Tynedale **Renewable Energy** Trail

Stonehaugh Campsite

Site 8

Energy from sun and wind

Stonehaugh Campsite has limited mains electricity, and it would have been very expensive to upgrade the supply. A 6kW wind turbine proved to be the answer to providing power to the shower-block. The turbine charges batteries, which are used to provide electricity when there is not enough wind to turn the turbine. It also provides enough power for two hook-up points for caravans to run their lights. Water is heated by solar collectors on the roof of the shower block, which provide all the hot water for the camp site with no back-up heat source, but as the campsite is much busier in the summer, when the panels are most efficient, this has caused little difficulty. The owner, Carole Townsend, is delighted with the system. She says that the visitors love it, and has many positive comments about it, especially from German and Dutch visitors.

How does it work?

This turbine is on a particularly tall tower, to lift it above the surrounding trees, and increase the amount of electricity it can produce, as wind speeds are greater higher up. It is a "down-wind" turbine, meaning that it turns so that the wind blows from behind the blades. The triangular vane at the top of the tower ensures that the turbine is always in the optimal position to produce the maximum electricity. As the wind passes over the blades, it causes them to rotate. As they do so, they turn a generator which produces electricity. Any surplus power charges up a battery bank to be used when there is little or no wind.

There are three solar collectors for the solar heated water system, each covering 4m² of roof space. When sunlight falls on these panels it heats a mix of water and antifreeze inside them, which passes through the heating coils in the well-insulated hot water tank to heat the water inside.

Installation and cost

The 6kW wind turbine was made and installed by Proven Engineering, on a 15m mast. The solar collectors that heat the water for the showers and basins were installed by AES Solar Systems. The entire system cost approximately £34,000, which breaks down as £5,000 for the solar panels, £23,000 for the wind turbine and £6,000 on civil works, cabling and wiring. The campsite was awarded a 50% grant from the Electricity for Enterprise scheme, which operated in the North East between 1998 and 2002 assisting businesses overcome power supply problems. At 2007 prices, the wind turbine will save approximately £970 per year, and the solar collectors £240.

Environmental impact

A wind turbine of this size will save, on average, 5,600kgs of CO_2 emissions, compared to mains electricity. In addition, heating the water with solar collectors will reduce CO_2 by an additional 1,900kg.

Further information

Visit the other renewable energy sites shown on the map overleaf.

Kielder Castle renewable energy exhibition is open from Easter to October.

www.tynedalerenewableenergy.org.uk
www.aessolar.co.uk or 01309 676911
www.provenenergy.co.uk
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