

## CASE STUDY: ESTHER BUKHOLT & OLE NIELSEN (WORKING FARM)

PRIMARY OBJECTIVE: CO<sub>2</sub> REDUCTION

*“ Both my wife, Esther, and I have always had an interest in greener technologies and with the erection of our own Gaia-Wind Small Wind Turbine in 2007 an old dream has really come true ”*

**Ole Nielsen,**  
Small Wind Turbine Owner, Velling



## BACKGROUND

In November 2007 Esther Bukholt and Ole Nielsen installed the Gaia-Wind 133-11kW small wind turbine at their farm in Velling, Denmark.

Esther Bukholt and Ole Nielsen's decision for the wind turbine was based on a desire to significantly reduce their carbon footprint and on reducing their electricity bill and current oil consumption of approximately 2000 litres per year. Ole Nielsen has always been a DIY builder and has also built a number of wind turbines. He has attended a number of wind turbine classes at Tvind in Denmark as well as attended other courses in sustainable energy.

Esther and Ole chose the Gaia-Wind 133-11kW turbine because both safety and reliability are important to them. During their entire professional and personal lives they have been surrounded by children which established their strong focus on safety ([www.esther-ole-velling.dk](http://www.esther-ole-velling.dk)).

## SITE CONDITIONS

The turbine at Esther Bukholt & Ole Nielsen's farm is situated about 1 km from Ringkøbing Fjord, approximately 14 m above sea-level. There are a number of trees on the premises, but Ole makes sure that they are regularly cut and don't exceed a height of 8 metres so they have no influence on the performance of the wind turbine. The prevailing wind is from the west and has an average speed of 6-7 metres per second.

## TURBINE PERFORMANCE

The wind turbine has now been producing energy for the farm for 1½ years. In the first year the wind turbine produced 42 000 kWh, and in total it has produced 59 000 kWh. Hence Esther & Ole's dream has come true with meeting all of their objectives – their own private wind turbine, greener energy and a substantial reduction in their electricity bill!



## ABOUT GAIA-WIND

Gaia-Wind manufactures wind turbines for light industrial, agricultural, commercial, municipal and residential use. Our clients include working farms, educational institutions, large home owners, offices and other commercial premises. To date, there are over 200 worldwide Gaia-Wind installations, representing over 1000 years of combined operational history.

Our wind turbines incorporate over 20 years of Danish wind industry design experience and offer the performance and safety features that are usually only found in larger, utility scale turbines. Our oversized rotor design allows the turbine to deliver up to 80% more energy than other similarly rated equipment, enhancing project economics and maximizing the return on your investment, whilst ensuring optimum performance in low to moderate wind speed regimes (10-12mph).

A Gaia-Wind turbine generating around 30,000 kWh of green electricity per year, will offset around 17 tonnes of CO<sub>2</sub> emissions from existing energy generation. This is sufficient to bring the carbon footprint of the average four person household back to zero (household energy use + car + air travel).