

Chinese 300W wind turbines (12 and 24 volt)

We have been very impressed with these turbines but only after significant improvements have been made. This is a very cost-effective solution to include as part of a complete renewable energy system. We do not recommend using an unmodified version of this machine, for the reasons outline below.



EcoInnovation has been testing two of these turbines for the last 3 and a half years on our own site, and has installed over a hundred of our modified version in the field.

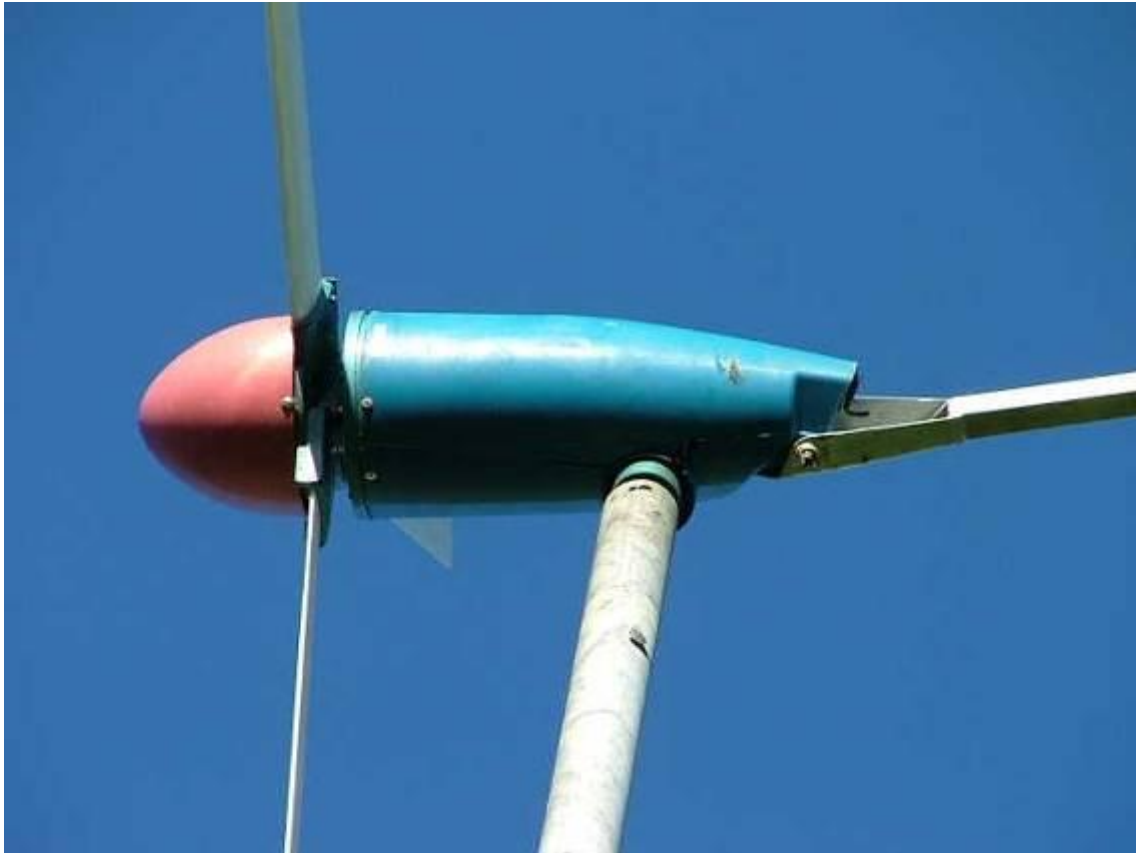
Our initial impression of the turbine was low, the problems were as follows:

- Ripples in blades on one model
- Blades were out of balance and the turbine vibrated severely
- Sharp burs on components
- Wires were likely to chaff on sharp unprotected holes
- No slip rings
- Very poor electrical components
- The tower supplied with the turbine is unsafe and should not be used

To rectify these issues EcoInnovation makes a number of changes that included:

- Vast improvement in blade retention
- Addition of slip rings
- 3-phase rectification at the turbine and dc down the tower
- Balanced blades
- Addition of grease nipple in the tail pivot
- Addition of good quality voltage regulator and diversion load

Picture shows detail of tail pivot. This is essentially a copy of the Bergy XL. It works very well and has not given any problems to date.

**Specifications:**

Do not believe the manufacturers specifications for this turbine as they are highly exaggerated. Our testing has shown they do perform very well and the specification does not need exaggerating. Tested against our Soma 1000 has shown they outperform the Soma in light to medium winds. The turbine starts in very light winds and starts generating in 2.5-3 m/s winds. This is due to the fact that the turbine has a large 2.2m blade but a very small 300W (maximum) output generator. This results in very good low wind performance at relatively low rpms. As average wind speeds are often low this turbine is an excellent choice and good value for money if the changes detailed are made.

We rate the output of this turbine as follows:

- 300 watts at 30 km/h
- 200 Watts at 25 km/h
- 100W at 20 km/h
- 50 Watts at 16 km/h
- 25 Watts at 13 km/h
- 12 Watts at 10 km/h
- Has a cut-in speed of 9 km/h.

The makers rate their turbine at 200 Watts at 22 km/h, which is not possible as this would require a conversion efficiency of 49%. The best turbines in the world do not even get close to this and it is almost impossible to attain this level of conversion efficiency from a wind turbine in practice.

Governor:

Picture below of governor working, it is a very effective and stable means of governing the turbine in strong winds. It works well and we were very impressed. Output drops to around 150-300W when tail is fully furled (as shown in picture below).



Blade Balancing:

Picture shows EcoInnovation balancing the blades in our workshop fixture. Note these blades were 65 grams out of balance at the outer radius of the hub. We fitted a lead weight to replace the 3 bolts shown in the picture. The makers of the turbine have not attempted to balance these blades. EcoInnovation balances all turbines we sell.



EcoInnovation added the two slip rings shown and we use the same brushes that we use on our Smart 400 turbine.



EcoInnovation testing generator in our workshop lathe to check maximum output of 300 Watts is obtainable. All tests went well.



EcoInnovation added a 3-phase rectifier and secured the cable from chaffing. Note the two brush holders on the bottom right of the picture.





EcoInnovation has imported around 300 of these turbines. All turbines and towers will have at least a 12 months warranty, please see the website for details. Price will be inline with Jaycar but will take into account the changes made by EcoInnovation and the labour required to sort out the problems with these machines.

EcoInnovation also stocks replacement blades, nose cones, and other spare parts for these turbines should they ever be require

It is our view that this turbine is currently the best value product available. We will be offering systems that include:

- 300W turbine and tower
- Solar PV bank
- Battery bank
- Regulator and diversion load
- Inverter
- Wire
- Back up generator set and charger (optional)

We hope to be able to offer the most cost-effective domestic Renewable Energy solutions in New Zealand.

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