

FUTUREENERGY 



wind turbine

[www.futureenergy.co.uk](http://www.futureenergy.co.uk)

Welcome to the future, and to the launch of our latest renewable energy products.



## 1KW UPWIND TURBINE

Our 'rugged' **Upwind Turbine** range is based on 2 years of real-life testing and development in Warwickshire and the Uplands of Scotland.

Using our unique **Permanent Magnet Generators**, combined with our Hi-Spec Wind Turbine Blade Sets, these furling turbines create very useful power in low wind conditions, and over 1000W in winds of 12.5m/s.

Available in **12V, 24V & 48V DC** versions, they are suitable for **battery charging, water/air heating** and **Grid-Tie** installations.

We don't recommend 'building-mounted' installations other than steel-framed buildings. These turbines are tower-top ready, and will fit on to a standard 50mm galvanised scaffold tower.

Your turbine will be supplied in 2 shipping containers, weighing a total of 27Kgs, and you will be required to attach the tail fin and blades to the main turbine housing.

All instructions will be supplied to guide you through the simple assembly and you should be ready to mount and use your turbine in only a few hours.

For site location and tower mounting options, please visit **[www.futureenergy.co.uk](http://www.futureenergy.co.uk)**, where you will find loads of useful information about setting-up, connecting and operating your turbine.



## Unique Features

- Mechanically furling tail fin for high wind protection
- Unique high-spec Permanent Magnet Generator
- 5 top-grade glass filled nylon turbine blades
- Sealed bearings in mast-mounting shaft
- 60 Amp rated slip-ring prevents cable-twisting
- Aerodynamic profile design
- Rugged and simple, with a minimum of parts and simplicity of design
- Zinc-plated and Stainless Steel with powder-coated and anodised aluminium for optimal corrosion and weather resistance
- Manufactured in the UK

## Technical Specifications

**Nominal Power Output** – 1000W (600W / 12v Version)

**Start-Up Wind Speed** – 2.5m/s

**Cut-In Wind Speed** – 3.2m/s

**Rated Wind Speed** – 12.5m/s

**Survival Wind Speed** – 50m/s

**Rotor Diameter** – 1.8m

**Number of Blades** – 5

**Generator Type** – 3-Phase Perm Magnet  
(this is rectified to DC inside the turbine, giving a 2-wire DC output)

**Weight** – 22Kgs

**Suitable Tower Diameter** – 50mm

**Noise** – LAeq 35dB @ 5m/s @ 5m behind rotor

**Noise** – LAeq 54dB @ 7m/s @ 5m behind rotor

ROHS compliant



# WIND TURBINE PERFORMANCE DATA

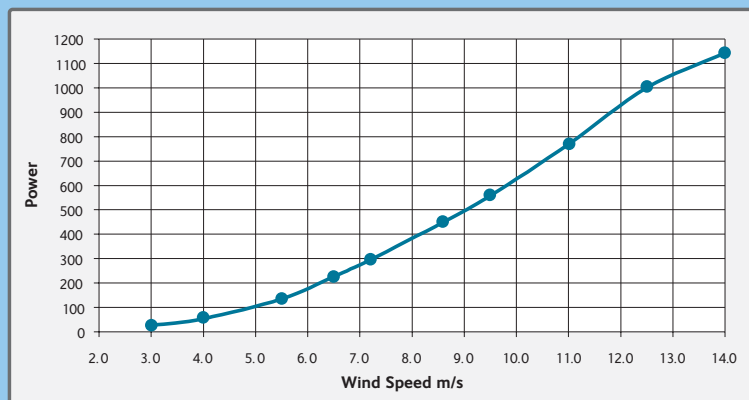
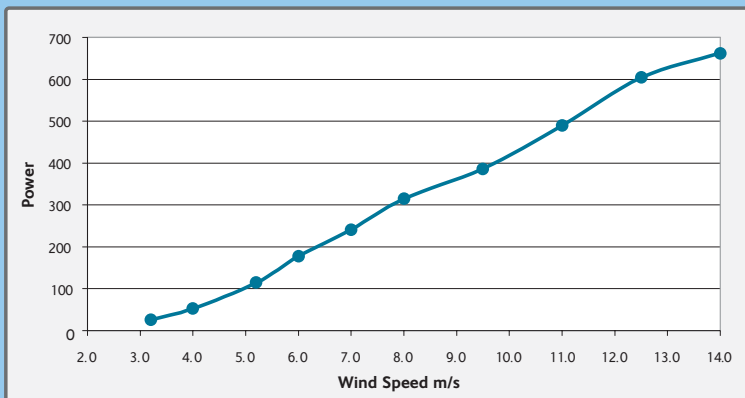
**Turbine Model :**  
FE1012U (404 PMG)

