



Coomanore North, Bantry, Co. Cork. ☎027 52773.

✉: info@turbotricity.com www.turbotricity.com

Turbotricity produces high quality turbines minimising overheads to offer quality and value to end customers - not at the price of some poor quality Chinese turbines, but at a price which offers some prospect of a reasonable payback time, without compromising quality or durability..

Our wind turbines are designed by a Scottish design company experienced in making rugged turbines. The focus is on providing reliable, effective turbines capable of surviving winds up to 140mph. At the same time, our unique combination of a state of the art generator and inverter maximizes output in low wind conditions.

We offer a grid tie 2.5kw system which is a fit-and-forget system, with virtually no maintenance and fully automatic control of the turbine and grid connection.

Availability expected 1st Week April

We have been running our 2.5kw prototype turbines in Scotland under various wind conditions and are now satisfied with our combination of generator, blades and inverter. We are putting finishing touches to our controller and moulded cowlings, and will be able to commence installations in the first two weeks of April.

Features include;



Rugged Downwind Design

Our turbine and blades face away from the wind. This provides more directional stability and enables Turbotricity turbines to survive extreme conditions more easily than upwind machines. The only problem with downwind turbines traditionally is that as the blade passes the shadow of the tower, it loses the wind briefly, and this can cause lost power and occasional noise. We have minimised these effects by using a narrow reinforced pinnacle instead of a standard tower for the blade length. Using a computer aided design, drag is further reduced with a pinnacle wing and cowling, ensuring that there is smooth airflow over the blade for its entire rotation.

Blade Pitch Can Be Pre-Set

We are using a patented hub design which enables us to modify the blade of the pitch slightly to ensure optimum operation in areas with different wind conditions



Tough Blades

Our hub and blade shoulder system are designed to withstand extreme forces, way beyond what can be experienced in a wind turbine. Our blades are injection moulded in glass reinforced polyamide, rather than polyester to ensure that blades cannot delaminate and break up.

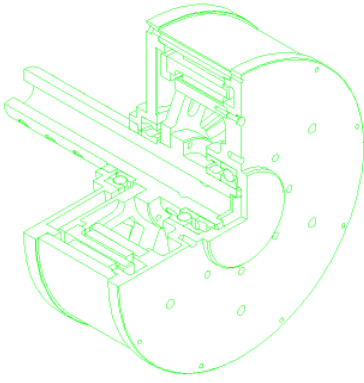
Free Standing Tower

We are using an Irish made free standing tower, engineered to withstand wind in excess of 65 m/sec (145 mph). The tower is easy to raise and lower safely using a hydraulic ram which can be powered by an electric pump, or using tractor hydraulics. Guyed towers, often used on budget turbines, require annual maintenance and can fail with catastrophic results. They should not be used in domestic settings.



No Planning Permission Required

Our turbine / tower combination is designed to come within the limits of planning exemptions passed in Ireland in 2008 provided it is installed behind the front wall of your house and at least 14m away from any boundary.



Axial Flux Generator

Most iron core generators suffer from a cogging effect – the turbine start up is lumpy, and this prevents a smooth start up in low winds. We use an air core generator which provides a smooth start-up, enabling our turbine to start in low wind conditions.

Low voltage startup

Many inverters only start to supply power when the generator voltage exceeds 200V. Our inverter operates over a wider range, from 50 to 580V. This means that in light winds, we can harness even the very small amounts of power available.



Multi Power Point Inverter

Most wind inverters only have three or four power points available. This is rather like a car only having three gears. Our inverter has 16 power points available for us to programme, enabling us to optimize power output over the entire working range of the turbine.

Our inverter also has a computer interface for monitoring of performance if required, and is compliant with EN50438, the EU standard required by ESB for grid connection.

Automatic Control in Extreme Winds

Every turbine requires a strategy for dealing with extreme winds out of the operating range of the generator. Turbotricity™ turbines are controlled using a microprocessor which monitors the output of the turbine. When the wind is close to the operating limits, the controller applies an electronic brake gradually to slow and then stop the turbine. The system then monitors wind conditions to ascertain when it is safe to start the turbine again.

