

Introducing Air Breeze



**The next evolution in the
AIR series wind turbine**

airBREEZE

History of AIR



AIR 303 1995-1998
(18,000 produced)



AIR 403 1998-2001
(42,000 produced)



AIR-X 2001-2007
(46,000 produced)



AIR – Breeze 2008

AIR was introduced to the market in late 1995 and since then, it has been the best selling small wind turbine in the world.

- Over 100,000 AIR wind turbines have been sold
- No other small wind turbine in history has sold as many units

How AIR is Used



Antarctic Science Station



Emerging Countries



Military Remote Monitoring



Offshore platforms



Sailboats

How AIR is Used



Recreational Vehicles



Remote Home



Hobby

How AIR is Used



Telecom



Street Lights



Cathodic
Protection

Introducing Air Breeze

- More Energy
- Lower Startup
- Quieter Operation



air BREEZE

Blade Design

Quieter /Low Wind Startup



Old blade

New blade

With 30% more area, the wider airfoil provides lower startup, improved overall performance, quieter operation and greater durability



New higher strength material
That resists fractures



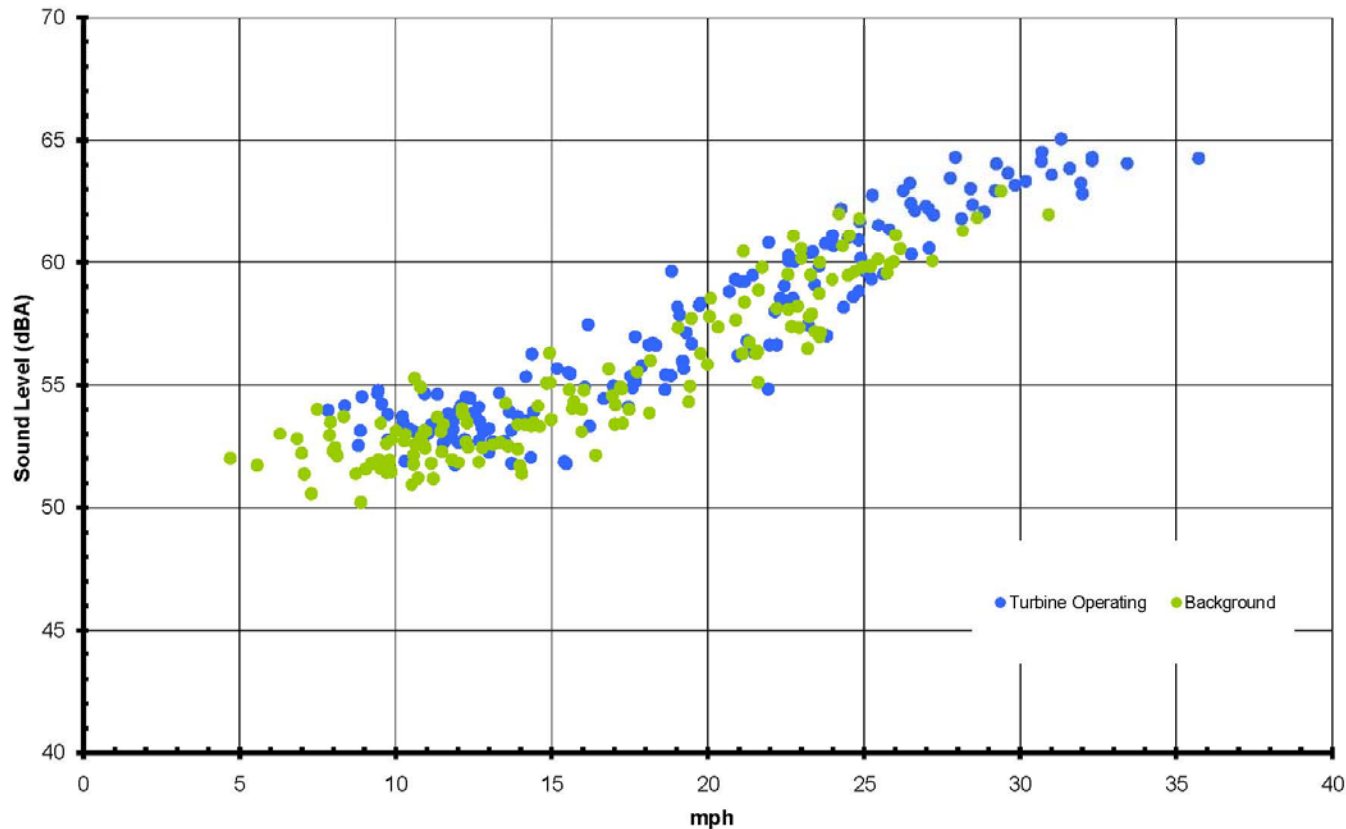
New airfoil design now includes a boundary layer disruptor for quieter operation

