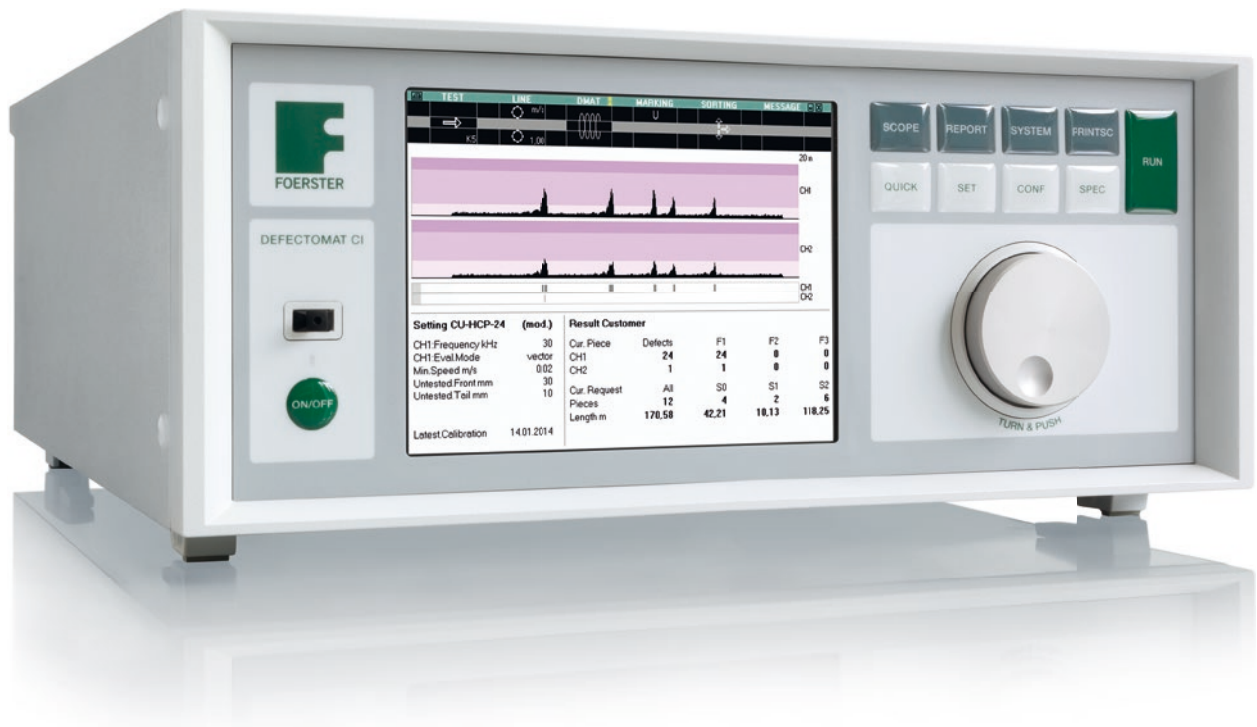


DEFECTOMAT® CI

Non-Destructive Eddy Current Testing of
Long Products like Tubes, Bars, Wires and Profiles



The Company

FOERSTER is a global technology leader for non-destructive testing of metallic materials. One of the "Hidden Champion" companies, FOERSTER operates worldwide with an extensive network of ten subsidiaries plus qualified representatives in more than 60 countries and works closely with its customers.

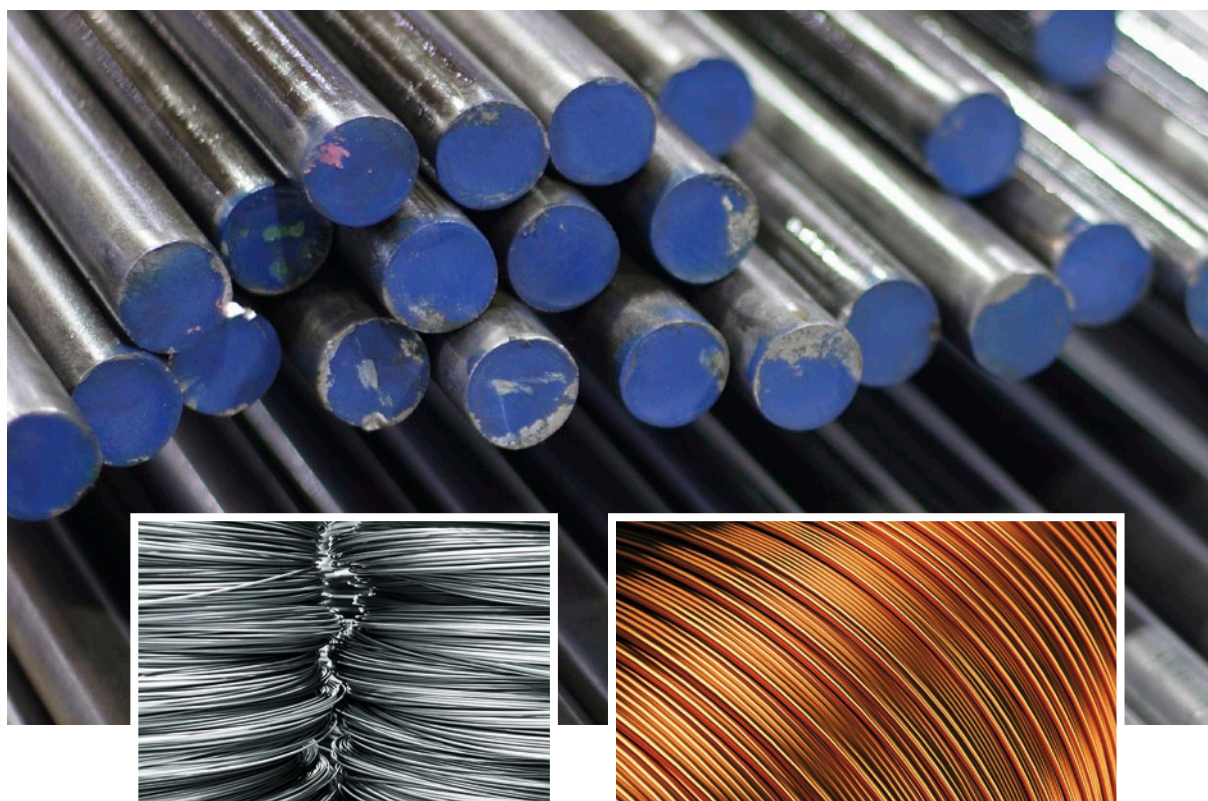
FOERSTER Division Testing Systems (TS)

