

Wind Power

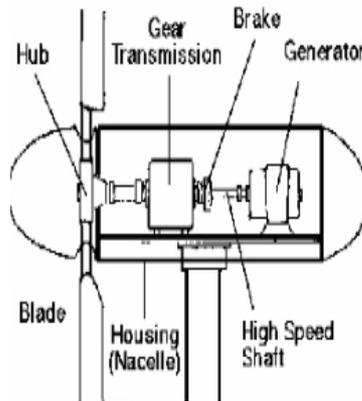
Wind is the most rapidly expanding energy source with an average growth rate of 33% between 1998 and 2002. This is partly due to the environmental benefits to a world that is being irreparably damaged by the harmful emissions from fossil fuels. However, although the UK accounts for 40% of Europe's total wind resource, it remains largely untapped, currently meeting only 0.5% of our electricity requirements.



Bessy Bell Wind Farm, Newtownstewart

The kinetic energy in the wind is intercepted by two or three rotating blades. The action of the blades extract energy from the wind slowing it down. This energy first appears as mechanical energy and is transformed to electrical energy from a generator coupled to a shaft through a gearbox.

HOW DO THEY WORK?



Turbines should be positioned to gain maximum energy from the wind and those placed at a higher level will not be placed close to buildings or trees, as these provide shelter. Wind speed is obviously an important factor when assessing the suitability to harness this resource and needs to be measured at the potential site.

LOCATION

SIZE

Wind turbines can be used to power anything from a caravan (using less than 100 watts) to whole towns (using several megawatts). The most recent example of a wind farm in Northern Ireland is Althullion in County Londonderry, which has an installed capacity of 26 megawatts, which is enough to supply 20,000 homes with electricity.

The most common turbines used on average-sized farms are 20 kilowatts and would stand at around 30 metres in height.

SIZE GUIDE

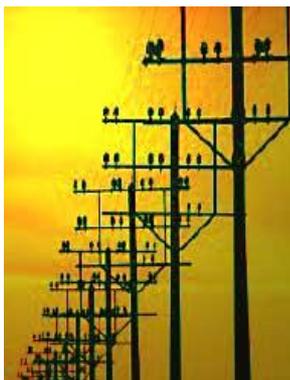
1 megawatt (Mw) = 1000 kilowatts (Kw)
1 kilowatt = 1000 watts

POWER	HOMES SUPPLIED
500 watts	Mobile home
6 kilowatts	Average-sized house
20 kilowatts	Average-sized farm
600 kilowatts	600-1000 homes
26 megawatts	20,000 homes

PLANNING

Planning permission is always required for the installation of a wind turbine. Factors assessed will include location, size of turbine and likely visual and environmental impact.

STAND ALONE OR GRID-CONNECTED SYSTEM?



An off grid system will only provide that particular household with electricity and surplus power is stored in batteries, which can be expensive. However, implementing the system is less expensive, as connecting to the grid can incur several costs.

Grid-connected systems ensure that power is always available in the event of a low supply of wind energy. Any surplus energy is exported to the grid and sold to the electricity supply company. However, it is much more economical to ensure that most of the electricity is used on site, as the cost per kilowatt hour (kWh) from the grid is 10p, but the price paid for input into the grid is 3p per kWh.

FUNDING AVAILABLE

clearskies
Renewable Energy Grants

For small-scale applications, 'Clear Skies' offer a grant of up to £5000 but only for turbines up to 5Kw.

For community grants, the size of the grant is the lower of 50% of installed cost or £100,000 regardless of the technology.



There is a new funding initiative offered by the DARD, where a limited number of applicants will receive 50% funding on a 20Kw turbine. However, the deadline is getting closer!

COST

The system cost is currently £2,500 to £5,000 per kWe (electric kilowatt), for smaller scale turbines and a 20Kw turbine is estimated to cost £26,000, which includes turbine, mast, inverters and installation.



HOW CAN Diversitec HELP YOU?

WE CAN:



Aid you with all aspects of the planning process.

Help you with grant applications.

Calculate the wind speed at your potential site.

Keep you up to date with recent developments that may benefit or hinder you.

62 Forthill Road, Listullycurran, Dromore, Co. Down. BT25 1RF
Tel: (028) 9269 8527 Fax: (028) 9269 8527
Mobile: 07751 029651
E-Mail: info@diversitec.co.uk