SCHAEFFLER

Schaeffler Global Technology Solutions

Wind power

CEZ Group, Romania

Large-Scale Wind Farm Monitoring

The Fântânele-Cogealac-Grădina Wind Farm is the biggest onshore wind farm in Romania and one of the largest of its kind in Europe. It is operated by the Czech CEZ Group, a company ranking among Europe's top ten energy providers.

Challenge for Schaeffler

Unlike other machinery, wind turbines run unattended for most of their life, whilst being subject to highly variable load situations. To operate and maintain a large number of such turbines, it is necessary to have a constant overview of the machine status and learn about imminent damage as early as possible. OEM General Electric, who had been contracted to deliver all wind turbines for the Fântânele-Cogealac-Grădina Wind Farm, asked Schaeffler to provide a condition monitoring solution that was capable of coping with just such a demanding task.

Schaeffler Solution

Schaeffler offered a solution based on their well-proven FAG WiPro system. A total of 240 FAG WiPro units with 1 680 sensors altogether were installed. Project management as well as system design and programming of the measurement tasks were especially tailored to the customer's turbines.
In addition, an international team of Schaeffler condition monitoring experts set up an independent computer network throughout the wind park purely for condition monitoring purposes. A system of servers was installed to guarantee safe and convenient operation of the monitoring units. Based on the specific nature of the project, characterized by a large number of similar machines, Schaeffler adopted a new statistical monitoring approach. Thus it was possible to offer the service at a very competitive rate.

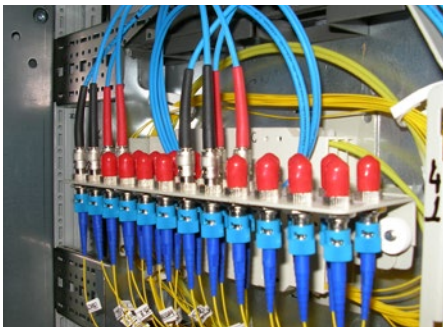
CEZ GROUP

Technical Information about the Wind Park
Onshore Wind Turbines
Number:
240 wind turbines
Make and model:
GE 2,5 MW
Nameplate capacity:
600 MW
Rotor diameter:
99 m
Hub height:
100 m

LuK INA FAG

240 FAG WiPro systems ensure reliable monitoring

Server arrangement on site



System integration in the optical network

Customer Benefit

In the initial phase of the monitoring project in 2013, Schaeffler supported the customer's maintenance and repair measures on site, thus helping to maintain the availability of the turbines at an optimum level. Especially the planning and implementation of such a large-scale project considering all the necessary resources, equipment and spare parts was a particular challenge that Schaeffler faced. Certified Schaeffler condition monitoring specialists (ISO level II and III) assisted and trained the customer in the area of data analysis and reporting. This helped to identify bearing and gear problems at an early stage and to prevent severe damage to large components. For example, just a single gearbox failure can quickly lead to costs exceeding 300 000 euros.
Considering all the above mentioned facts, condition monitoring provides a valuable contribution to the successful operation of this very large wind farm.

What's special?

The Fântânele-Cogealac Wind Farm features the latest wind turbine technology. Schaeffler has contributed to this overall solution by providing a reliable monitoring solution. Particularly demanding was the sheer size of the project, which required a number of measures to achieve the necessary efficiency and operational reliability. Although the FAG WiPro generates a comparably small amount of data per turbine, it was decided to have an independent computer network exclusively for condition monitoring.

Technical Information about the Solution
Condition monitoring system:
FAG WiPro
Number of installed units:
240
Sensors of each unit:
• 7 sensors • Special low frequency: 3 sensors • Standard: 4 sensors
Online monitoring service:
• Monitoring of the wind turbines' condition • Monthly reports • Alarm report is issued immediately after a damage has been detected
Network dimensioning and layout:
• Design of independent and redundant condition monitoring network • Completion of network on site • Server arrangement for data storage, analysis and transmission

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