SERVICE NOTE

# ABB Ability™ Condition Monitoring for shaftlines

## On-site condition monitoring for rotating machines

ABB Ability™ Condition Monitoring for shaftlines is an on-site condition monitoring service that addresses the reliability of the complete shaft-line, including motor, gearbox and driven load. It identifies electrical and mechanical issues related to the rotor, bearings, gearbox and other components – problems which account for a major percentage of total failures.

ABB Ability™ Condition Monitoring for shaftlines is an on-site condition monitoring service which provides reliable early warnings of defects, allowing more time for effective maintenance planning. Other systems only give a reliable warning when failure is imminent.

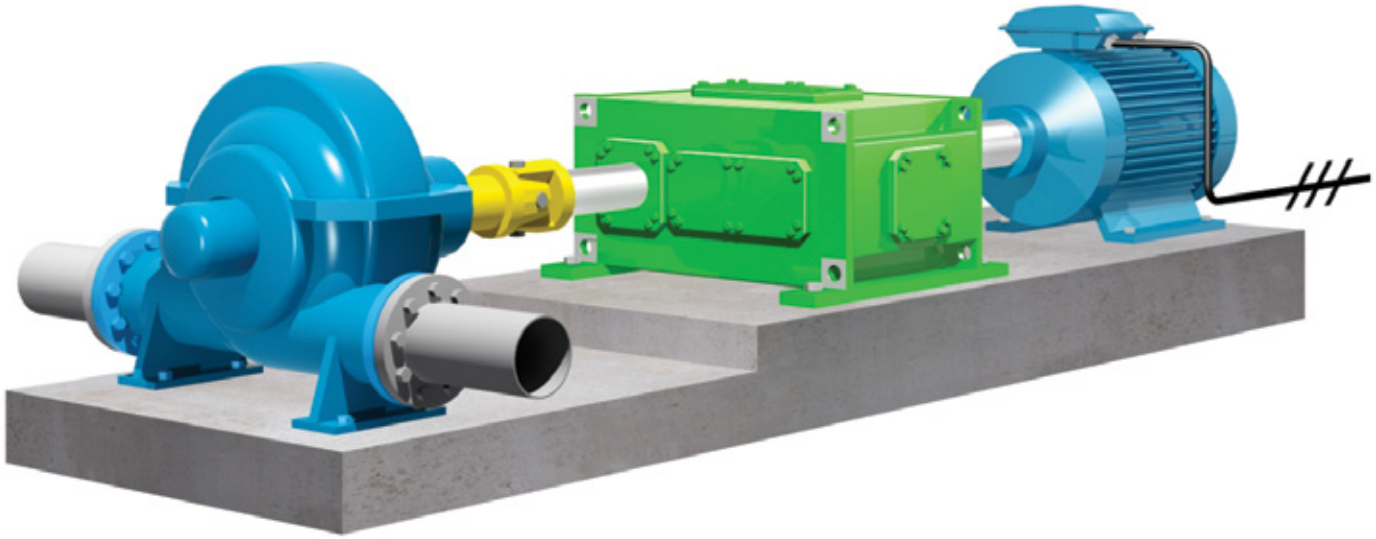
ABB Ability™ Condition Monitoring for shaftlines uses a custom developed data collector along with analysis tools based on in-depth research by ABB. For more effective results it takes an integrated approach. It uses the same hardware and software to detect, monitor and diagnose electrical and mechanical problems in the entire shaftline.

**Methodology**

An ABB service engineer collects a combination of electrical and vibration measurements on the entire shaftline under normal operating conditions. The data are analyzed and a detailed report is supplied to the customer. The report interprets and analyzes the test results, identifying the defects, quantifying their severity and listing possible causes. The 'health' of each unit in the shaftline is assessed on a component-by-component basis.

**Main benefits**

- Holistic approach to condition monitoring of the entire shaftline including motor, gearbox and driven load
- Multi-sensor approach (vibration, current, voltage) with integrated analysis and reporting
- Early warnings of developing faults provide adequate time for maintenance



**Motor**
ABB Ability™ Condition Monitoring for shaftlines analyzes electrical data (current and voltage), vibration and torque in combination to derive indices that describe the severity of defects in:

- Rotor
- Bearings
- Installation
- Power quality

The analysis also takes aspects of the motor design and construction into account to calculate fault criticality values for the specific type of motor.

**Gearbox**
ABB Ability™ Condition Monitoring for shaftlines service provides automated detection of gearbox faults. This is based on ABB's years of experience in manufacturing and servicing gearboxes, including planetary gears, and on intensive R&D at ABB's research centers.

A Physics of Failure approach supported by advanced signal processing means that defects can be detected early, with improved identification of defect type and severity. ABB Ability™ Condition Monitoring for shaftlines is typically used to analyze parallel shafts (up to 4 shafts), epicyclic and worm gearboxes.

Advanced algorithms enable time synchronous averaging of vibration signals from the gearbox without the need for a speed related trigger. The range of faults picked up by the service includes:

- Gear faults – both distributed faults, such as gear wear, and localized tooth faults caused by tooth pitting or cracking
- Torsional forces from the load side

**Driven load**
ABB Ability™ Condition Monitoring for shaftlines can be used to analyze driven equipment such as pumps, fans and compressors. The analysis is not impacted by changes in the load or other system conditions. Some of the typical faults that can be identified in the driven system are flow turbulence, bearing issues and other mechanical problems.

ABB Ability™ Condition Monitoring for shaftlines uses a novel method, capable of combining vibration, shaft speed measurements and electrical signals from the motor to identify and quantify faults in the motor, gearbox and load.

For more information please visit:
**new.abb.com/motors-generators/service**



9AKK106048 REV B EN 102018