



# CONDITION MONITORING AND OIL ANALYSES

## MINIMIZING DOWNTIME FOR WIND TURBINES

One of the major concerns in investing in wind turbines and wind farms are related to the availability of the turbines, i.e. the risk of having less wind power production from the wind turbines due to stand still and repair. Reliability of the structures and the wind turbines is therefore essential for the wind farm to perform successfully.

A minor failure in critical components of the wind turbine can cause unacceptable down time and loss. The operation and maintenance of wind turbines are costly. One of the approaches to reduce these costs is regular condition monitoring to detect failures of critical components as early as possible. With the increasing

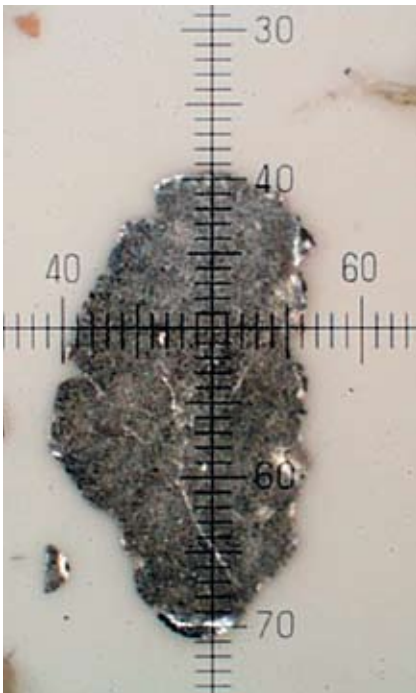
number of installed wind turbines and major failures of critical components the necessity of condition monitoring can not be neglected. Some components, although designed for the turbine lifetime, fail earlier than expected and cause unscheduled down time which harm the overall success of the wind farm project.

# RIGHT SERVICE GIVES MAXIMUM RETURN!

For the wind turbine gear box, wear debris particle analysis is a strong tool to predict mechanical failures. The technique isolates wear particles from machinery, and classify the debris by microscope combined with chemical analyses.

Testing of used oil is a preventative maintenance tool that operates as an early warning system. It enables you to both minimise repair and maintenance costs while maximising production through scheduling downtime.

SGS can supply you with expertise condition monitoring of the oil used in the wind turbine gear box, generator and hydraulic system, and give you a detailed description of the current situation.



*SGS analyses the current situation, such as the shape, size and numbers of the wear particles*

An investigation of shape, surface, size and colours can identify the alloy and the number to determine if wear is severe. By this examination, it is possible to identify if particles come from cutting wear, severe sliding or fatigue. Their origin might also be from ingress from the surroundings like sand or dust.

The particles will be classified into different sizes and numbers to be able to identify if the level is changing during the operational time of the wind turbine. The evaluation is done by highly skilled machinery and chemical engineers who are experts in evaluating failure regimes and to give and corrective advice.

Regular monitoring of the chemical and physical changes in a lubricant taken from a wind turbine gear box, generator or hydraulic system can provide an early warning of potential failures.

## SGS IS ABLE TO PROVIDE

- Sampling of oil and lubricants using a customised sampling kit
- An extensive range of laboratory tests to cover all applications
- Condition monitoring by Ferrography
- Expert diagnosis of wind turbine components and lubricant condition
- A range of modern reporting solutions

## SGS COMPETENCE CENTRE WIND ENERGY

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