**Battery Load :**  
12 V

**Startup Wind Speed :** 2m/s

**Charging Initiation Wind Speed :** 3.2m/s

**Charging Initiation RPM :** 230



**Turbine Model :**  
FE1024U (406 PMG)

**Battery Load :**  
24 V

**Startup Wind Speed :** 2m/s

**Charging Initiation Wind Speed :** 3m/s

**Charging Initiation RPM :** 258

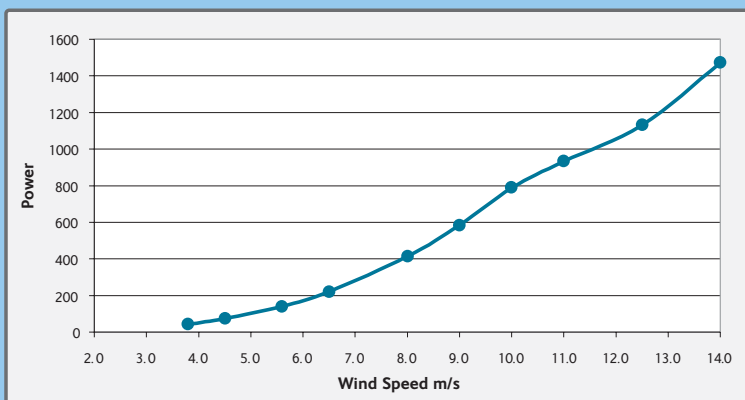
**Turbine Model :**  
FE1048U (408 PMG)

**Battery Load :**  
48 V

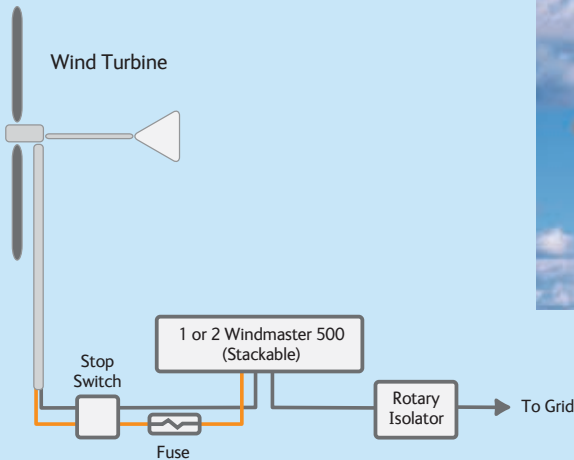
**Startup Wind Speed :** 2m/s

**Charging Initiation Wind Speed :** 3.8m/s

**Charging Initiation RPM :** 380



# GRID-TIE SOLUTION



**48V Wind Turbine  
with Grid Tie Inverter**

## GRID-TIE INVERTER

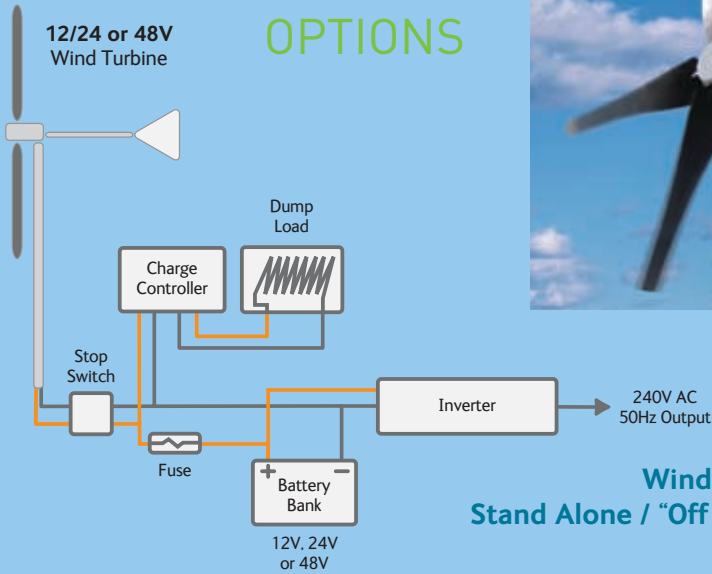
**Windmaster 500 Grid-Tie Inverter** – The Windmaster 500 offers a simple solution when connecting an FE1048 turbine to your household mains supply. With its light weight and compact size, the Windmaster 500 can be installed inside existing meter cupboards, or in outbuildings, but is not suitable for use outdoors. Connection to the input of the inverter is provided by 2 dedicated DC power plugs, supplied. The output should be connected in accordance with the electrical requirements for the country of installation.

