framatome

Flat UT Probe

for Ultrasonic Inspection of Rolling Bearings of Wind Turbines

In-service inspection on the outer ring of rotor main bearings of wind turbines

Challenge

The component design of rolling bearings was not considering in-service inspections. This causes very restricted access to the inspection area. Therefore, the minimum available space for inspection requires very small hardware, for example probe and cabling.

Solution

Framatome's wide portfolio of different technologies allow detailed analysis of the component and its setup. This analysis was the basis for an access concept for the inspection technique.

The close cooperation between manufacturing and design, which is available within Framatome, made it possible to develop a tailor-made manufacturing process to reach most smallest dimensions of the probe: overall height of the probe including the coupling supply is only 7 mm. For coupling original gear oil is used. The highly sensitive inspection technique delivers reliable results with exact positioning data.

This inspection technique does not require any mechanical modifications on the wind turbines components. It allows to inspect the runways of the rotor bearing outer rings in mounted configuration. The rotor bearings can be inspected onshore or offshore as in-service inspection, as well as already during the manufacturing process. The testing during manufacturing process of the bearings offers the possibility to compare the manufacturing testing data with the acquired data from in-service inspection later on without any change in inspection technique.

Customer benefits

- Inspection without mechanical modifications on the wind turbine
- Allows efficient and reliable lifetime planning of the bearings
- Maximizes the availability of a wind turbine
- Minimizes costs for dismantling or repair

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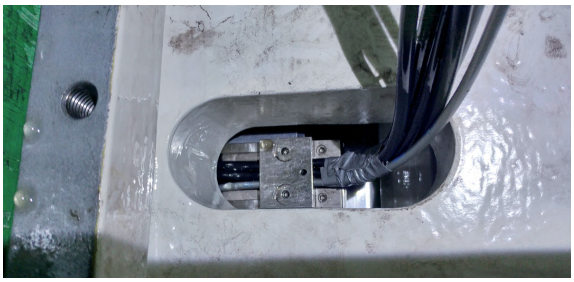
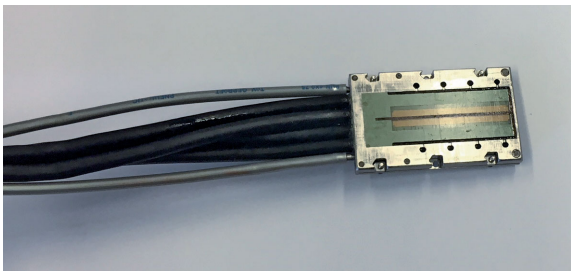
is **our** everyday **commitment**





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Technical information

- 100% coverage of runway area stressed by the rolling elements
- Safe detection of relevant discontinuity from 1–2 mm depth
- High-resolution 64-channel phased array S/E – 0° UT probe (7.5 MHz)
- High-end UT system SAPHIR*quantum*
- Exact positioned data acquisition
- Data management of inspection data allows data re-analysis by independent parties
- Possibility to compare the manufacturing testing data with the acquired data from in-service inspection

Contact: examination@framatome.com
www.framatome.com