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Wind energy for a cleaner environment

Vaisala caters for the wind energy sector

Vaisala's offering has proved a valuable resource for the wind energy application.

According to the World Wind Energy Association (WWEA), wind turbines currently generate more than 1% of all global electricity. In 2007, 19,696 MW of new wind energy capacity was added to give a total global installed capacity of 93,849 MW by the end of December 2007. The added capacity equates to a growth rate of 25.6% in 2006 and 26.6% in 2007.

In some countries and regions wind energy already contributes 40% or more of the total energy consumption. The wind industry employs 350,000 people worldwide, up from 300,000 in 2006. Based on this accelerated development, the WWEA has increased its prediction for 2010 and now expects 170,000 MW to be installed by the end of 2010.

What to measure in wind parks?

Vaisala's offering has proved a valuable resource for the wind energy application. Wind measurement is obviously very important, but many other environmental parameters are significant as well.

Wind turbines are often equipped with wind speed and direction sensors. Both heated and non-heated anemometers are used. To date, most sensors are based on the traditional mechanical rotating vane and cups. Durable ultrasonic wind sensors with no moving

parts are becoming the popular low maintenance choice.

Barometric pressure measurement is growing in importance. For example, Nordex AG, a European developer and manufacturer of wind turbines, fit their latest wind turbines with Vaisala barometric pressure sensors. Pressure measurement is used for calculating air density and hence the efficiency of a wind turbine.

Real-time lightning information is used to mitigate the risks of damage to turbines, blades and peripheral equipment. This information is currently being used by various wind farm operators in the US and Europe.

Another big wind turbine manufacturer is conducting tests to measure relative humidity in the high-power switching circuits of a wind turbine. When humidity increases, a heating system switches on to reduce the possibility of flash-over due to increasing moisture in the air.

Moisture in the oil in the gearbox of large wind turbines is increasingly being measured and monitored.

Visibility sensors are used for adjusting the light intensity of the beacon. In this way, the light is only used in poor visibility to ensure they are visible to aircraft, reducing the discomfort to people living near by. ■



Vaisala at the 20th World Energy Congress

The World Energy Council, at the conclusion of its 20th World Energy Congress, held in Rome between 11 and 15 November 2007, stated: "To achieve a sustainable energy future will require an unprecedented level of global cooperation between industry and government, and deeper integration of regional and international energy markets".

The World Energy Council convenes the Congress every three years. This is the premier global energy forum and exhibition to forge a better understanding of energy issues and solutions on a global scale.

Vaisala and Eurelettronica Icas, Vaisala's long-term partner in Italy, exhibited together at the World Energy Expo, which was held in Rome in conjunction with the Congress.

Vaisala offers a variety of ultrasonic and mechanical wind sensors for different needs, from low-cost combined units to sophisticated fully heated sensors for extreme weather conditions. Vaisala's offering also includes tools for the measurement of barometric pressure, present weather, lightning, moisture in oil and humidity - all of which can benefit wind energy producers.

The 21st World Energy Congress will be held in Montreal from 12 to 16 September 2010. ■

Sources:

WWEA (wwindea.org)

BWE (wind-energie.com)

DEWI (dewi.de)