Air Breeze – Sound Data

Sound Level Study; AirBreeze on 45' tilt-up; 1-min averages

1/30/2008; Beech Mtn, NC; Elev = 1560 m

Downwind @ tower + r = 47'



The turbine blends into the background sounds at all wind speeds.

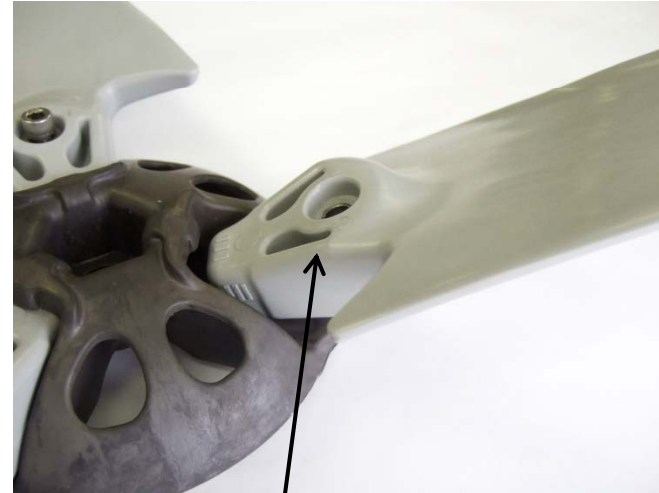
This supports the anecdotal observation that the

wind turbine operates very quietly. – *North Carolina Beech Mountain Study*

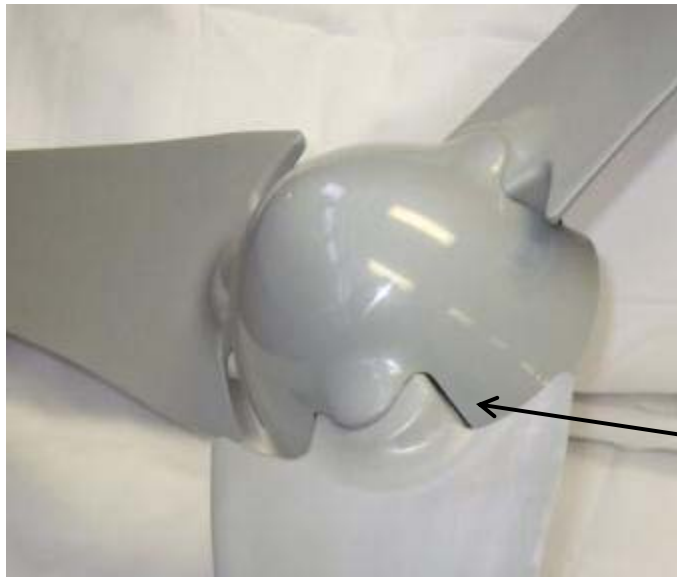


Hub Assembly Easier and Sleeker

New hub design has less material and less waste. The new locking root design eliminates a fastener while at the same time improving the safety of the hub



