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## 'DIGITISATION' OF INSPECTION DATA IS THE FIRST STEP TO 'DIGITALISATION' OF O&M

As the wind industry continues to expand in scale and geographic reach, the 'digitalisation' of vital operations & maintenance data is set to gather pace. Wind energy asset owners and operators are increasingly redefining their approach to O&M, by adopting technologies that introduce greater efficiencies and streamline processes. Many have invested and are continuing to invest in predictive maintenance solutions, combining improved SCADA data analytics, CMS systems, oil monitoring and machine learning



Despite this high-level investment, however, one of the most essential requirements of a data-driven approach is often overlooked.

### KEY CHALLENGE

Specifically, the management and analysis of O&M inspection data remains a key challenge to the wind industry. Inspection and service work can potentially generate vast amounts of data, but recording this information using pen and paper, or manually inputting findings from field reports into centralised logs can be an immensely time-consuming and labour-intensive process. It also leaves little scope for effective analysis of the

data. This makes it harder to track the health and performance of individual turbines and apply learnings across an entire turbine fleet.

To quantify this challenge, it is estimated that management teams currently spend 80% of their time on average organising their inspection data – that is, pulling it into one place and cleaning it for consistency – and just 20% of their time actually using this data to inform their decision making. That means less time to track failure rates, respond to developing technical and safety issues and determine where the maintenance budget should be focused.

### EMBRACING NEW TECHNOLOGIES

Tools that enable technicians to 'digitise' their inspection data (i.e. turn that data into a digital form) are consequently growing in prominence. Yet a cultural obstacle remains, since technician teams and managers can often be reluctant to move away from what are seen as tried and trusted methods of data collection and embrace new technologies – particularly when they consider the time of investment required to get these systems up and running.

The good news is that great progress has been made in the development of solutions designed to overcome this

cultural resistance and the perceived pain of 'going digital'. Below are three key digitalisation trends that will help the O&M sector harness the true potential of digitalisation.

### 3 KEY DIGITISATION TRENDS

**1. Quick and painless deployment**  
New digital technologies, aimed specifically at O&M within the wind industry, possess a number of advantages over one-size-fits-all solutions designed to be used across a range of sectors. The latter will often require weeks of detailed

individual sites. For instance, field technicians may use different terminology to describe similar failure modes – such as 'microcracking' versus 'surface damage'. Again, this lack of standardisation can make it difficult for managers to efficiently track, analyse and respond to trends in turbine condition and performance.

Digital tools introduce a standardised language for defect reporting, increasing accuracy and reducing the potential for inconsistencies and ambiguities. They also allow

team which high-risk components they need to focus on for the next inspection.

This ability to easily access, track and analyse condition data enables decision-makers to better monitor O&M activities, as well as the progress of any turbine damage and effectively prioritise their O&M requirements. Ultimately, therefore, digital inspection approaches provide a greater level of insight into asset condition and drive efficiencies in financial planning for O&M.

### MOVING FORWARD

Currently, the digitalisation of wind energy O&M data remains in its infancy, especially when compared with other industries, such as aviation. Despite this, the benefits of increased uptake and integration of digital technologies are clear.

Ultimately, the statistics speak for themselves. For instance, EBWFC, who used the fieldPRO™ system to conduct End of Warranty inspections for 50 turbines, found that they were able to complete inspection reporting within 72 hours – as compared to the three-four weeks this would take using traditional paper-based reporting. Moreover, the benefits of digitalisation are felt not only on a project and portfolio-wide level by management teams, but also by field technicians, who commonly express their satisfaction that they no longer need to spend time writing reports and manually uploading images each evening.

### BENEFITS

Greater appreciation and awareness of these benefits should empower both O&M managers and technicians to incorporate digital tools into their everyday working environment. By 'digitising' inspection data, asset owners and their maintenance teams can take the first step to 'digitalising' their O&M practices.

formatting and customisation before they can be deployed in the field and used to record wind turbine data. By contrast, technologies such as ONYX InSight's fieldPRO™ mobile software, designed by engineers specifically for collecting and monitoring wind turbine inspection data, allows technicians to quickly begin submitting and storing results directly from the field.

Mobile software of this type, designed by engineers, for engineers, is easy and intuitive for technicians to use. By allowing them to input data in real time and upload images directly, these tools enable technicians to increase productivity and significantly cut the time they spend manually completing field reports. O&M managers also benefit from instantaneous and centralised access to field data such as failure rates, can keep an eye on health and safety protocol and track any relevant major or repeated issues with assets from across their sites.

**2. Clean, consistent, and high-quality data first time**  
Manually completed field reports present challenges to O&M managers looking to compare notes from inspections and repairs carried out across portfolios or even within

technicians to easily review and pass on information and recommendations based on previous inspections between them. Any data submitted from multiple devices is merged and a turbine's record updated, allowing multiple technicians to work on a single turbine and simultaneously share their progress.

In addition to turbine condition data, digital tools can help optimise health and safety practices by using GPS and time-stamped data to validate and ensure adherence to LOTO and PPE procedures.

**3. Comprehensive insight into asset performance and O&M activities**  
O&M data recorded and submitted by field technicians using fieldPRO™ or similar technologies is digitally stored and hosted on a cloud-based network, which can be accessed and reviewed by site managers, engineers or asset owners, as required.

Having standardised cloud-based data at their fingertips gives O&M managers clear visibility over the inspection process and immediate updates with the inspection results. This allows them to quickly prioritise current tasks and also informs the

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