

Wind and Solar Thermal , Brill School, Buckinghamshire

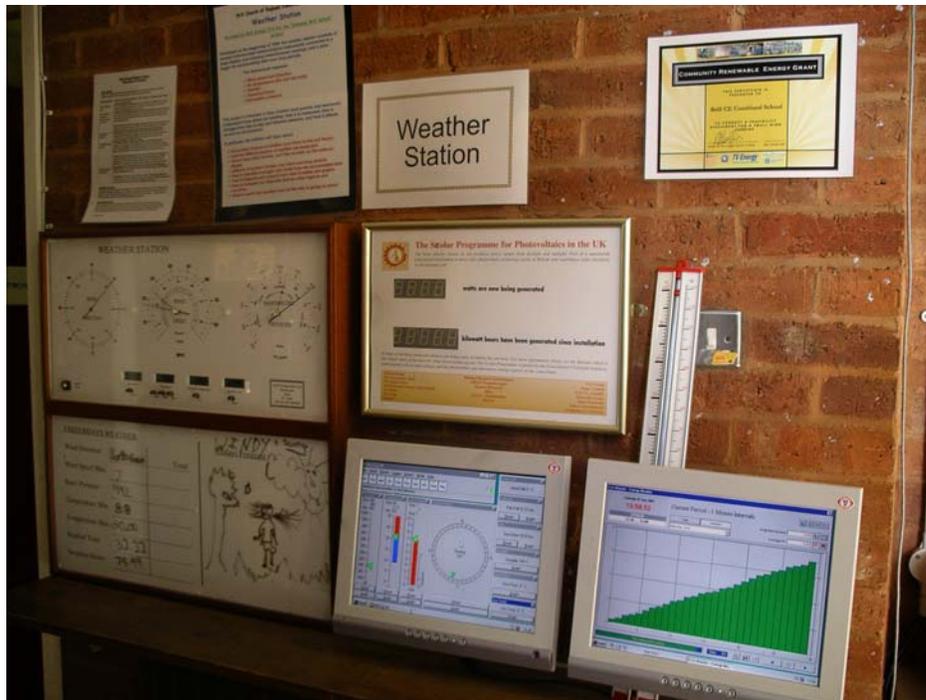
Existing or Proposed Project:	Existing Solar – Commissioned March 2003 Wind: – Commissioned March 2003
Location:	Brill, Buckinghamshire
Owner / Developer:	Brill School
Description:	Solar thermal system, Proven WT6000 wind turbine



Background:

Brill is a rural primary school situated in Buckinghamshire with 170 pupils. It is an award winner for conservation and green issues and is used as a reference site for local schools up to a 30m radius. This was a pilot school for a wind turbine project close to the site of an existing wind mill that is a historical landmark within the village.

Pupils at Brill are well versed with the knowledge that many of the renewable sources of energy that they read about are working within their school to create a better future for all. Prior to this project, the school already used energy saving devices such as energy saving light switches, room sensors and water saving taps. The school swimming pool conserves heat by using solar summer and winter covers which has the added benefit of extending the pools usage season. A smaller wind turbine (installed a few years before) generates electricity to power a water pump and a 1kWp PV system is good demonstration model to show solar energy generation. Brill school also uses an Eco-Warrior energy monitoring system enabling the usage of electricity, water and oil to be studied by the school children.



The Eco Warrior weather station

Technology / Scope of Project:

Funding

In April 2003 Brill school was awarded £2000 from the TV Energy Community Renewable Energy Grant fund to investigate possible renewable energy solutions for the school. Following this a successful bid to the DTI Clear Skies Grant scheme secured a further £16000 towards the installation of a solar thermal system and a small wind turbine. The remaining funding came from the school's own fund raising activities (£6060) and from Buckinghamshire County Council Energy Challenge Fund (£8060).



Solar Thermal Installation

The solar thermal system is based on evacuated tube technology and is used primarily to heat the school swimming pool. It is estimated to yield about 12-13,000kWh of energy annually. This not only reduces environmental impact from using fossil fuel, but has enabled the pool to be used at a reduced cost to the school pupils and the wider community during school holidays. A swimming club has been established and other groups such as Brownies and Guides are able to use the facilities outside of school hours. The swimming pool is now open every day of the week from May to October. Out of season, the solar panels are used to heat the water required in the kitchen area. Payback is less than 4 years (£3000 was the cost to Brill school for the system). The money saved is being ploughed into further energy saving initiatives and savings of about £1000 per annum are anticipated.

Wind turbine installation

Brill school is well placed for wind energy, high on the top of Brill Hill, where average wind speeds are registered at 6.4m/s. The chosen Proven WT6000 6kWe turbine is aesthetically pleasing in a rural landscape and is able to withstand high wind speeds. The wind turbine is capable of producing in excess of £1200 worth of electricity per annum (estimated annual energy yield 18917.6 kWh) which will be an added bonus to school funds and is expected to supply about one quarter of the school's electricity, with any surplus exported to the national grid.



The Proven WT6000 turbine was installed 24th August 2004. The energy output recorded for two of the days since connection has been 24 and 69kWh for each day. If these figures are representative of output generally, annual generation will be between 15 and 25MWh, comparing well with the original Proven estimate of 19MWh from Proven given the average wind speed expected in the area.

Impact assessment and planning issues

The siting of wind turbines often provokes controversy and can stimulate anti-wind protest groups. Solar technologies do, not have such a visual impact upon the environment and are a more accepted source of renewable energy, although planners can be reluctant to approve installations on aesthetic grounds. To aid with the planning process, Proven Energy provide a detailed planning pack to assist planners and developers

When Brill school applied for planning permission for its Proven WT6000, it was required to undertake noise and visual impact assessments. Brill is situated in an Attractive Landscape Area and any development needs to fit into the surrounding village environment. Local residents and parish councilors were all informed of the proposed project by the head teacher, as part of the consultation process, allowing people to express their views. No negative feedback was received and the results of the assessment revealed the following:

- Noise was not considered to be an issue. Any sound that the turning blades would make would be masked by the sound of nearby trees.
- Harmful effects on wildlife was also discounted. A site visit to an organic farm and bird sanctuary where a similar turbine is installed revealed that no reported incidences of harm to wildlife were due to the wind turbine and the farm continued to operate a thriving business.
- Visual impact is minimal. Sited at the rear of the school, few people are able to see the turbine unless they walk through a nearby footpath.

It was felt however, that these positive responses were due to the turbine being positioned on a 9 meter mast. If the application had suggested a 15 meter mast it is thought that the Attractive Landscape Area designation may not have gained planning permission.

Importance to the South East:

Brill School has become a flagship project in the installation of the first wind turbine in the area. The energy efficient improvements together with the solar thermal systems for the pool and kitchen and a has resulted in annual savings of £1000 from the fuel oil bill and £500 from electricity. The wind turbine is expected to double the current electricity saving, assuming an offsetting of the entire annual energy output at 3.5p/kWh.

