PowerOak W300 Marine Wind Generator

PowerOak W300 wind turbine system is one of the most successful small wind generator system in the international markets. The main superiority of this 300W small wind turbine as below:

1) Pretty quiet, very very low noise .

2) Good output, our blades and motor is slightly bigger than competitors.

3) Safety in strong wind conditions.

Other highlights like low vibration construction; truly marine anti-corrosion, simple installation and durable.

The Features & Technology:

Our wind turbines feature advanced technology to improve performance and durability; Here are some features and technologies included in our wind turbine:

1. Generator

We use the strongest magnets (Neodymium Iron Boron Magnets) and most advanced technology for our rotor. Experiments show that using Neodymium Iron Boron Magnets as materials, it is more light weight and high efficient than any other materials. And our rotor tangential structure design also contributes to the whole rotor superiority.

Stator uses high temperature durable lacquered wire materials, plus vacuum impregnation treatment, so the insulation performance is greatly improved, and also more durable.

Having two bearing allows the wind turbine to start faster than a single bearing wind turbine. Thanks to this technology you can start producing energy at wind speeds as low as 1.8 m/s. Double bearing system also have the advantage of reducing the vibration emitted by the generator.

2. Blades

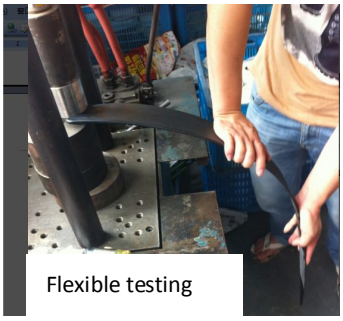
For same length blades, due to airfoil differences, output power and effiency is not same. Therefore, optimizing design of blades airfoil is very important. With our technology on fluid dynamics and aerodynamics, together the adoption of European blade design idea, our blades obtain a good start up performance and higher output than competitors.

Besides, another superiority about our blades is the carbon fiber composite materials. Using the most advanced technologies, our blades contain 20% carbon fiber. Carbon fiber is light weight, flexible and has a long life span. Due to these characteristic, blades have the advantages of bending at high speeds, thus reduce airflow force and slow down in high wind speed conditions. Blade with galss fiber materials are very strong

Flexible blades, blades can't give off during strong wind force, and destroy the installation.

And we have made the rotor blades balance treatment, in order to keep it quiet and no vibration when rotating. We have made inside nuts fasten structure between blades and hub connection.

Fasen connection design



Flexible testing

Inside section of blades
white parts is carton fiber material

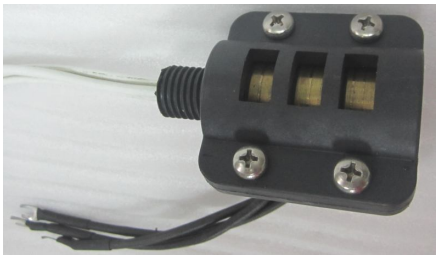
3. ***Aerodynamic body design***

Using high strength aluminum alloy materials, plus precision die casting technique, makes our wind turbine body light weight, high strength, anti-corrosion and durable. Besides, aerodynamic design is makes our wind turbines more effective but also more pleasing to your eyes. All our turbines have a powder coating finish, not only does it give them a perfect painting and feel but it also increases its life span by protecting the body from any weather condition and is easier to clean. Besides, aerodynamic design also contributes to this super low noise.

4. Double Security System

All our wind turbines are equipped by not one but two security systems. If the wind is too strong and the rotor speed is too high our security systems will directly act on the generator to prevent damage to the system.

5. Slip ring :



Poor quality slip has the problem to bear high currents, thus in strong wind conditions, slip ring/brush overheats. This slip ring is an integrated one; there are high copper materials involved. This slip ring can stand as high as 200A instant current. And its design is very very smooth, so it can quickly turn the body to the wind direction to get a higher effiency.

Specification:

Model Name	PowerOak W300
Model Number	W300
Wind turbine type	Horizontal axis, up-wind
Rotor diameter	900mm
Net weight	7.5 kg
Tower diameter	48-50 mm
Blades number	5
Blades material	Caron fiber reinforced plastic
Blades mass	216g /pcs
Body material	Aluminum high pressure diecast
Body construction	Completely one
Product finish	Marine grade treatment and painting
Tower Connection	bolt-on clamp
Start up wind speed	1.8 m/s
cut in wind speed	2.5 m/s
Survival wind speed	50m/s
Rated Power	100W (10 m/s)
Rated Rotor Speed	700 rpm
Maximum power	300W (15m/s)
Working Temp. range	from -40℃ to 60℃
Product Life (years)	15
The sound pressure level	33dB @ 5m/s @ 5m behind rotor (an air density of 1,225 kg/m³)
Generator	Synchronous-type, three-phase power generator with neodymium iron boron magnets
Rated Output voltage	Off grid 12V or 24V
Braking system	Electro-magnetic & blade over speed aerodynamic braking system
Yaw control	360 degree free yaw
Direction control	Tail tracing
Control system	Brake mode
	safty control
Recommend ed system	Off grid: deep cycle lead acid battery
Warranty period	3 year

In a nutshell, good quality & reliable performance, land durability are our main concerns. Most of all, good quality products at an affordable price for all consumers.

