

Schaeffler Global Technology Solutions

Wind Power

Projekt GmbH, Germany

Condition Monitoring of Wind Turbines

The Project Planning Company for Regenerative Energy Systems (Projekt GmbH) was founded in Oldenburg in 1993. It specializes primarily in the development and realization of wind farm projects. Likewise, the company's core business includes technical management of wind turbines as well as assessor services at home and abroad.

Challenge for Schaeffler

Projekt GmbH is responsible for the planning, realization and technical management activities of the Oldenbroker Feld wind farm. This wind farm set up in late 2001 comprises totally nine wind turbines. Projekt GmbH was looking for a condition monitoring system for the wind farm that met the "Allianz Zentrum für Technik" (AZT) requirements. This is often a prerequisite for the acceptance of a condition monitoring system by insurance companies.

Schaeffler Solution

Schaeffler experts installed one FAG WiPro system at each of the nine wind turbines for monitoring the drive trains. Apart from automatic monitoring, this online monitoring system offers the advantage that only a comparatively small amount of data needs to be transmitted for a detailed assessment of a machine's condition. Only one year later, the system detected a first case of emerging bearing damage.



Technical Information about the Plant

Wind Turbines (WT)

Number:

9 WT

Manufacturer:

Vestas

WT types:

V66 und V80

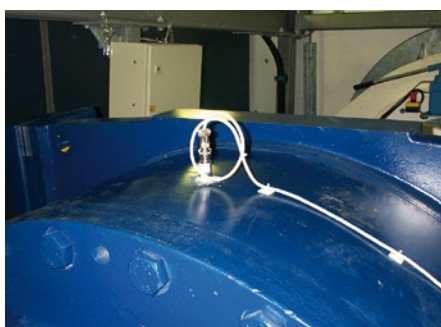
Total output of the wind farm:

16,6 MW

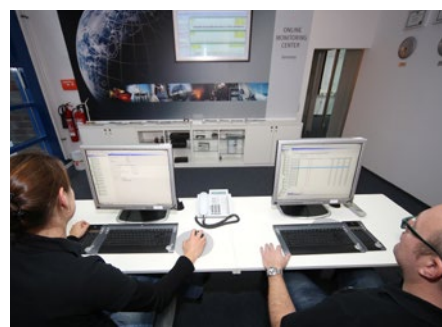




Online monitoring system FAG WiPro



Sensor for online monitoring



Experts in Online Monitoring Center

Customer Benefit

Thanks to the FAG WiPro, which triggered the alarm in good time, expensive consequential damage – for example to the gearbox or to the generator – was prevented. In each case, consequential damage would have cost the company far more than 100 000 euros.

Sample calculation:	
Cost of gearbox replacement:	€ 210 000
Cost of timely bearing replacement:	€ 4 700
Cost of generator replacement:	€ 140 000
Cost of timely bearing replacement:	€ 3 400
Realized savings:	
Gearbox:	€ 205 300
Generator:	€ 136 600

The non-recurring project costs – acquisition of the nine units plus installation and commissioning – amounted to about 80 000 euros.

Technical Information about the Solution

Schaeffler condition monitoring system:

FAG WiPro

Monitored elements:

WT drive trains

Sensors:

7 or 8 sensors per WT

Communication:

VPN

Additional signals:

Speed and power

Alarm:

Remote communication via VPN

What's special

A training scheme consisting of a number of different modules was developed for the customer. With the completion of the various modules, the monitoring activities were step by step transferred from Schaeffler to the customer. Now the customer successfully monitors the Oldenbroker Feld turbines as well as turbines on other wind farms. For particularly difficult data analyses, the Schaeffler experts continue to be at the customer's disposal to provide assistance.