Maintenance Free

Many turbines need to be taken down for annual maintenance, involving a call-out fee that puts the turbines payback time into infinity. Our turbine and all its associated components come with a 5 year warranty. The generator is greased for life, and the only maintenance required is inspection of cables and ground bolts. Blades should be inspected after five years and replaced after ten years.

Power Curves

Everyone describes their turbine as a 1kw, 2kw or 6kw, but what does this mean? It means that at a particular wind speed, it will produce that amount of power, but doesn't tell you what wind speed that is.

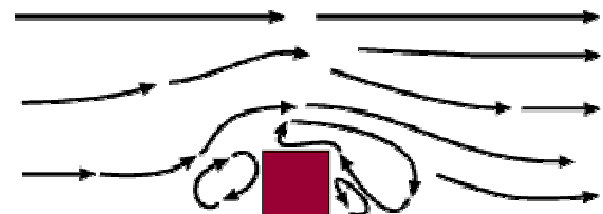


We will shortly have power curves available for our turbine, but are reluctant to publish expected results in advance. However, we expect our turbine to out-perform most other 2.5kw turbines across a range of wind speeds.

In each case, for your site, you should enter the figures from your power curve into an energy calculator to assess the annual output per year for your site. We can help you to prepare these calculations.

Is my site suitable for a turbine?

We have no desire to see turbines installed in non-productive sites. Wind turbines need to be placed at a location that is open to most of the prevailing winds. Any obstruction, even some distance away, may cause turbulence in the wind, and this will dramatically reduce efficiency, and undermine the effectiveness, so it is best to avoid sites with such obstacles upwind. Turbines should be free-standing, not attached to buildings, and should not be used in built up areas.



Provided you avoid such obstacles, a good idea of the local wind speed can be calculated using a combination of an online map (which usually gives wind speeds at heights of 75m to 100m) and a calculator which estimates the wind speed at the height of your turbine. We can assist with this assessment, or provide you with the necessary information to do this yourself.

Frequently Asked Questions;

What is the procedure for the ESB to install my system?

ESB has announced that for the first 4,000 microgeneration installations, they will fit a meter for free which will monitor the electricity sold back.

The inverter system will seamlessly supply electricity to your system, supplying your household needs first, and exporting any surplus power to the grid. During times when your house is using more power than the turbine produces, you will automatically buy the additional power needed at the normal ESB rate.

That meter will be read once a year and you will receive payment for the electricity sold at the following rates;

What are the payments?

- 9c per Kw Hr for all electricity sold to ESB. This is a variable rate which comes for review on an annual basis
- An additional 10c per Kw Hr for the first 3,000 Kw Hrs sold in any one year for the first five years of the system.

In addition to this, you will of course be saving the normal price for electricity produced by your turbine which you use yourself.

How much your turbine will save you depends on how well you can spread your own use of power. You can best manage this by using equipment such as washing machines and dishwashers at night.

Are there grants available?

There is a pilot microgeneration grant, but this scheme is only to cover testing of systems. The grant takes the form of subsidised payment from the ESB for power purchased.

Does Turbotricity produce a larger turbine?

We have settled on a 2.5kw machine as the most cost effective for most households. As it happens, the tariff favours smaller turbines, because if you use a larger one, more of your power will be exported at the 9c rate, so the additional cost of the larger machine will largely have to be funded by a smaller feed in tariff. Also, a larger turbine should, ideally, be mounted on a taller tower as the longer blade would be closer to the ground, causing turbulence. A taller tower to circumvent this problem would require planning permission for domestic sites.

