

EAGLE POWER

SUSTAINABLE ENERGY SOLUTIONS

**TECHNICAL REPORT ON THE
PROVEN PRODUCT RANGE
FOR USE AS
BACKGROUND MATERIAL
TO ACCOMPANY
PLANNING APPLICATION**

FOR

A PROVEN WIND TURBINE

2009

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Greave Head Farm Ripponden West Yorkshire HX6 4NU

☎ 01422 823769 Fax 01422 823623 info@eaglepower.co.uk Web www.eaglepower.co.uk
Eagle Power is a trading name of Gumbley & Company Limited, a limited company number 1644240 at the above registered office

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PROVEN WIND TURBINES

INTRODUCTION

Proven Energy is the world's leading supplier of small wind turbines. The high performance of its turbines is the result of almost thirty years of inspiration, innovation and development.

With over 2000 units installed worldwide, Proven Energy have unrivalled experience and have built up a global reputation for their robust and reliable performance producing energy under the harshest of conditions.

The main attributes of the Proven Wind Turbine are that they are considered to be: robust, well designed, have low noise emission and a low maintenance regime.

Robust

Proven Energy provides the world's only robust, low maintenance turbine. Their internationally patented turbine has undergone extensive testing under the most rigorous of climate conditions. Proven Energy's installations operate successfully throughout the world, from Antarctica to Saudi Arabia.

Unlike upwind turbines, the system works with nature and not against it by getting the most out of any wind speed, helping to maximise your investment.

Design

The patented Proven Flexible Blade System enables the turbine to generate power in light or strong winds. This unique system, a combination of innovative design and the latest techniques in advanced composite technology, allows the blades to bend and flex.

As the wind gets stronger, the blades twist to reduce their aerodynamic efficiency. This allows the wind turbine to maintain a high output even in the fiercest storms, unlike many other turbines, which need to stop generating power to protect themselves at high wind speeds. The blades also regulate their speed, preventing damage if the load from the turbine is disconnected through a power cut or electrical fault.

Low Noise

A Proven Energy turbine is designed to minimise noise and maintenance. It has a direct drive generator, which operates without a gearbox. The generator load is continuously monitored to keep the blades rotating at a low speed, whilst optimising power output.

Compared with other modern small turbines, the blade tip speed of a Proven Energy turbine is low. This means that noise is reduced substantially.

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Low Maintenance

Proven turbines are designed to run with the minimum of maintenance.

Applications

Eagle Power consider the Proven wind turbine represents the right system to meet the applicant's needs. They also support the intended location for the turbine based on wind speed survey assessment work undertaken in the locality.

The Proven Energy product ensures it can help achieve renewable energy aspirations by reducing domestic energy bills. It is also confident that the wind turbine selected will work productively and deliver all-round environmental benefits.

If a property is not connected to the grid, energy from a wind turbine can be used to supply electricity via a battery storage system. This reduces the reliance on diesel generators, which are expensive to run and damaging to the environment.

Where a property is already connected to mains, renewable energy can be used directly and surplus exported back to the grid.

TYPES OF PROVEN WIND TURBINES

Proven manufacture and supply models with different outputs, mast heights and blade diameters.

The Proven 2.5kW

The turbine head and blades can be white or black. The mast is normally hot dip galvanised and can be painted if required

The Proven 2.5, although the smallest of the turbines, given the right wind conditions can provide enough energy for a standard 3 bedroom house.

The Proven 2.5EX is widely used on off-shore oil platforms, as it is the only turbine in the world that is totally explosion-proof.

Outline Specification

- Rated Output: - 2500W (2.5kW)
- Voltages available: - 12V / 24V / 48V / 120V / 240V / 300V

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- Annual Output - 2,500-6,5000 kWh (depending on location and average wind speed at the site)
- Rotor Diameter: - 3.5m
- Mast Height: - 6.5m / 11m

The Proven 6kW

The turbine head and blades can be white or black. The mast is normally hot dip galvanised and can be painted if required

The Proven 6 is suited to a broad range of applications. It has been installed to provide energy for homes, farms, schools, local authority buildings, business and retail premises.

Outline Specification

- Rated Output: - 6000W (6kW)
- Voltages available: - 48V / 120V / 240V / 300V
- Annual Output - 7,000-20,000 kWh (depending on location and average wind speed at the site)
- Rotor Diameter: - 5.5m
- Mast Height: - 9m / 15m

The Proven 15kW

The turbine head and blades can be white or black. The mast is normally hot dip galvanised and can be painted if required

The Proven 15 is ideal for larger houses, commercial premises, farms, telecoms applications and small industrial units.

