Automated 100 % Crack and Heat Treatment Testing of Gear Shafts

The gear shaft is a central component of the transmission. The constant load changes stress the component to a high degree, which is why perfect material is necessary. FOERSTER assists in quality assurance with non-destructive testing systems that use the eddy current method to check the gear shafts for material defects such as cracks as well as the heat treatment condition directly during the production process.

The STATOGRAPH test instrument with one contour-guided and two stationary eddy-current probes is used for the crack testing of the gear shafts. Thus, the gear shafts are checked for longitudinal and transverse cracks.

Fig.1: STATOGRAPH CM+ and different standard probes

During the non-destructive crack testing, an eddy current probe inspects the surface of the test piece. Two additional probes test the punctures at critical cross-sectional transitions of the test piece. To determine the heat treatment condition, a MAGNATEST encircling test coil is additionally positioned at the end of the shaft.

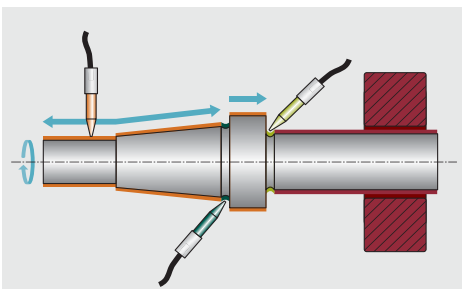

Fig. 2: Operating principle for testing gear shafts

The critical zones of the component, such as bearing seat area and diameter transitions, are 100 % checked for material cracks by the eddy current testing.

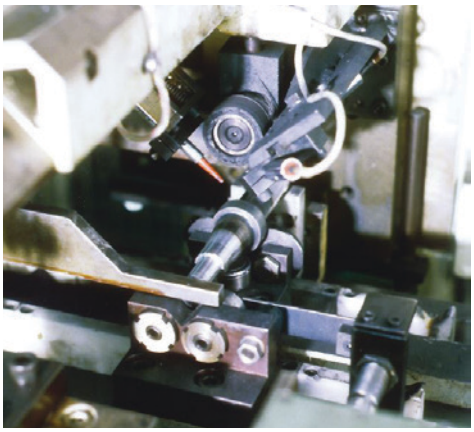

Fig. 3: In line testing of a gear shaft

After testing the components are sorted automatically in „OK“ and „NOK“. The test performance is up to 360 transmission shafts per hour. For continuous quality assurance, the results can be documented and evaluated.

We recommend the STATOGRAPH test instrument with standard probes for the crack testing of gear shafts. To monitor the heat treatment condition, the MAGNATEST test instrument is used in combination with an encircling coil. This ensures a 100 % inspection of the entire gear shaft. Further information about our products and industry solutions can be found on our homepage at: foerstergroup.de