

inFOCUS

New Database for Hundreds of Test Reports

Computer program summarizes test results from periodic turbine inspections.

By Thomas Arnold

Throughout the service life of a wind-energy turbine, managers of large wind-farm portfolios have to cope with a veritable deluge of information. In addition to electronically transmitted operational data, there are various documents — such as licenses, invoices, and maintenance and repair reports — that contain important information for optimizing operation. And last but not least, reports from periodic inspections also regularly deliver valuable information about the state of repair of wind turbines and their equipment.

However, with this abundance of information, stakeholders may find it difficult to draw the right conclusions and make good investment decisions. Do the turbines have any faults that require immediate action? What about repairs, servicing and maintenance, and their intervals and deadlines? Operational processes and documentation processes may ensure the relevant data and information are available, but their processing generally proves quite challenging. For example, there are no interfaces or functions for exporting letters and PDF files.

To analyze data and information, prioritize activities, and initiate work to be undertaken at the turbines, experts frequently copy data and information to other IT systems and file formats (e.g. Excel workbooks).

ADVANTAGES FROM DIGITIZATION

Given the above, standardized and digitized processing of information promises a plethora of advantages. Evaluation of the data included in the reports of periodic turbine inspection is one example. To date, faults mostly have been recorded in a paper checklist, from which the experts later enter the results in their own IT systems and file formats.

This approach quickly produces hundreds of test reports. To complicate matters further, the data recorded during the on-site inspection of the turbine is not standardized, and it may include different spellings or various synonyms or abbreviations for the same component. Specific faults are recorded in an unspecific manner and insufficiently described, which causes another problem.

The sector has now taken first steps toward removing excessive leeway for interpretation and improving the situation by introducing standardization. For example, the European Technical Association for Power and Heat Generation (VBG) published an international list of nomenclature for wind turbines, the Reference Designation System for Power Plants (RDS-PP®). The method and nomenclature of the RDS-PP® are based on the proven German identification system for power plants (KKS). Each component is assigned

a unique and specific code depending on its location of installation and its functions. The code "MDL10," for example, refers to an azimuth drive.

DATABASE SOLUTION

This innovation lays the foundation for a new database solution developed by TÜV SÜD's experts. With this solution, faults are now recorded in a digitized and standardized manner on the expert's smartphone or tablet PC



Germany has 25,000 onshore wind turbines that must be inspected every two years. During inspection, a remote-controlled drone equipped with a camera delivers high-resolution photos, thus permitting full documentation of the inspection. (Courtesy: TÜV SÜD)

directly on site during the periodic inspection of a wind-energy turbine. With a single click, the experts can access an extensive list that includes precise fault descriptions and clearly assigns and specifies the components and their locations of installation.

In addition to the inspection reports, which they can manage con-

veniently in netDocX, the virtual logbook, turbine managers now can access the database.

All information and data are stored there in a centralized manner and processed to allow stakeholders a quick overview of the wind turbines' state of repair. The functions implemented by the system

ALSO IN THIS SECTION

18 Company Profile:
Shermco Industries

22 Conversation with
Steven Elrod with BS
Rotor Technic USA

support data analysis and evaluation and help users prepare statistics, derive forecasts, prioritize activities, and manage dates and tasks.

DETAILED EVALUATIONS

For the first time, the database also allows the production of more detailed evaluations that involved considerable efforts in the past using conventional tools — if they were even possible at all.

As documented defects can now be mapped across all wind turbines, the quickly available information reveals which faults are the most frequent, whether components of a certain manufacturer have particularly high failure rates, or whether specific faults occur more often in certain turbines or regions (e.g. faults caused by lightning). Series faults, too, can be identified faster.

Data analysis thus highlights areas that offer the potential to improve availability and save costs. Managers can improve their planning of servicing and maintenance measures and quantify the costs of fault types, thereby reducing downtime, improving efficiency, and facilitating budgeting. ↗



TÜV SÜD is continuously expanding its services in the field of renewable sources of energy. The international service provider considers wind power and photovoltaics to offer the largest growth opportunities. (Courtesy: TÜV SÜD)



Thomas Arnold heads the Measurements and Technical Inspections team within the department Wind Cert Services of TÜV SÜD Industrie Service GmbH with focus on measurements of wind-turbine behavior as well as wind-turbine inspections. In the latter, the department offers all necessary inspections for WTG as an independent body recognized by all authorities.