Outline Specification

- Rated Output: - 15000W (15kW)
- Voltages available: - 48V / 300V
- Annual Output - 17,000-45,000 kWh (depending on location and average wind speed at the site)
- Rotor Diameter: - 9m
- Mast Height: - 15m

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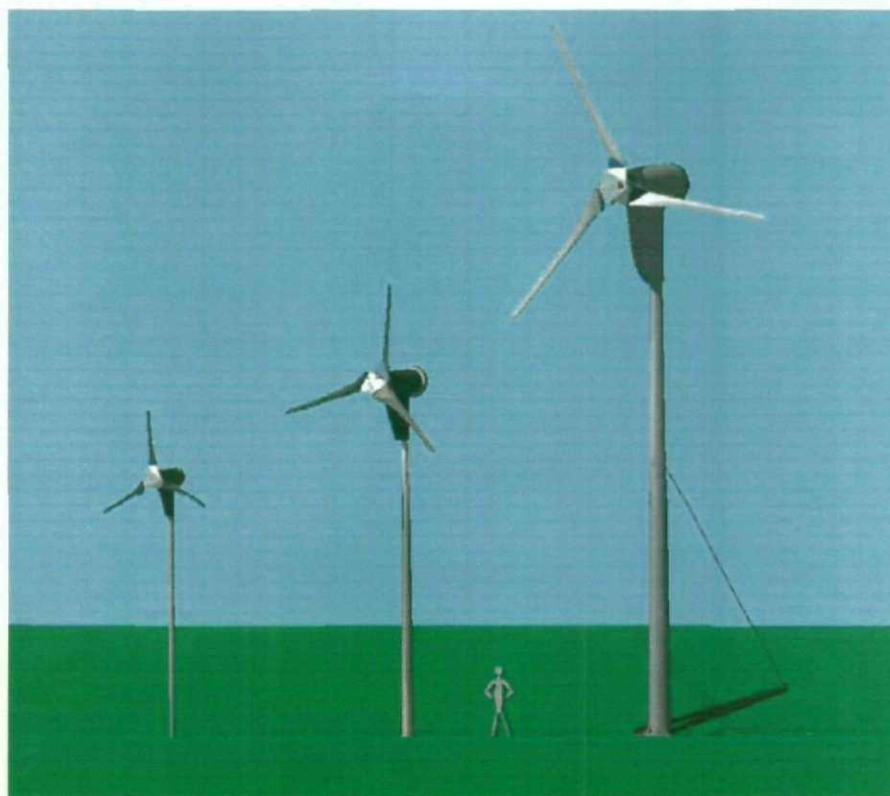
Masts

Each is of a tapered monopole design with no guy wires. They are constructed from hot dip galvanized steel to guarantee durability. Updates coming soon include new options for taller towers.

Proven 2.5kW - 6.5m (21ft) or 11m (35ft)

Proven 6kW - 9m (30ft) or 15m (49ft)

Proven 15kW - 15m (49ft), 20m (64ft), or 25m (82ft)



Relative size of the wind turbines

From left to right: 2.5kW on 6.5m mast, 6kW on 9m mast, man of 2m height, 15kW on 15m mast

Wind Energy Systems

All Proven Energy turbines are available in three standard systems, which manage the use of the electricity generated.

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1) Grid Connection

Electricity from the wind turbine is fed directly into the distribution board, providing power to the premises. Any surplus electricity produced may be exported to the grid and sold to the energy supplier. Convenience and the opportunity to sell excess electricity have made this the most popular option.

2) Battery Charging

Energy produced by the turbine is stored in a battery to provide a power supply. This is most beneficial for those which are not connected to the grid and which rely on a diesel generator. Installing a wind turbine can substantially reduce fuel consumption and benefit the environment by reducing CO2 emissions.

3) Direct Heating

Energy produced by the turbine is directed to hot water tanks, storage heaters or under-floor heating, rather than providing electricity to feed into the power supply. This can substantially reduce CO2 emissions produced by oil or gas heating systems.

A wind turbine should be located on a site with good exposure to the prevailing wind, ideally away from buildings and trees to avoid turbulence, which can severely reduce the output. Wind speed increases and turbulence reduces with height. In certain circumstances, there may be a compromise between obtaining optimal output from the turbine and the effect on the visual amenity, although this can be mitigated by our ability to paint the mast to blend in with the background.

The specific turbine being applied for and its design specifications are included with the planning application now submitted. This technical report, together with other associated documents, should be read together as they provide complementary information to help the Council give positive consideration to the proposal.

FURTHER INFORMATION AND ASSISTANCE

If further information is required please do not hesitate to contact the office where we can be of further assistance.

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