This inverter is supplied exclusively by FuturEnergy in the UK, and comes complete with DC input plugs, PC-Link connection and Monitoring/Logging software. In low wind sites it is advisable to use only one inverter with the FE1048, since over 90% of the power produced by the turbine will lie under the 500W export power limit of the inverter. For higher wind speed sites, we would suggest using 2 inverters, connected in parallel, to handle the full power of the FE1048 turbine. No charge controller is required when using these inverters, since they can handle a much higher input voltage than the turbine can produce, even in power-cut situations.

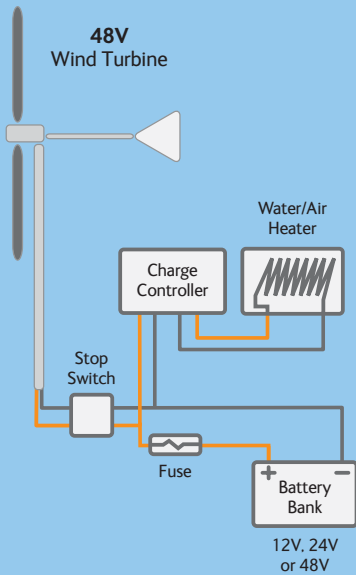


In "Hybrid" systems (those involving both wind turbines and solar PV), use the standard Soladin 600 inverter for solar, keeping the installation simple and very neat.

# 1KW UPWIND TURBINE OPTIONS



**Wind Turbine with Stand Alone / "Off Grid" System**



**Wind Turbine connected as a Water/Air Heater**

## IMMERSION HEATER

1000w 48 volt immersion heater. This can be used in a water heating application in preference to dumping any excess energy from the battery into the air with a standard dumpload. The heating element is 12" long and also has a 7" copper pocket. It connects to the tank via a 2.25" BSP thread. Connections are made via a domestic terminal cover. This product has been specially designed to work with alternative energy water heating applications.



## CHARGE CONTROLLER

**Xantrex C40 & C60 Charge Controllers** – For use in Battery-Based systems, these rugged charge controllers offer protection against overcharging when used with our FuturEnergy wind turbines. The **Xantrex C60** is capable of handling charging currents of 60A, and is suitable for use with battery banks of 12V and 24V only. The **C40** can handle charging currents of up to 40A, and is suitable for use in 48V battery charging applications.

In order to use either of these controllers with your FuturEnergy Turbine and Battery Bank, you will require a suitable dump load for connection to the C40 or C60

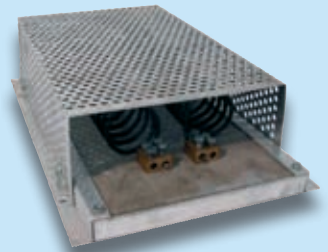


## DUMP LOAD

For use with either of the Xantrex charge controllers above, these dump loads are effectively very high power air heating elements. The C40 and C60 charge controllers are used in 'Load Diversion' mode, and as such, they dissipate any unwanted power into these dump loads when your battery bank becomes fully charged. It is vital to use a charge controller to prevent damage to your batteries, especially if you leave your system unattended for long periods of time and without loading your batteries with an inverter, or other suitable device.

The following number of dump loads are required with each of the following battery voltages :

- For 12V systems use a C40 or C60 and 2 Dump Loads (in parallel)
- For 24V systems use a C40 or C60 and 1 Dump Load
- For 48V systems use a C40 and 2 Dump Loads (in series)



## STOP SWITCHES

**Stop Switch, DC & AC Isolators** – For use with all turbine models, these switches allow the user to isolate the DC supply to a load, to apply an electrical "brake" to the turbine and to isolate the AC side of an inverter (if connected). The AC isolator is a 4-pole 20A lockable switch, which should be used when connecting Grid-Tied Inverters to a "mains" supply. The switch should be mounted close to the main consumer unit, between a spare 16A breaker and the inverters.

The DC Isolator and Brake should be connected to the output of the wind turbine, between it and the load (inverter, batteries etc). The main rotary switch is rated at 63A and is 4-pole. In this mode, the internal connections have been pre-wired in pairs of 2 poles, giving a massive switching capacity of 120A. Also mounted inside these switches are a low resistance "dump load", allowing the turbine to slow to a safe level before applying a direct "short circuit" to the turbine output wires.



## Philosophy

Our development of the very latest in cost-effective products has been driven by the vast renewable resources available to everyone and which remains untapped for most.

We seek to find the best sources of energy and to build and promote products which can extract it efficiently, while making them available to all.

Based in the UK, we work alongside some of the renewable industry's pioneering and forward thinking companies pulling a wealth of knowledge and experience together to bring you the latest in energy efficient products and services.

Please check out our website for the latest news on products, press and successful installation stories.



**FuturEnergy Ltd**

*A subsidiary of Special EFX Ltd*

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