Assessing the condition and early fault detection for WTGs became lately a common and essential practice, because they can improve the performance and reliability of a WTG.

An important consideration in this sense are the bearings with a hot spot. Its failure develops over time, but in the very early stages, it shows an abnormal operation by a build-up of gas in the grease.

Not detecting and correcting the failures in the early stages could result in significant loss of revenue and higher repair costs due to unscheduled maintenance and business interruption.

Recently, great advances were made in assessing the condition of grease-lubricated bearings through innovative analysis of grease samples.

These analyses are used for evaluating the condition of the bearings of wind turbine generators, by measuring the content of dissolved gasses (thus the name dissolved gas analysis) in a sample of lube grease. This will help determine at very early stages whether the bearing has a hot spot and will be failing or it has a normal behaviour.
DISSOLVED GAS ANALYSIS
Assess the condition of grease-lubricated bearings in WTGs

The dissolved gas analysis method is based on the principles used for more than fifty years for condition monitoring of oil-filled transformers. Recently, DGA has become an accurate and compelling approach for evaluating the operating condition of transformers.

It has been documented that in so-called “hot spots” and in the bearings excessive temperature due to abnormal friction is developed, and therefore, gasses are formed and dissolved in the grease. The content of gasses is thus an indicator of early signs of damages, available before any serious damage has taken place.

Benefits:

• Most powerful tools for detecting at an early stage bearing failures in grease-lubricated bearings
• Early detection of bearing failures allows for converting unplanned maintenance into a scheduled one, thus reducing maintenance cost and production loss
• Low cost testing process

Why choose Ventus?
Your guarantee for high quality inspections, analysis and reports, before a bearing failure has to be addressed urgently, and therefore producing unscheduled maintenance and unnecessary production losses.

DGA show-case of grease sampled from several WTG bearings. As seen in the figure, some bearings contain an elevated amount of dissolved ethene (C2H4). This indicates that these bearing are running with contact zones that has elevated temperatures, resulting in grease degradation, and hence formation of ethene.

Development of dissolved gasses and wear particles in a bearing with incipient failure. The dissolved gasses appear long time before the metallic particles, which only appear when the bearing surfaces begin to break down.

DGA show-case of grease sampled from several WTG bearings. As seen in the figure, some bearings contain an elevated amount of dissolved ethene (C2H4). This indicates that these bearing are running with contact zones that has elevated temperatures, resulting in grease degradation, and hence formation of ethene.