STATOGRAPH TCL

Smart eddy current crack detection in components critical for safety and operation

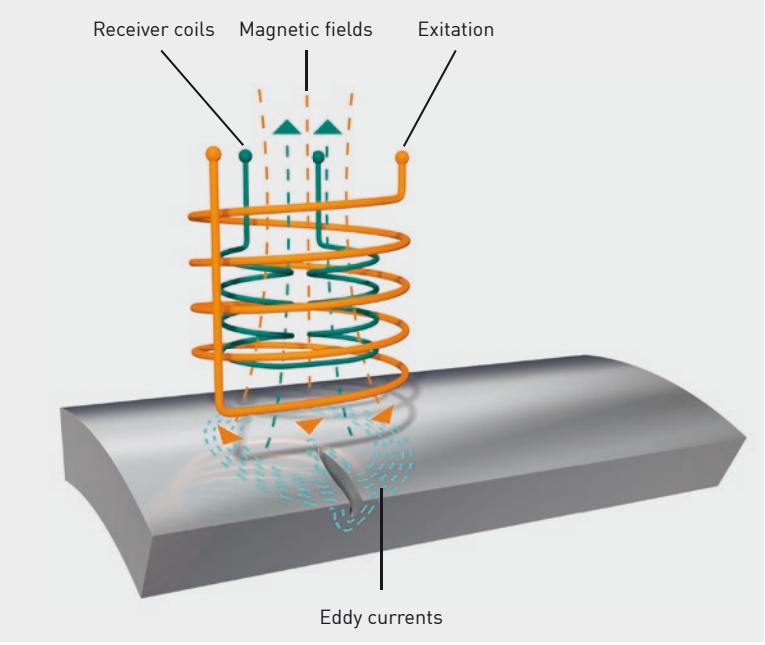
STATOGRAPH TCL: Smart and intuitive crack detection

Do you manufacture components that are critical to operation or safety? Then you know that many of the production steps along the value chain of any part can put a lot of stress on the materials – sometimes leading to undesirable results such as hardening cracks, grinding burns or deep-drawing defects. Besides the considerable economic damage they can wreak on the production line, such flaws can also cause consequential harm to the end user. With the STATOGRAPH TCL, FOERSTER has developed a cost-effective, yet highly efficient, inspection system for 100% eddy current crack detection. It can be used both in series production and for manual testing. The various sensors are automatically recognized via a data chip, eliminating the need for lengthy adjustment processes.

The benefits

- **100% inspection with non-destructive testing:** optimally prepared for all testing requirements.
- **Eddy current crack detection:** with a wide frequency range from 4 Hz to 20 MHz.
- **State-of-the-art software with intuitive user interface:** support functions (wizards) ensure easy operation during parameterization.
- **Clearance compensation:** learning of material-specific distance curves to suppress clearance fluctuations.
- **Improved test quality:** short cable runs between the TCL and the sensor system minimize interference.
- **Innovative probe recognition:** data chip automatically recognizes the probe, directly loading its settings.
- **Easy automation and line integration** via I/O interface.

Operating principle & fields of application



Eddy current crack testing

A relative movement between the probe and the component is required for dynamic crack testing. Either the component is set in motion (rotation) while the probe is fixed at a defined distance, or vice versa. To test a surface or contour, the component surface can be scanned with one or more probes. The use of flexible sensors or arrays is also possible. The selection of the appropriate probes depends on the component geometry, cycle time and defect specification.

Advantages of eddy current testing

- Non-destructive, fully automatable and contactless
- Fast, reliable and repeatable
- Economical, environmentally friendly and clean
- Testing under non-conductive coatings, paints and varnishes is possible

Versatile use for efficient quality control

The STATOGRAPH TCL is designed for fully automated and non-destructive eddy current testing for 100% inspection in series production. Typically, the components under test are those that are critical to safety and/or functioning, from a variety of industrial sectors including automotive engineering, aerospace, rail transport, shipbuilding, energy technology, electronics, medical technology, and oil and gas. The areas of application are as varied as the components themselves! The only requirement is that the material must be electrically conductive.

