



Oasis Montana Inc.

Alternative Energy Supply and Design
Toll Free: 1 877-OASISMT (877-627-4768)
e-mail: info@oasismontana.com
Home Page: www.oasismontana.com

Air X Wind Turbine Generators

FREQUENTLY ASKED QUESTIONS ABOUT THE AIR 403 WIND GENERATORS

Will an Air 403 power my home?

Not unless your power requirements are very minimal and you wind speed very high. The Air 403 is designed for remote battery charging at a site with modest power requirements, and a good average wind speed.

Can I disconnect my Air 403 without damaging it?

You can disconnect the Air 403 without causing it any damage. The Air 403's sophisticated electronics control the voltage. The turbine will become louder when it's disconnected, especially at higher velocity wind speeds. It is not recommended to leave the unit disconnected for extended periods.

Is it possible to short my Air 403?

Yes, you can short your Air 403 without causing any damage; however, be absolutely certain you do not short your batteries, as this could cause serious damage, expulsion of sulfuric acid or an explosion. First, disconnect the turbine from the battery and then connect the turbine positive wire to the turbine negative wire. Doing this will safely short the turbine and stop it from spinning. In high wind conditions it will spin very slowly when shorted. The stop switch (toggle switch) can be used to stop the turbine by disconnecting the battery and shorting the turbine wires.

Can the turbine be hooked up backwards to the battery without causing any damage?

NO! If you reverse the polarity you will damage the turbine and void your warranty. Be absolutely certain that you hook the positive (red) wire to the positive battery post, and the negative (black) wire to the negative battery post.

Where can I find the pipe and tubing to make a tower?

Most electrical and plumbing supply houses (and some hardware stores) carry the schedule 40 steel or aluminum pipe. The Air 403 utilizes 1 1/2" schedule 40 steel or aluminum piping; if you use aluminum, ask for electrical aluminum conduit. The actual outside diameter of the pipe is 1.875 inches, 48 millimeters.

Where can I locate a start/stop switch?

Also called a toggle switch, these are available from your dealer or from most automotive or electronics parts stores. It must be a 50 amp DC single-pole double-throw toggle switch.

Do I need a regulator for the Air 403?

The Air 403 is internally regulated, with adjustable voltage setpoints, so you do not need an external regulator. You can also use any kind of "dump load" regulator that works with solar panels if you desire to do so.

How does the Air 403 control power and RPM in high winds?

The Air 403 has a unique rotor blade set that is made of carbon fiber reinforced thermoplastic. As the wind speed gets close to 45 to 50 mph (21.5 m/s), aerodynamic forces cause the blades to twist and the rotor to stall. This is a passive function that slows the rotor to protect it from excessively high wind conditions.

Why do I hear an unusual noise when the wind speed nears 50 mph (22 m/s)?

When the aeroelastic blades twist due to high wind conditions, the unit is stalling itself to protect itself. The noise is normal and protects the unit in high wind conditions. If the noise is undesirable, stop the wind generator by shorting the turbine wires or through the use of a toggle (start/stop) switch.

Why is the body made of cast aluminum? Why not some other cheaper or lighter material?

The aluminum body acts as a heat sink that cools the alternator and electronics in high winds, at high power levels. The weight of the aluminum also adds stability in high winds.

Why is there a cut-out in the unit's tail?

Balance - The cut-out helps to balance the Air 403 on its turning axis to better track the wind. Since the turbine weighs only 13 lbs (5.9 kg) and is properly balanced, more power can be utilized from the wind no matter how slight or directionally unstable.

Wind tracking - The cut-out also helps to create more edge surface area which provides more directional thrusting for turning the turbine into the wind.

Why is the LED (light emitting diode) located where it is?

The Air 403 and Air 403 Marine units have their LEDs located on the belly near the tail; it's easier to see it there.

Will the LED burn out?

It should last a lifetime (and the unit will work fine even if the LED gets damaged or burns out).

How long will the bearings or other wearing parts last?

The bearings should have a 10 year life in 12 mph (6 m/s) average wind speed sites. Bearing life will vary from one site to another; however, at least a five year performance in adverse conditions and a 10 year performance in normal conditions should be expected. The copper brushes should last a lifetime. The yaw shaft has been tested to over 100,000 revolutions with no visible wear on the brushes or slip rings.

What is the maximum wind speed the Air 403 will survive, and do I need to take it down in a storm?

NEVER approach any wind turbine in strong wind conditions! The Air 403 is designed to run without care in storm conditions. If you wish to shutdown the turbine, use the start/stop switch to safely short it. The Air 403 is rated to survive 100mph (45 m/s) wind speeds. If higher winds are regular at your site, contact your dealer for information about the Air Industrial units.

How do I know the turbine is charging?

You will need to install an amp meter in your system for precise indication of your charging rate.

Why is the Air 403 so powerful for its size, weight and cost?

Nearly every part of the turbine has been developed from the "ground up" using 3-D computer models to help analyze every element of its design. This popular wind turbine features the following:

--It utilizes a permanent magnet (PM) alternator that matches the cubic power of the wind. All other PM alternators are linear in their output and either stall or unload the rotor blades making them much less efficient.

--The Air 403 uses 12 Neodymium Iron Boron magnets, the strongest magnets available in the world.

--This unit offers blades with advanced airfoils made of injection-molded carbon-composite materials that meet the strength-to-weight ratio requirements of the computer assisted design.

--The blades have aeroelastic twist that provides durability and simplicity.

--The electronic circuit/alternator allows the turbine to self-regulate.

--The conviction and high standards of the manufacturer , to help change the world by providing quality renewable energy innovations at a reasonable cost.

WANT TO POWER YOUR HOME OR OFFICE?

Looking for a wind genny to power your conventional home? Check out the Bergey Windpower site for state-by-state wind maps ("3" or higher is very suitable for wind generation), pricing, specifications, power output vs. wind speeds, installation manuals, and tower options--all this information you can look at or print right off the 'net! We sell these units--and they are increasingly back-ordered due to demand. Spend some time here: <http://www.bergey.com>.

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Oasis Montana Inc.

Alternative Energy Supply and Design

436 Red Fox Lane

Stevensville, MT 59870

[E-mail us](#) for free information on system sizing; or
order our Design Guide & Product Catalog for
\$10.00 (\$18.00 for international customers)

mailto: info@oasismontana.com

Home Page www.oasismontana.com

241380

Tech Support: 406-777-4309 or 4321

Toll Free Order Line :

1(877-OASISMT) 1(877-627-4768) or

1(877-OASISPV) 1(877-627-4778)

Fax: 406-777-0830

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