Single bolt design
with locking safety tab



Nose cone is more
secure and durable

Improved Internal Controls

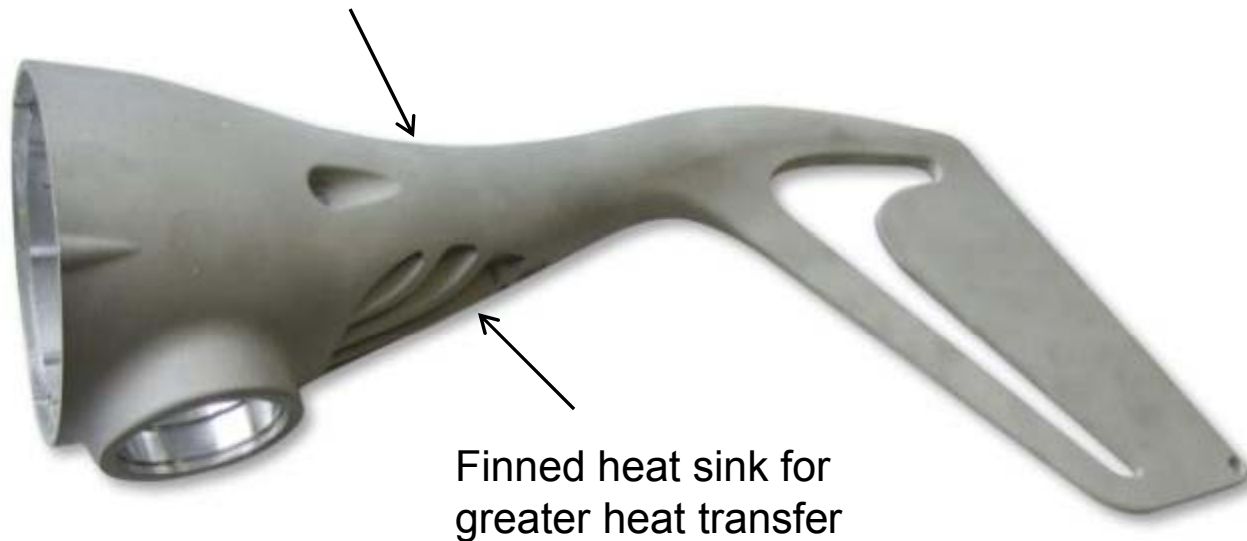


- Improved Electronic Stall Control* reduces shutdowns in high winds
- Improved power tracking maximizes energy production at all wind speeds
- More robust FET (Field Effect Transistors)

•Electronic Stall Control is a patented technology that optimizes energy output while stalling the blades in high winds electronically rather than with a mechanical control

Upgraded Castings

Improved finish with new die cast process



Finned heat sink for greater heat transfer

Land version shown

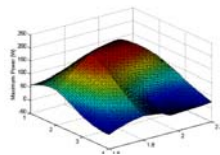
Improved Energy Output

The most dramatic change in AIR is its power rating. SWWP is adopting new international standards for Performance, Safety and Sound for all its products.

The IEC 61400-2 calculates power curves to the “one-minute average”.

Historically, most small wind turbines have produced power curves on a “one-second average” or “instantaneous” measurement.

For in-depth info:



aiR BREEZE

Power vs. Energy Ratings

The power rating of AIR Breeze is 200 watts or half of the AIR-X 400 watts. However, its energy production is actually higher in most wind speed averages.

The following slides are designed to teach you the differences between Power and Energy so the customer can understand why a 200 watt machine has the same value as a 400 watt machine.