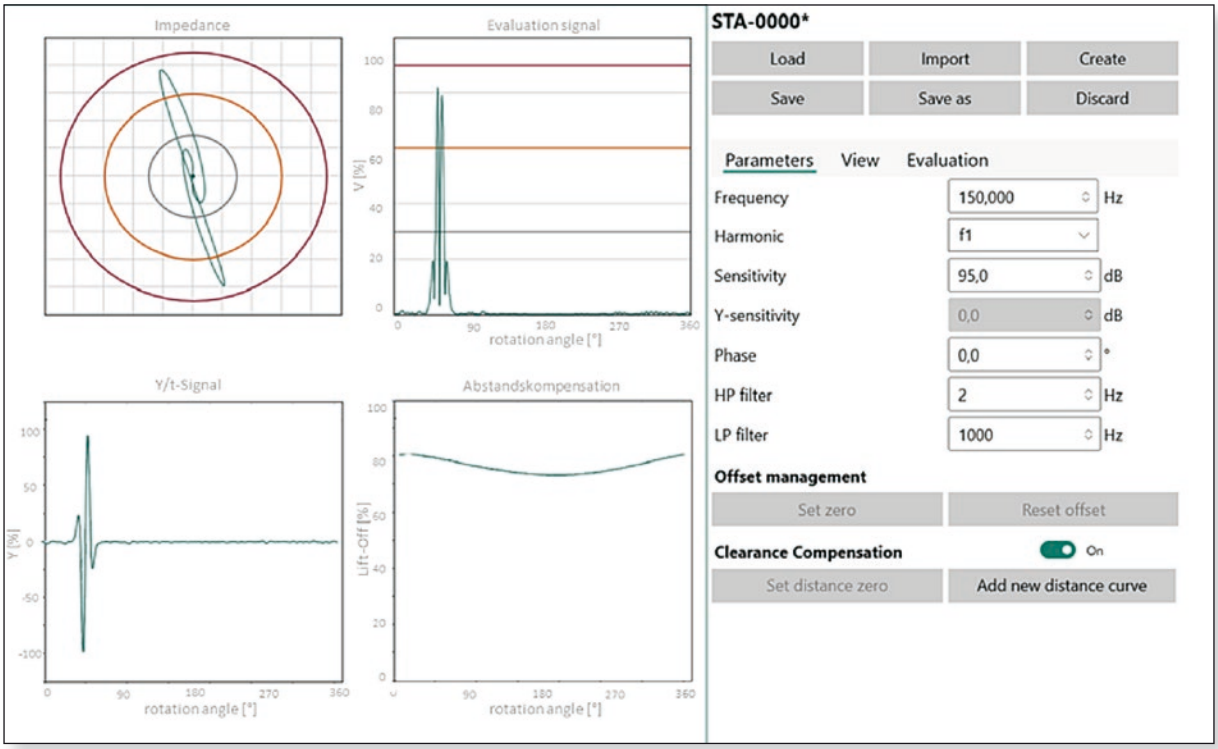
The following types of surface defects can be detected with the STATOGRAPH TCL

- Cracks and pores
- Grinding burns
- Material separations
- Geometric inhomogeneities
- Local permeability and conductivity discontinuities (e.g. hotspots)

Technical data

Product features	STATOGRAPH TCL
Dimensions & weight	176 x 109 x 35 mm; 0,5 kg
Power supply	24 V, 1250 mA (AC adapter optional)
Permissible ambient temperatures	+5°C to +40°C (+41°F to +104°F)
Relative humidity	8% to 80%
IP	IP40
Frequency range	4 Hz to 20 MHz
High- / low-pass filter	0-50 kHz
Evaluation	Vector (360° threshold), |Y| (phase-selective)
Sensors	Differential sensor (with clearance compensation), absolute sensor
Signal charts	Impedance, evaluation signal, y/t diagram, clearance signal (each per revolution or as a time-based scan)
Interfaces	Digital I/O, industrial ethernet, remote

Reliable & intuitive testing with sophisticated features



Modular, compact and flexible

The STATOGRAPH TCL test system consists of one to four TCL (Test Channel Line) test channels and a PC including test software. For automated testing, FOERSTER offers an industrial PC with interface module (Digital I/O, Industrial Ethernet). This enables reliable testing and stable interface communication with high performance.

All components can be installed in an equipment cabinet. As an alternative, FOERSTER offers the TC COMPACT – here all system components are installed in a 19" housing (6U). In addition to the industrial PC, it offers space for up to 4 TCLs. The TCL itself can also be installed directly in the line close to the sensors. This significantly shortens the cable lengths and minimizes negative effects on the test quality. The data stream is transmitted to the evaluation electronics via Ethernet. A (touch) screen and/or keyboard or mouse is required for visualization and operation.

Optimized ease of use

The modern software of the TCL test system is intuitive and optimized for touch operation. Embedded help is available if you have any questions. Wizards can support you in setting up the test parameters, but of course, there is also the option of free parameterization. In addition to a wide frequency range from 4 Hz to 20 MHz, the STATOGRAPH TCL has high-pass and low-pass filters from 0 - 50 kHz. The eddy current signals are visualized in the impedance, evaluation and y/t diagrams as well as scan charts. In addition to the 360° threshold, the evaluation can also be phase-selective. Password protection prevents manual intervention in the test during automated testing. In test mode, the results are displayed as a bar chart in addition to the signal charts. The report function subsequently enables complete documentation.

Robust sensors for precise test results

FOERSTER sensors for high-quality test results
As a leading manufacturer of test coils, FOERSTER is always striving to bring its customers the newest and most innovative sensor solutions – for superior test results. We offer a wide range of sensors to fit different sample shapes and diameters. Tried and tested through decades of use, the sensors provide reproducible test results for both quality control and process control. Depending on the test task and the complexity of the components, we can also develop application-specific sensor technology just for you.

All existing STATOGRAPH sensors can be made compatible with the new STATOGRAPH TCL by means of adapters. In addition, the TCL sensor technology features automatic probe recognition, which loads from a chip all the relevant sensor data for optimal test settings.

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