



WindSafe from DMT now available on Beckhoff platform

# Reducing hardware to significant lower investment costs

The advanced technology from DMT is often used in cases where wind turbines must turn 24 hours a day or where motors, gear units and pumps must operate at peak performance. The company, based in Essen, Germany, specializes in condition-based maintenance of machines and systems. With the consistent further development of the XSafe online Condition Monitoring platform, which is tailored to the special requirements of the wind energy sector, DMT ensures that wind turbine operators always have up-to-date information on the state of their systems.

In the area of human-machine interfaces, DMT has offered measuring experience for monitoring complex machines in different applications for more than 20 years. This expertise has also found its way into the industry-specific WindSafe Condition Monitoring software from DMT, which ensures economic and efficient online monitoring of wind turbines and windfarms. WindSafe is GL-certified and was the first online Condition Monitoring system to be approved based on the criteria of Allianz Insurance (AZT) in Germany. It is recognized by all main German insurance companies. The software monitors and analyzes structure-borne noise data of wind turbines in real-time and gives clear indications of any drivetrain wear. Impending faults are detected in good time, therefore avoiding potential system failures or consequential damage.

## **Convenient interface with the Beckhoff automation platform**

All WindSafe functionality is now available on the Beckhoff automation platform: interfacing with TwinCAT PLC software enables reliable machine monitoring without additional measuring equipment. This integration with wind energy system controllers results in significant reductions in investment and maintenance costs, and indeed longer life cycle costs.

In addition, using hardware from a single manufacturer simplifies the design and production of wind turbines. "With this new solution we offer an economic alternative to conventional Condition Monitoring systems," said Joachim Kott, DMT Sales Division.

## **Cost-effective extension without additional hardware**

The use of standard hardware and software components from the Beckhoff product portfolio enables the extension of existing or proposed automation concepts with a cost-effective online Condition Monitoring solution. The compact hardware and the modular software from WindSafe offer scope for a wide range of applications, from localized systems in which acquisition, processing and analysis of measured data take place on the same PC, up to simultaneous Condition Monitoring of multiple wind turbines. The spectral values of the individual machines are consolidated to provide an overview for the operator. Condition Monitoring systems with this architecture are used for monitoring large windfarms, for example.

## **Wind turbine monitoring redefined**

"With the current version of WindSafe operators no longer need special hardware components, since the software is directly integrated in the existing wind turbine control system from Beckhoff. In this way we can offer cost-effective, easily adaptable system monitoring. This lean solution is particularly beneficial in wind power systems, where space in the nacelles tends to be limited," said Dr. Matthias Krauledat, Machine Diagnostics Software Developer at DMT.

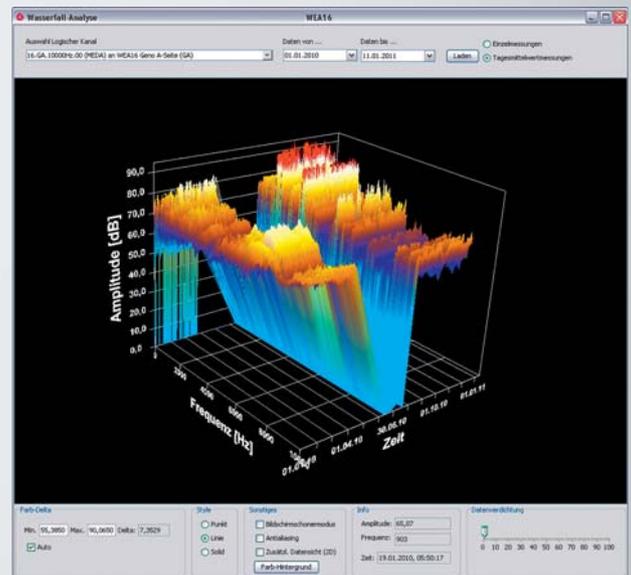
## **Functionality of the Condition Monitoring system enhanced using Beckhoff components**

The acceleration sensors are directly connected to the Beckhoff EL3632 EtherCAT Terminals, which sample data with a rate of up to 50 kHz and a resolu-

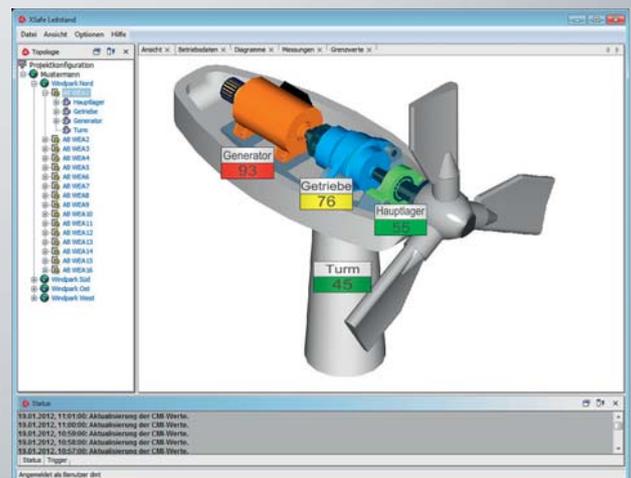


## Example configuration for acquisition of wind turbine monitoring data

- IPC: Beckhoff C6920
- I/O: 4 x Beckhoff EL3632 EtherCAT Terminals
- Sensors: 8 x DMT KS11 acceleration sensors
- Data acquisition: TwinCAT PLC
- Data interfacing: TwinCAT ADS
- CMS software: DMT WindSafe CMS



Waterfall analysis



WindSafe control station

tion of 16 bit. The analysis takes place in real-time on the PC. The flexible access to TwinCAT ADS is utilized for further processing in the XSafe software, which calculates spectral values for machine monitoring from the measured structure-borne sound signals. If preset, component-specific threshold values are exceeded, alarms are triggered which provide information on wear, imbalances, alignment errors or invalid operating states. These alarms can be reported for further processing directly to the system controller or other operator systems. The close integration with the control system results in significantly more accurate signal processing. All data are directly available, so that any interference, for example from ancillary components, can be filtered out easily.

### Online monitoring as a DMT service

Once the data acquisition system has been installed, DMT can offer continuous online machine monitoring as an expert service, whereby trends in the measured data are analyzed and translated into recommendations for action. Regular reports on the state of the system facilitate planning of service intervals and ensure maximum system availability at all times.

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Further Information:

[www.dmt.de/en](http://www.dmt.de/en)