Power vs. Energy

POWER

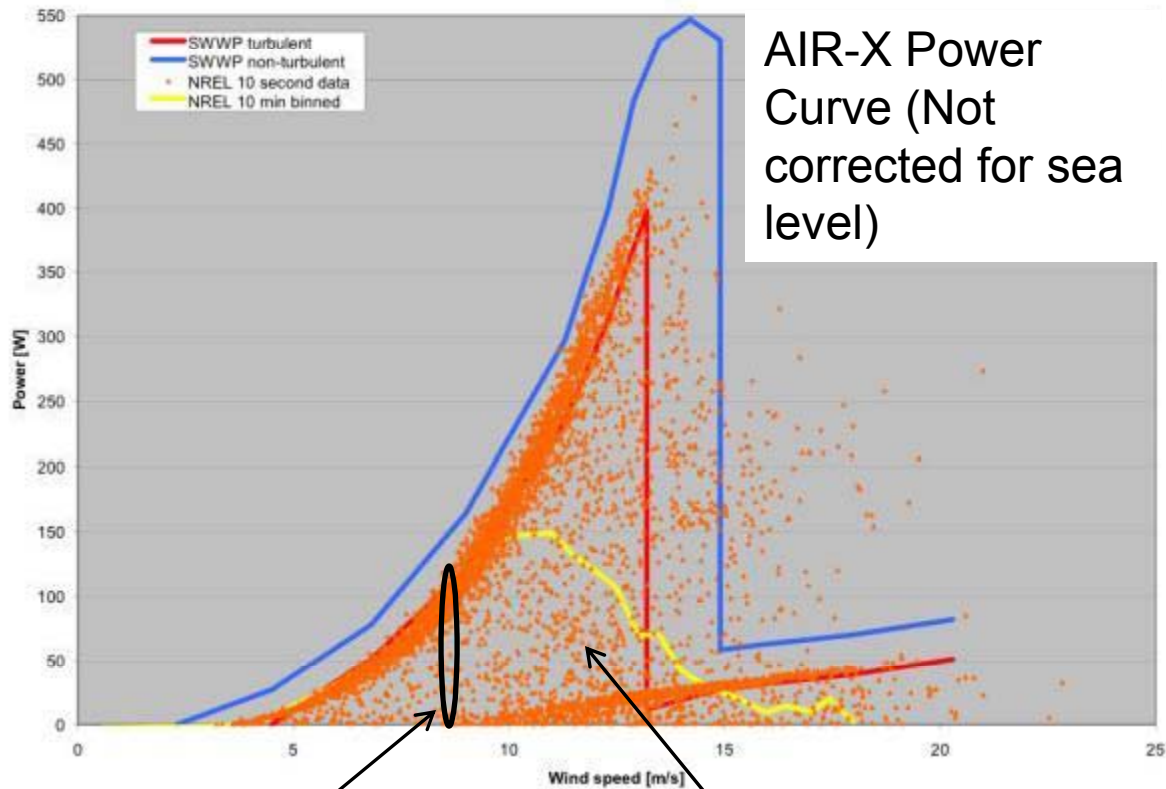
Is a reference to the potential instantaneous output of a device measured in Kilowatts (kW)

ENERGY

Is a reference to the output of a device over time measured Kilowatt Hours (kWh)
This is the measurement consumer's use