Division TS specializes in developing and manufacturing technical systems for the automated, non-destructive testing of metallic long products and heavy plates. Electromagnetic methods such as eddy current and flux leakage testing, ultrasound and inductive heat flow thermography are used to inspect these semi-finished products for flaws that are invisible to the naked eye.

These systems are made for the metal producing and metalworking industries, where tubes, wires, bars, billets, rails, profiles, metal sheets and similar items are produced on rolling mills, drawing lines, welding lines or processed in various finishing operations. FOERSTER products perform many critical test applications during these processes.



Testing Semi-Finished Products with DEFECTOMAT® CI



Quality Control and Process Monitoring

Increasing quality requirements in the production of semi-finished products require automated process monitoring. That is why FOERSTER has developed the DEFECTOMAT CI as a compact entry-level instrument into eddy current testing. The test equipment is specifically designed for quality control and process monitoring along the entire long-product production. It enables the surface testing of semi-finished products like tubes, bars and wires for defects, such as short and transverse flaws. Both austenitic, ferromagnetic and non-ferromagnetic metals can be tested with the system.

Testing is carried out without contact using the non-destructive eddy current method. A wide range of different sensors allows exact adaptation to the respective application. The parameters gained during testing are important indicators for continuous process optimization.

Testing principle for a wide range of applications

Thanks to its compact dimensions, DEFECTOMAT CI can be easily integrated into existing production lines. The system is used in tube welding and finishing lines, endless wire lines, as well as casting and rolling mills.

Welding quality can be monitored in tube welding lines using a weld seam probe or segment coil. The optional absolute channel also enables the detection of slit tubes.

In tube and rod steel adjustments the differential channel is used for surface flaw testing. The sector evaluation allows disturbances to be suppressed phase-selectively. The static absolute signal enables a simple material mix testing to monitor the material properties.

In endless wire lines, e.g. drawing lines or rewinders, the section-specific evaluation of flaw signals over selectable limit values produces up to six quality statements.

DEFECTOMAT® CI

**Dual-Channel Eddy Current Testing**

Equipped with up to two fully operational test channels each, the compact DEFECTOMAT CI is perfectly suited for eddy current testing of long products. Because its wide range of functions makes it possible to integrate it into virtually any production environment, it is an excellent introductory-level system for structured quality assurance.

Advantages of DEFECTOMAT® CI

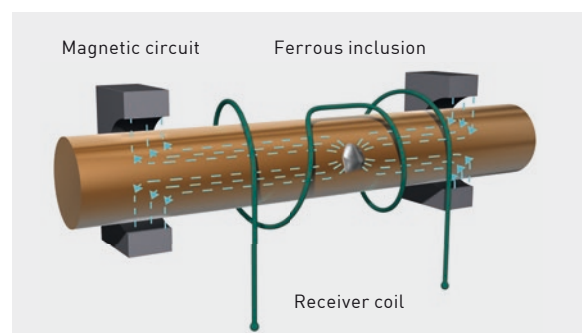
- Optional dual-channel evaluation of Diff/Abs, Diff/Diff, Diff/Ferromat
- 12 test frequencies ranging from 1 – 1000 kHz
- Automatic filter tracking
- Accurate marking
- Sector signal evaluation with three trigger thresholds

