

Wind Turbine In-Service

Minimize Downtime through
Condition Monitoring



ABS Consulting

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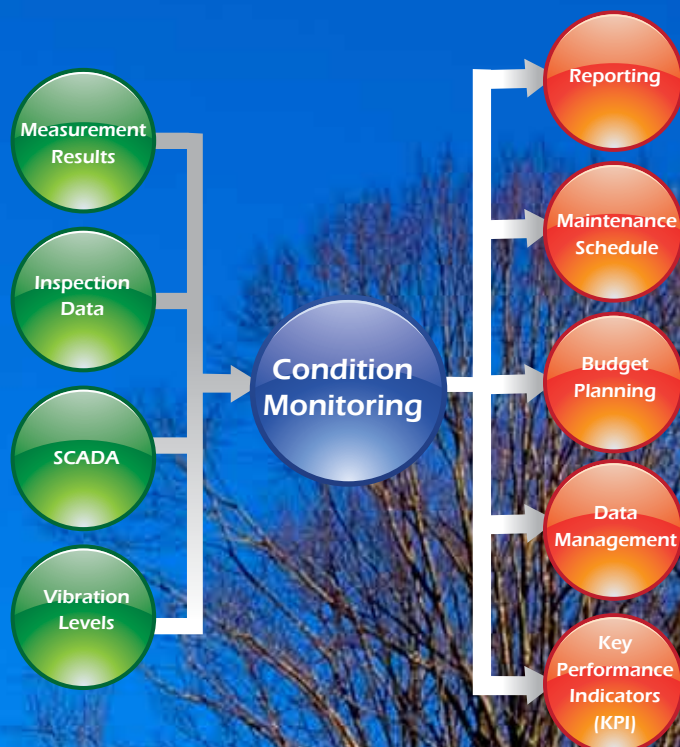
Expertise to Help You Avoid Downtime and Unexpected Costs

The wind energy sector is growing quickly in terms of number and capacity of installed turbines, as well as developing technologies. To maintain reliability and availability throughout the life of wind assets, condition monitoring during the In-Service Phase is critical. Failure inherently disrupts the operation, diminishing overall wind energy production, bottom line revenues and the perception of wind as a reliable alternative energy source. This is particularly true for offshore farms where operations and maintenance costs are significant. The resulting failures and unexpected repair and maintenance costs may also lead to increased operational costs and reduced profits.

An effective condition monitoring program allows for regular inspections and monitoring of wind turbine components throughout the asset's life span. The goal of condition monitoring is to gather operational metrics as part of a data management plan, then mine the information to determine KPIs, build budgets and maintenance schedules and provide reports to support decision making for owners and stakeholders.

A condition monitoring program will help you:

- Detect defects at an early stage
- Avoid consequential damages and unscheduled downtime through managed inspections
- Avoid unexpected operational costs



Our Services

ABS Consulting engineers have the multidisciplinary expertise to help you develop a condition monitoring program that minimizes downtime and maximizes your return on investment. Since reliability and availability are critical, determining and understanding the potential failures and their consequences provides valuable insight into the system and operations. Analyzing the right data can help you to budget, plan and schedule monitoring and maintenance tasks.

Measurement Results

The data gathered from inspections, vibration sensors and the Supervisory Control and Data Acquisition (SCADA) system provide an overview of the wind farm and turbine conditions. Operators can utilize the data to generate KPI for budget planning and maintenance scheduling.