Power vs. Energy

How power curves are created



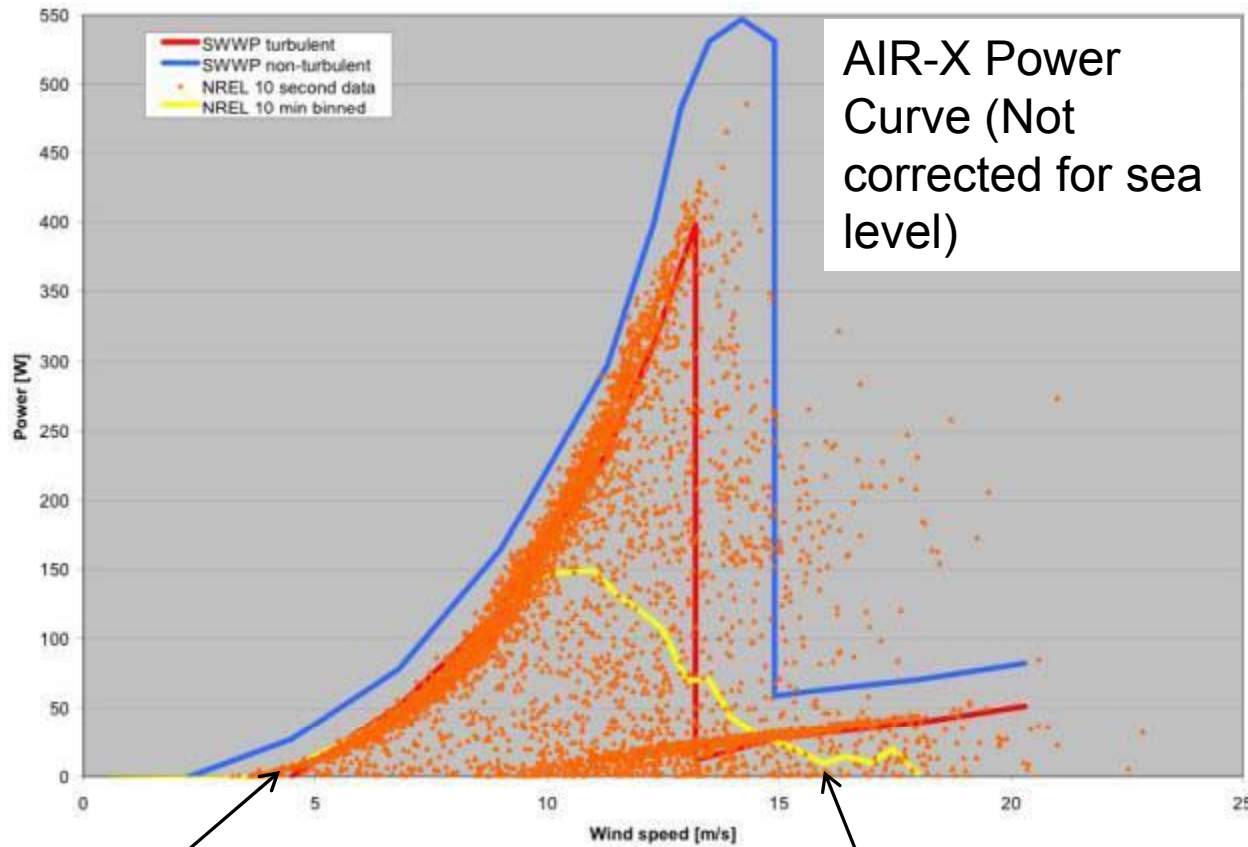
AIR-X Power Curve (Not corrected for sea level)

Power curves are created by filling “bins”. A bin is an incremental wind speed. Bins are filled with power data (watts) output and then averaged. The average number is calculated over a time period (1-10 minutes). The more turbulent the site, the more scatter data. This scatter data pulls the power rating down.

Average is calculated on all the data in a “Bin”

