PREDICTIVE MAINTENANCE OF OFFSHORE WIND FARMS

Application for the maritime industry

SUMMARY

Predictive maintenance helps to extend the lifecycle of wind power plants and establish efficient maintenance cycles. Data regarding the reliability of individual components and the condition of the foundation structures can be collected automatically, evaluated easily, and used for the maintenance concept. Maintenance costs are reduced.

PARTNERS

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PROJECT DESCRIPTION

- Predictive maintenance through the use of sensors and predictive analytics
- Monitoring the condition of underwater foundation structures and the offshore environmental conditions
- Extending the lifecycle of wind power plants and establishing efficient maintenance cycles
- Simplified documentation thanks to mobile service app with back-office solution on an IoT platform (cloud)
- Increased process quality due to streamlined maintenance processes and an effective maintenance history file
- Simplified maintenance work processes through the use of AUVs/ROVs, RFID and Augmented Reality

REFERENCES

Planned infrastructure for research and testing of underwater technology at Fraunhofer IGD in Rostock
www.youtube.com/watch?v=J2kCu1js_Cg

Source: Siemens AG

CURRENT SITUATION

The cost of maintaining wind power plants is increasing. Furthermore, the maintenance processes in the offshore wind power sector are complex, the environmental conditions harsh, and the equipment difficult to access. Increasing demands relating to quality, safety and the obligation to provide evidence generate significant additional work. As a result, the costs incurred for maintenance in the offshore sector are comparatively very high. To enable efficient and fault-free operation to be ensured despite all this, new technologies must be used.

SOLUTION

The use of sensor technology combined with process control based on smart components makes it possible to perform predictive maintenance – both above and below the water. A mobile solution pulls together all the documents required for maintenance. Engineers are provided with the latest information at all times, and can document the maintenance order directly on site. Solutions from the aeronautics industry serve as guidelines.

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INDUSTRIE 4.0 – FEATURES

- Automated data acquisition above and below the water.
- Predictive analytics and predictive maintenance.
- Mobile service app and web-based back-office solution.
- Smart IT solutions for technical documentation.

STANDARDIZATION APPROACHES

The standards used include the following: RDS-PP and Zeus, as well as further formats and industry standards, most of which however require reformatting.