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Schaeffler Global Technology Solutions

Wind power

Geolica, Spain

Cost Savings through Monitoring Package for Wind Turbines

Geolica is a producer of renewable energy in the wind energy sector that currently operates two wind farms in Spain, with an installed total power of 84,8 MW. The wind farms, San Juan de Bargas and Santo Cristo de Magallón, are located in Aragón.

Challenge for Schaeffler

An unexpected downtime due to damage to any component in the drive train of a wind turbine can have significant economic consequences in terms of production disruption and repair costs. To avoid that kind of situation, Geolica was looking for a condition monitoring system that would detect any damage at an early stage. In this way the company wanted to avoid unplanned downtimes, become able to plan necessary maintenance measures in good time and save time and repair costs. As Geolica didn't have any experience with condition monitoring and the analysis of vibration data so far, they also required support in this task.

Schaeffler Solution

Some years ago Schaeffler Iberia installed 56 FAG WiPro systems, one in each wind turbine, in Geolica's wind park in San Juan de Bargas. The measured vibration data were sent automatically via TCP/IP to Schaeffler's Online Monitoring Center in Germany, where it was analysed by experienced vibration experts. In addition, the wind farm's personnel received customised vibration monitoring training. Already in the second year of use the Schaeffler vibration experts detected signs of serious damage to a gearbox in one of the wind turbines. To verify the problem Geolica carried out endoscopy measurements that confirmed the diagnosis.

Geolica
General Eólica Aragonesa, S.A.

Technical Information about the Plant
Wind Turbines
Number:
56 wind turbines
Model:
Made 800
Power:
800 KW
Generator speed:
1500 RPM
Height:
52 – 59 m

LuK INA FAG

Damage to the raceway of the inner ring

Damage to rolling elements

Wind farm in Spain

Customer Benefit

The FAG WiPro systems provide Geolica with detailed information about their wind turbines, permitting condition-based maintenance. Thanks to its large memory capacity, the FAG WiPro also allows storage of data histories of other relevant machine data (e.g. process variables or dynamic behaviour in a wide operating range). The team of the Schaeffler Online Monitoring Center took care of the data analyses until Geolica's maintenance staff had gained enough knowledge to do the monitoring activities themselves. Thanks to the FAG WiPro and the support provided by Schaeffler via online monitoring, expensive consequential damage has been prevented several times. Considering just the costs that would have resulted from the gearbox damage detected at an early stage, the following costs were avoided:

Costs without predictive maintenance	
Costs of a new gearbox:	approx. € 100 000
Costs with predictive maintenance:	
Costs of intermediate speed shaft bearing (IMS) replacement:	approx. € 9 500
Costs of one FAG WiPro system (8 channels) and one year online monitoring:	approx. € 9 000
Total savings:	**approx. € 81 500**

What's special?

This was the first time that Schaeffler has conducted such a comprehensive online monitoring project in Spain or Portugal. The Schaeffler Online monitoring service allows customers to get permanent support without having the expert knowledge on site. This solution can also be applied to similar applications in the sector of wind power or even other industries.

Technical Information about the Solution
Condition monitoring system:
FAG WiPro
Number of installed units:
56
Channels and sensors:
• 8 channels, 6 sensors – Generator: 2 sensors – Gearbox: 3 sensors – Main bearing: 1 sensor • 2 analog inputs
Online monitoring service:
• Monitoring of the wind turbines'condition • Monthly reports • Alarm report is issued if the values are out of the normal range
Endoscopy

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