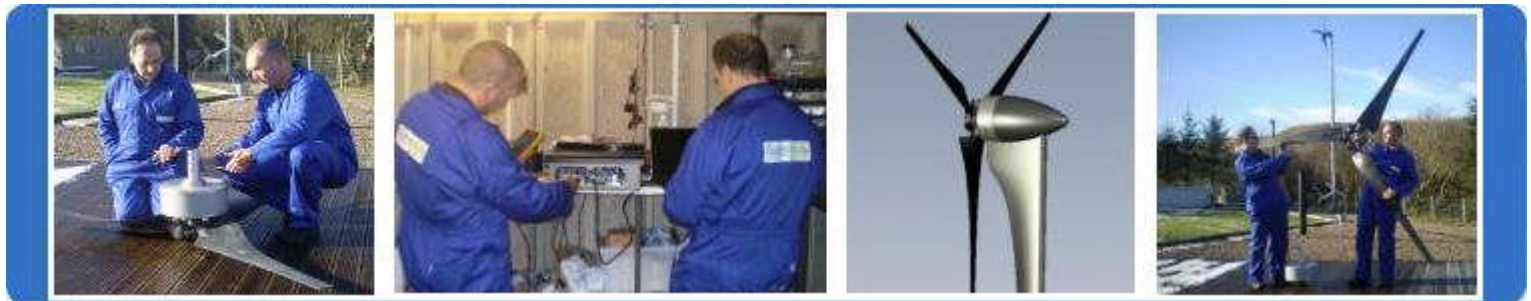
Where do I go from here?

We suggest you carry out a site assessment, either using our site-assessment instructions, or getting ourselves or an independent company to assess your site.

You can place an order with Turbotricity for a turbine to be installed. We request a deposit, paid by credit card for €2,000. Using a credit card ensures that the sale is secure from your point of view.

We will then set a date for installation. We will require a bank draft for the balance of the price to be handed over on delivery and installation of the system. Regrettably this is essential before the final stage of installation can begin.

Please call Gerry to discuss your requirements on 083 365 4400



Disclaimer

Due to constant product development, specifications may change without notice. Please refer to the specifications supplied with your turbine or enquire on any points. For further information, please contact Quentin@turbotricity.com or gerry@turbotricity.com



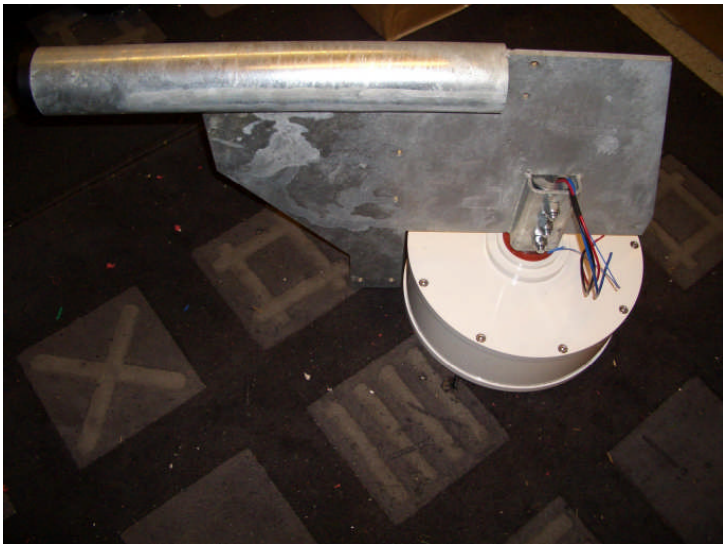
About our Generators

(This bit is only for techies really...)

We're very proud of the standard of generator we use in our 2.5kw turbine. This is a precision built axial flux generator, weighing over 45kg and capable of producing well above its 2.5kw rating. All components are made from stainless steel, aluminium, plastic or copper so the generator is completely corrosion resistant.

It is also unlike any other generator we have ever seen. Generators work because electricity is produced when a magnet passes across a coil of copper. In our case, the coils are embedded in a drum, with magnets revolving on either side of it.

Unusually, the shaft is fixed and the main body of the generator rotates. This gives the generator greater momentum and ensures that the shaft and bearings can be protected from the elements.



Axial flux generators like ours have movement which is absolutely smooth, with no cogging effect which would be normal with an iron core generator.

Here you can see the shaft of the generator attached to the nacelle, which in turn will be mounted onto the tower of the turbine.

The entire generator assembly is manufactured to very fine tolerances, and SKF bearings are used throughout. This is a generator which should provide many years of trouble-free use, regardless of the working conditions to which it is subjected.