low as -40°C
- Highly oil resistant (Oil Res I and II); FT4 flame rated
- No minimum order length or quantity


**1.800.468.1516**  
**+1 715.294.2121**  
[www.northwire.com/energy](http://www.northwire.com/energy)

 **NORTHWIRE®**  
INC

© 2010 Northwire, Inc. All rights reserved.



Fig. 2: Another view of the Windspire placements at Adobe headquarters.

has a state of the art campus with a multitude of green attributes that have earned us three USGBC LEED-Platinum certifications, so our employees are very conscientious about their environmental

footprint," says Randall H. Knox III, senior director of Global Workplace Solutions at Adobe. "We believe the wind turbines are a positive enhancement to our headquarters, and that their presence will

## Remote Condition Monitoring Service

Harness Our Knowledge • 24/7 Local Support

### Don't just buy hardware without monitoring service!

When you combine our hardware with our qualified remote condition monitoring service we ensure:

- You have the appropriate equipment
- The equipment is properly installed
- The equipment is accurately set up
- The equipment is functioning!

With our Remote Condition Monitoring Service, we become your vibration specialist!

- Alarm management
- Severity assessment
- Fault detection

Visit Schenck at  
Windpower Booth 7349!

 **SCHENCK**  
Balancing & Diagnostic Systems

535 Acorn Street • Deer Park, NY 11729 • 1-800-873-2352 • [www.schenck-usa.com](http://www.schenck-usa.com) • [sales@schenck-usa.com](mailto:sales@schenck-usa.com)

The  Group



**Fig. 3:** Windspires mounted atop the Devon Bank building.

spur people to talk even more about conservation."

DONG Energy of Denmark is a leading European energy provider, and a market leader in the development and construction of offshore wind farms. DONG sees the value in installing small wind turbines at the sites of its energy customers, recently announcing plans to market vertical axis turbines throughout Denmark.

Jan Darville, manager of electric installations at DONG, recently told the *International Herald Tribune*: "It's about starting a chain reaction of thinking green. If people see wind turbines outside their office window, maybe they'll start thinking about what happens if everyone at the office actually shuts down their computer when the day is over, and all of a sudden energy usage is down 2 percent."

Conservation is an important piece of the energy puzzle for big wind and all energy providers. If we can reduce overall energy use we can better control the availability of energy and the cost to provide it to consumers.

#### SMALL WIND, BIG FUTURE

Small wind turbines are also an excellent tool for wind-power education. If the U.S. is going to be the leader of clean energy, younger citizens need to get in-

## Seamless Rolled Ring Technology

### Our Technology

Used by some of the world's most innovative companies.



AJAX supplies quality rolled rings used in the manufacturing processes of some of the world's most innovative companies.

See how Ajax seamless rolled rings drive innovation at [ajaxring.com](http://ajaxring.com).

**AJAX**  
ROLLED RING AND MACHINE

803.684.3133 | [www.ajaxring.com](http://www.ajaxring.com) | [sales@ajaxring.com](mailto:sales@ajaxring.com)



**Fig. 4:** A cluster of Windspires at Phelps High School in Washington, D.C.

volved now. It is nearly impossible for most schools to install their own 1 MW turbines, but schools all around the country are installing 1-3 kW systems right on school property. Teachers are able to incorporate the installation into a full wind energy curriculum, exposing the students to a firsthand wind experience while preparing them for a future in wind energy. Exposed to the power of wind, these youths are more apt to embrace a future with larger

turbines spread across their local landscapes and the policies that will be required to make this vision a reality.

Caitlin Wargo is the director of sustainability and energy management at Far Hills Country Day School in New Jersey. She has recently ordered four 1.2kW wind turbines for the campus to compliment other renewable energy systems already installed. "It is our hope that by involving our students in our energy initiative, they will get a foundation in the issues surrounding renewable energy, from science and engineering to socio/political and economic," she says. "Coupled with the critical thinking and leadership skills that are the hallmarks of a FHCDS education, our students will be ready to take their place as the leaders of tomorrow in renewable energy."

## GETTING STARTED

As an industry, small wind is ready to help big wind overcome current market adoption barriers that will lead to growth. The technologies that are currently available are efficient, silent, and attractive, and a wide array of rotors—from traditional horizontal axis to innovative vertical axis designs—are available to meet individual design needs. In addition, the newly announced small wind certification program will ensure that the turbines are safe and tested. It's time for big wind to start using small wind as a tool to grow the entire industry. ↗

## Protect Wind Turbines from Damaging Electrical Surges!

APT carries a full line of UL 1449 3rd Edition hard-wired and DIN Rail mounted Surge Protective Devices (SPDs).



- APT's hard-wired SPDs - used at the inverter/transformer level
- Full range of voltages and surge capacities to cover all your SPD needs
- DIN Rail SPDs - used for specific applications within the turbine
- APT has a team of Engineers to assist in all situations

*"Protecting Your World from Surges!"*



**Advanced Protection Technologies**  
1.800.237.4567 • [www.aptsurge.com](http://www.aptsurge.com)

Distributor Opportunities

**Metallizing outperforms 40 other coatings.**

When lifecycle counts, contractors trust Thermion.

USA • Canada • Taiwan • Singapore  
New Zealand • Czech Republic • U.A.E.

High Production Arc Spray Systems  
Metallizing Spray Wires  
Custom Design and Engineering  
Training and 24-Hr Tech Service  
Spare Parts for All Thermion™ Products  
Worldwide Distribution

 **Thermion™**  
The Original and Reliable

360.692.6469 • [info@thermioninc.com](mailto:info@thermioninc.com)  
Find out more at [www.thermioninc.com](http://www.thermioninc.com)