RETScreen® International
Clean Energy Decision Support Centre

CASE STUDY

REAL PROJECT 05

WIND ENERGY PROJECT

LARGE WIND TURBINES / NIEDERSACHSEN, GERMANY

RESULTS

The Grüppenbühren Windfarm is located in the German state of Niedersachsen about 100 km east from the North Sea coast and was completed in November 2000. It is one of many windfarms to have been built in Germany in the last few years. One of the innovative features of this project is its monitoring system with integrated video surveillance. The video monitoring system gives a better overview of the wind turbines' operation and has led to a reduction of maintenance and repair costs.

SYSTEM DESCRIPTION

The 9.9 MW Grüppenbühren Windfarm consists of six Vestas Wind Systems V66 turbines each rated at 1,650 kW output. To-date, the wind turbines have produced about 15,100 MWh/year. The windfarm, aided by its video surveillance system, has demonstrated an availability rate of 98%.

LESSONS LEARNED

- Good policy support by the government, including feed-in tariffs that value the environmental attributes of wind energy, and the availability of soft loans help make windfarms financially attractive.
- Micrositing of wind turbines relative to one another and to local geographic features is an important task that directly affects the windfarm's energy output.
- Video monitoring over the Internet can be part of the public relations concept of a windfarm and serve to gain the support of local inhabitants and investors.
- Windfarms can be a sound long-term investment and a hedge against future energy price increases.

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THE BIG PICTURE

The development of wind energy in Germany in the recent past has been unprecedented and the country now has the largest wind energy concentration globally. By the end of 2001 a total of 11,438 wind turbines were installed in Germany totalling 8,753 MW of rated capacity. Wind energy development on such a scale is possible due to consistent government support through assured and remunerative buy-back prices as well as a good quality assurance and planning system which ensures that the technical performance of the wind turbines is optimized. This has also resulted in major industrial development: the German wind energy sector currently employees about 35,000 people and its turnover in 2001 was about €3.5 billion.

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THE GRÜPPENBÜHREN WINDFARM
PHOTO CREDIT: PROJECT GMBH, OLDENBURG