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SMALL TURBINE COLUMN:

Questions Any Small Wind Turbine Manufacture Should Be Willing and Able to Answer About Their Products

by Mick Sagrillo

With the advent of state public benefit programs funding renewable energy projects, there has been an explosion of new wind turbine manufacturers bringing an ever expanding number of small wind turbines to the marketplace. You almost need a roster to keep score.

With so many choices out there, how do you know which turbine will be right for you? My first advice is not to base your decision the way most people decide things: promises and price. When it comes to wind technology, these invariably turn out to be poor screening tools. Such an approach is akin to shopping for a dentist based quotes the lowest bid: you go first!

Equipped with questions

So how do you compare one product to another? My suggestion is to begin by interviewing wind turbine manufacturers or their sales representatives to assure yourself that what they are offering is more than a half-baked idea. Some of the questions that I think any manufacturer or rep should answer, regardless of the turbine design or blade orientation, include the following, with comments in italics:

- How long have you or your company been in business? *Expect some exaggeration on this answer that will likely include how long the company has been thinking about offering a wind turbine as well as designing and testing the early prototypes.*
- How long has this turbine model been in production? *That is, not in the prototype or beta stage, but as a production model available for sale to ordinary consumers.*
- How long was the prototype tested? Who did this testing? How many beta versions were sent to the field for feedback?

- How many production models have been sold to ordinary consumers? Better yet, how many production models have been sold per year over the sales life of the turbine? *Expect numbers to increase with time.*
- How many of the turbines you sold are still running? *Don't laugh. One manufacturer continuously brags about the thousands of turbines they have sold. I own nine of them, all of which are broken and safely packed away in their boxes. So, thousands less nine for that model.*
- How frequently has this model turbine seen design change or upgrades? What are those changes or upgrades? When were the changes or upgrades incorporated? Were existing owners offered an opportunity for an upgrade with the changes? At what cost?
- If the model has never been updated, why not?
- Does the wind turbine meet the proposed American Wind Energy Association Small Wind Turbine Performance and Safety Standard? *AWEA's Small Turbine affiliates have been working on a Performance and Safety Standard for a number of years, and hopefully it will be implemented sometime in 2009.*

Does the wind turbine meet the proposed American Wind Energy Association Small Wind Turbine Performance and Safety Standard? *AWEA has been working on a performance and safety standard for a number of years; with the initiative approaching completion, hopefully the standard will be adopted sometime in 2009 and used by the Small Wind Certification Council (SWCC) to certify small wind turbine equipment. (The SWCC is composed of a wide array of stakeholders, including industry members, installers, government officials, and public benefit's program representatives.)*

- Who developed the power curve for the wind turbine (i.e., the curve on a graph indicating how large the electrical power output will be for the turbine at different wind speeds)? Has it been validated by an independent testing agency or reviewer?
- What is the annual energy output for the turbine in average wind speeds of eight to 14 miles per hour? How was this information developed? Has this ever been validated or verified by an independent testing or reviewing agency from real life installations? Or by a customer with a wind speed datalogger and kilowatt-hour meter? How and where?
- Do you offer a performance guarantee for turbine output? *While such performance guarantees are a standard with wind farm equipment, this is a relatively new concept for small wind. Don't expect an affirmative answer on this one, but you never know.*
- How does one shut the turbine down in the event of high winds, leaving on vacation for a week or so, or to do maintenance? Is the shut down mechanism reliable at any wind speed? Do you have guidelines for how to shut the turbine down in high winds?
- What maximum wind speed is the turbine designed for? What about the tower? Has this been certified by either an on-staff engineer or outside engineering firm?
- Has the turbine ever gone through a reliability test? By who? What was the duration of that test? What were the results?

- What is the sound profile for the wind turbine at various wind speeds and distances from the tower? Who performed the acoustic test?
- How long is the warranty period for the turbine? What does the warranty cover? What is excluded?
- Is an extended warranty available?
- What rate of warranty work have you needed to do on this turbine? *Do not expect an answer to this question, as the response will likely be that this is proprietary information. Regardless, it is worth asking simply for the reaction you might get.*
- What problems in the field have you seen or heard of? How have you dealt with them? Have you issued any recalls or updates as a result of these problems? Who does the work to remedy the problem? Who pays for this work?
- Can you recommend any installers in my area who can install this wind turbine? *Preferably there will be more than one installer who can do the work so that you have some choices. In addition, an installer who also works with other manufacturers' equipment is preferable, not because you are shopping for a different turbine, but because this gives the installer the advantage of having a well-rounded "education."*

A reputable industry

While such an interview is not meant as a grand inquisition, it should give you a fairly good idea about how well thought-out the manufacturer's products and wind business really are. If the bulk of the questions cannot or will not be answered, then the person being questioned has spoken volumes about his or her wind turbines and company. Only the gullible or foolish buy a product that will make them "run faster and jump higher," in spite of receiving no validation of such claims.

I have been working with small wind turbines for over 28 years, and I am still amazed at the number of "manufacturers" who will not or cannot give reasonable answers to many of the above questions. These questions are obviously biased towards the consumer but are not meant to be antagonistic towards the manufacturer or purveyor of wind equipment. We need everybody to play together to have a successful small wind industry. And to have a successful industry, we need an honest and reputable one. If some of these questions ultimately result in the demise of a half-baked product or idea, we are really all better off.

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Editor's note: The opinions expressed in this column are the author's and may not reflect those of AWEA's staff or board.