

CASE STUDY: MIDDLEPART FARM, AYRSHIRE, SCOTLAND

“ ...production figures are consistent with your predictions but far exceed the estimates of the local energy consultants who are amazed by its overall production. Visitors are impressed that it is so quiet and that it is productive even in reasonably light winds.... ”

**Mr. Bronte-Stewart,
Owner, Middlepart Farm**



BACKGROUND

Middlepart Farm is a busy working livery yard and stud with all the consequent electricity requirements for lighting and equipment such as a horse walker. The site also includes the main farm house and a self catering cottage with an electrical central heating system.

The owner of Middlepart Farm, Mr. Bronte-Stewart wanted to reduce his energy bills by generating electricity from a renewable source. After substantial research into the various options available, the Gaia-Wind 133-11kW turbine was finally selected from a shortlist, the power curve and performance in moderate winds being the deciding factors.

SITE CONDITIONS

The turbine is sited in open fields about 70m NNE of the main farm buildings on a gentle SE slope. Apart from the farm buildings themselves there is little to obstruct wind flow in the turbine vicinity.

The NOABL wind speed database indicates this postcode has good moderate winds. The estimated annual average wind speed at the turbine mast height of 18m is 6.6 m/s.

TURBINE PERFORMANCE

The turbine produced an impressive 56.5 MWh(56,500 units) of 'green' electricity during its first 18 months of operation, averaging just over 100 kWh/day and offsetting circa 21 tonnes of CO2 production annually. About half of the electricity generated is used onsite resulting in a dramatic reduction in electricity bills and the remainder is sold to the grid. Mr. Bronte Stewart also benefits from an income through the government carbon credit scheme (ROCs).



ABOUT GAIA-WIND

Gaia-Wind manufactures small wind turbines suitable for agricultural, rural residential and light industrial use. Our clients include working farms, educational institutions, large home owners, offices and other commercial premises.

Our wind turbines incorporate over 20 years of Danish wind industry design experience and offer control and safety features usually found only on larger, utility scale turbines.

The Gaia-Wind turbine is optimised for best performance in moderate wind speed regimes (annual average wind speed between 4.5 and 7 m/s). In such conditions the oversize rotor design allows the turbine to produce up to 80% more energy than other similarly rated machines thereby offering superior project economics and return on investment.

A Gaia-Wind turbine, generating 30,000 units of green electricity per year, will offset around 17 tonnes of CO2 emissions from existing energy generation. This is sufficient to erase the carbon footprint of the average 4 person household.