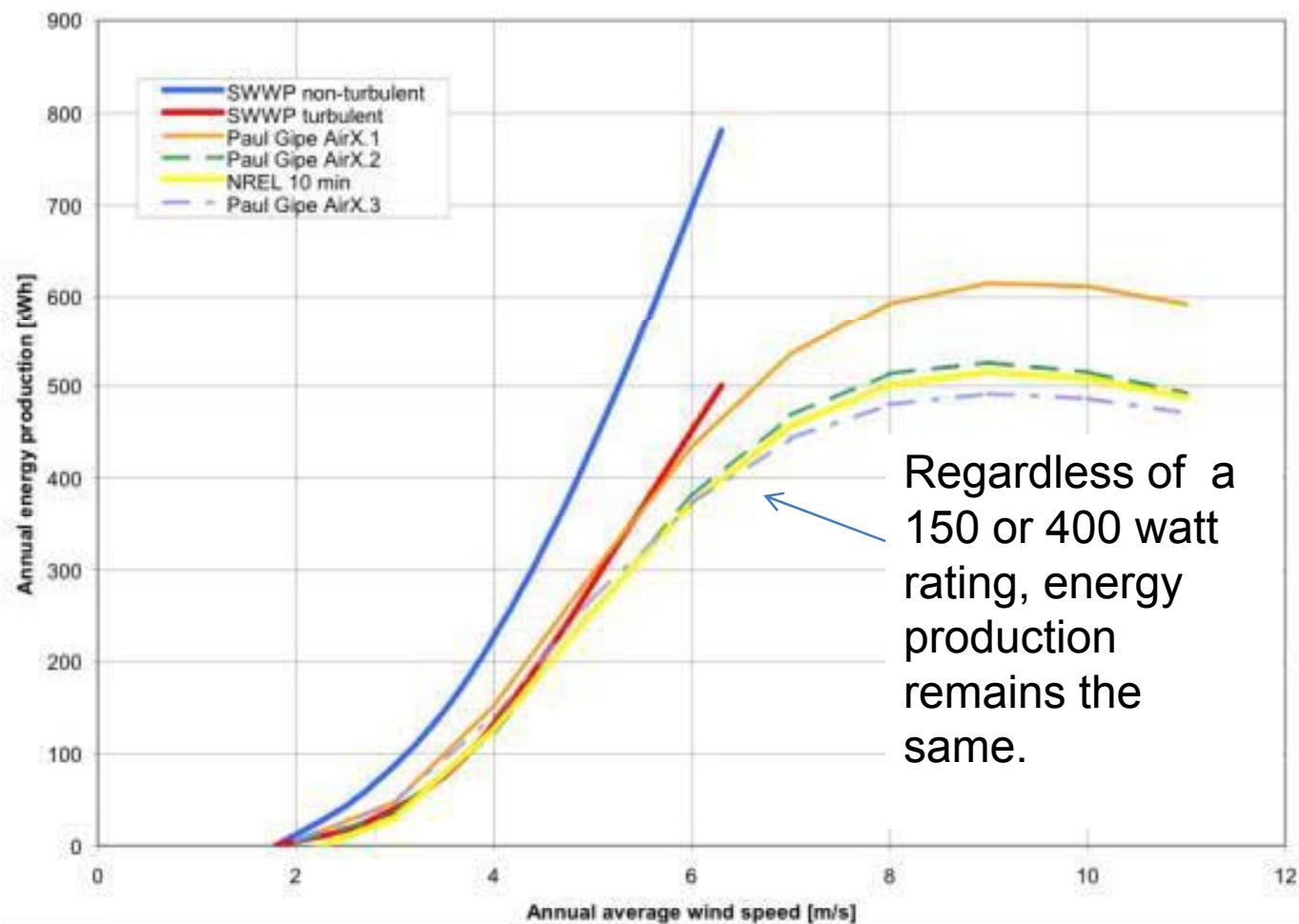
Scatter data caused by turbulence

Power vs Energy



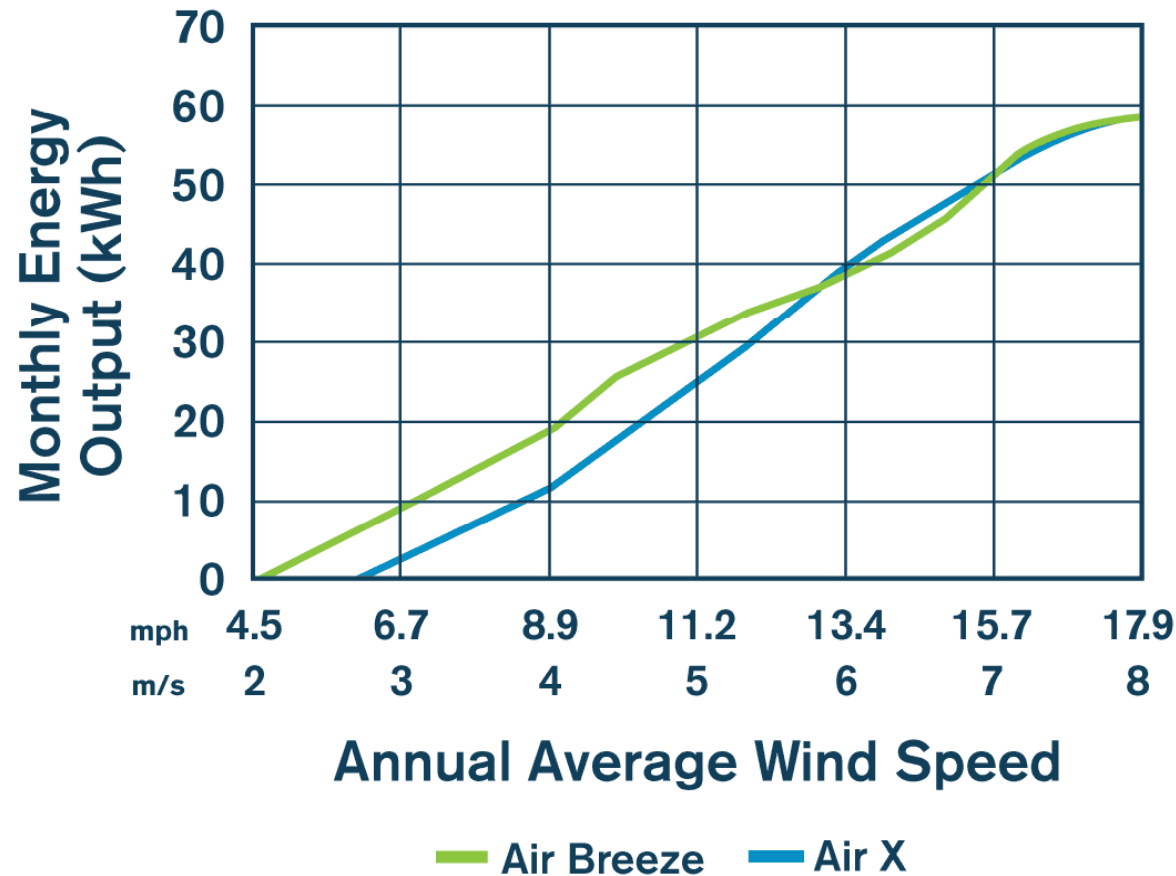
This NREL Power curve demonstrates the difference between a ten second average and a ten minute average power rating. In general, the shorter the average measurement the higher the rating. Turbulence can also significantly affect a power curve.

Energy Data Comparison



Source: <http://www.nrel.gov/docs/fy03osti/34756.pdf>

Air Breeze Energy Output



Energy curves are based on estimated energy production over 30 days at a given wind speed average.



What people are saying

- ***“Sound emissions are tremendously improved - you have finally cracked this one! ...This really is a great improvement of what was already a good product.”***
– Nigel Calder, Sailboat Enthusiast
- ***“It was as easy to install as the Air X. The sound is much better , the blade chord has helped and the raised edge along the leading edge seems to help. Great in low wind speed!”***
- Logan Bryce - Montana
- ***“The sound emissions are very low”***
– Rene Contreras, Puerto Monte – Chile
-
- ***“I have been buying Air wind generators since the first model. All thumbs up! Air has had many years running an off grid house, only requiring maintenance once even through several tropical storms. Overall: priceless.”***
- Dr.G Hernandez, San Juan, Puerto Rico



How to Sell Air Breeze

- Talk down power ratings, talk up energy ratings
- The 200 watt Air Breeze produces the same or more energy of a comparable 400 watt wind generator with the same swept area
- Air Breeze has a lower startup and higher output in lower wind speeds than Air X
- Air Breeze is quieter than Air X
- Air Breeze is a improved product, still priced the same as an Air X



Marketing Support (How we can Help)

- Advertising in Sailing and Off-grid home publications
- www.airbreeze.com
- Dealer support with
 - Demos
 - Brochures
 - Advertising materials
- www.windenergy.com/dealer_corner