Inspection Data

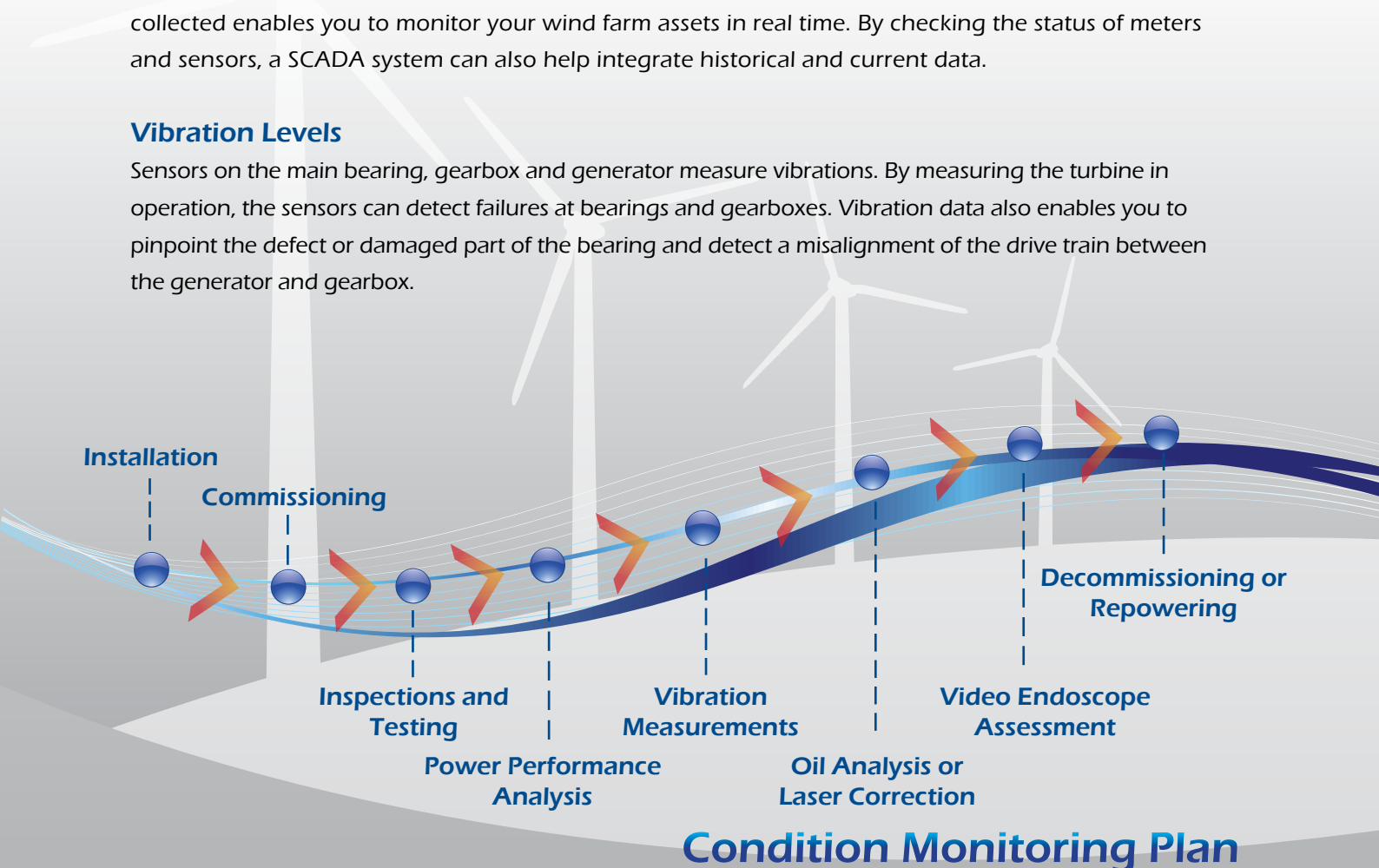
A system of inspections and analyses will detect deviations early, helping operators avoid claims including consequential damages. Inclusive inspections evaluate multiple turbine components, including the gearbox and gear oil, rotor blades and coatings. A comprehensive inspection program also includes a review before the turbine manufacturer's warranty expires. Using sophisticated tools, this inspection offers a final opportunity to claim any defects, problems or non-conformities. Following the end-of-warranty inspection, ABS Consulting provides the owner or operator with a comprehensive report outlining issues and potential solutions.

SCADA Metrics

The SCADA system gathers and analyzes data from either a single turbine or an entire farm. The data collected enables you to monitor your wind farm assets in real time. By checking the status of meters and sensors, a SCADA system can also help integrate historical and current data.

Vibration Levels

Sensors on the main bearing, gearbox and generator measure vibrations. By measuring the turbine in operation, the sensors can detect failures at bearings and gearboxes. Vibration data also enables you to pinpoint the defect or damaged part of the bearing and detect a misalignment of the drive train between the generator and gearbox.



Comprehensive Safety, Risk and Integrity Management

ABS Consulting has decades of experience in managing risk and safety while optimizing asset integrity for on- and offshore industries. We analyze risks and develop practical testing plans, then utilize industry-leading technology to create customized solutions. ABS Consulting also works closely with industry leaders and governing organizations to develop standards for use globally, including guidelines for on- and offshore wind development and wind turbine design, certification and permitting.

About Us

ABS Consulting is a global safety, risk and integrity management company with broad experience completing challenging projects in the oil and gas, chemical process, nuclear, government, maritime, mining and renewable energy industries. ABS Consulting has offices in 28 countries and over 1,400 employees. ABS Consulting headquarters are located in Houston.

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