Frequent asked questions:

1. How about noise of this wind generator?

The sources of sounds emitted from operating wind turbines can be divided into two Categories:

1) Mechanical sounds, from the interaction of turbine components.
2) Aerodynamic sounds, produced by the flow of air over the blades.

Our mechanical design, like double bearings; front-back faces; exceptional blades assembly and anti-vibration plastic pad connection with pole, blades design and materials, all these contribute to make PowerOak W300 the quietest wind turbine in the world.

2. Is it marine anti-corrosion?

The body is made of a lightweight magnesium and aluminum alloy, and is coated with a marine-grade polymer powder coat to prevent oxidation or corrosion.

Our latest study found that in order to have a longlasting anti corrosion you have to, follow these steps:

- Surface polishing
- Zinc-aluminum coating treatment

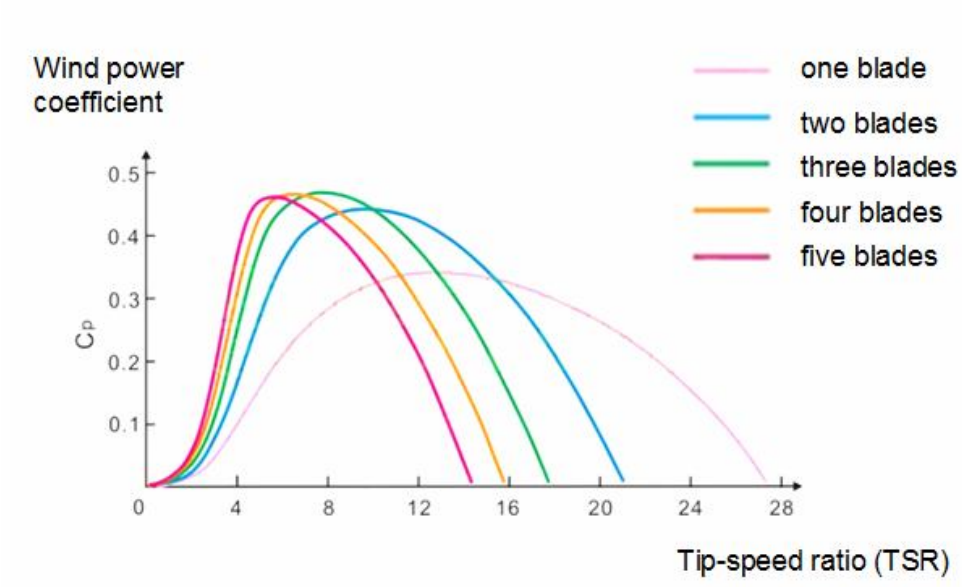
  Zinc-aluminum coating is composed of ultrafine zinc and ultrafine aluminum and none-chrome mental salt, it is a non-electrolytic inorganic coatings. After the treatment, the coating form an anti-corrosion surface of inorganic zinc sheets and aluminum flake.No organic solvents, non-toxic metals (such as nickel, lead, barium and mercury) and Cr, so more environment friendly.
- Sandblasted
- Using two layers of epoxy powder painting. Most manufacturers adapt single epoxy powder coating , a thin layer painting, surface porosity, or painted surfaces damaged during installation, these will lead to corrosion, our double epoxy coating is approved to be a good solution to this corrosion issue.

3. Why we use 3 blades in PowerOak W400, W600 wind generator, and 5 blades for PowerOak W300 ,W2000 wind generator ?

Many scientific experiments show that 3 blades and 5 blades wind generator have a good wind power coefficient. For small size wind turbine, as it has relative high rotation generator, thus in order to get a good output in high wind conditions, we use 3 blades for PowerOak W400 and PowerOak W600. Three blades wind turbine has a better rotation balance, and output power is more reliable. That is why most small wind turbines below 1kW have 3 blades.

For 5 blades wind generator, due to higher resistance, efficiency in high wind condition

is very important. While designing the PowerOak W300 and W2000, we have taken the consideration of this coefficient to make best power optimization in high wind condition. Below chart swows wind power coefficient for one to five blades wind turbine.



The power coefficient is a measure of how efficiently the wind turbine converts energy in the wind into electricity. Data is obtained by dividing the electricity produced by the turbine by the total energy available in the wind. Therefore a high power coefficient indicates a high efficiency at a certain wind speed.