Availability and Service

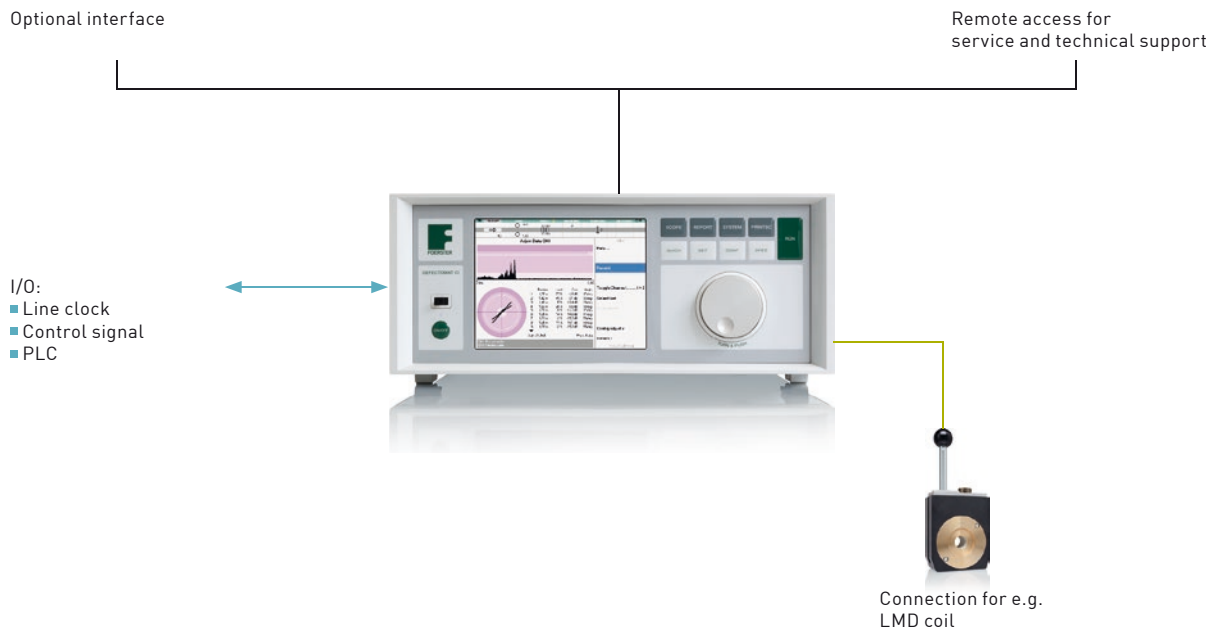
- Sensor monitoring based on noise levels
- Detection of cable breaks and short circuits
- Remote service via telephone or internet
- Protocolled calibration
- Easy swap-out of older models with pin-compatible line and sensor connections

Detection of ferrous inclusions with DEFECTOMAT® CI

The DEFECTOMAT CI can be optionally equipped with a FERROMAT channel to detect ferrous inclusions. Especially in casting/rolling lines for producing rolled copper wire, the simultaneous use of an eddy-current channel to detect flaws and a FERROMAT channel to detect ferrous inclusions is state-of-the-art. The limit values must be set differently in the two channels as in general one FERROMAT signal must lead to rejection. For the detection of ferrous inclusions the eddy-current coil is supplemented with a permanent magnetisation.



Principle for the detection of ferrous inclusions



More Convenience with DEFECTOMAT® CI

The modern IT architecture of the DEFECTOMAT CI allows it to be controlled directly at the device. All relevant parameters can easily be set by built-in function keys and a simple “turn-and-push” knob. Keyboard, mouse and display can also be plugged into the instrument. Furthermore, a primary process computer for data exchange can be connected via Ethernet.

Clear Presentation of the Production Process

All production information is clearly displayed on the high-resolution monitor. The status bar shows the current line speed as well as line outputs for marking and test-piece sorting; from here, the operator can quickly extract all information concerning the current test. Structured data from test signals and test events are exported in real time and at line speed. As desired, the test signals can be displayed in IVI, Y or XY format.

Test Protocols for Quality Documentation

Test protocols with corresponding test settings and results can be generated for each individual test piece or for a series of test pieces. Protocols can be designed individually and printed automatically, ensuring complete documentation.

Additional Advantages of the DEFECTOMAT® CI

- Quick operation with “turn-and-push” knob
- Password-protected access levels
- Clearly structured color interface
- Visualization of the test sequence
- Continuous display of the most important parameters
- Unlimited settings archive
- Stored sensor list with features
- Latest computer technology in compact design
- Full network integration
- Remote control of settings
- Transfer of result data
- Connection of various peripherals via USB: flash drive, printer, mouse, keyboard, etc.
- Data export and import via flash drive
- XML document structure for every tested piece and each order displayable with Internet Explorer

Application-Specific Sensors and Sensor Systems

High-Quality Sensors – Made in Germany

To provide the appropriate sensor technology for every customer need, FOERSTER is continuously developing new and innovative solutions. This way, FOERSTER is able to offer an extensive portfolio of sensors suited to a wide range of sample forms, dimensions and cross sections to ensure exact flaw detection on semi-finished products such as wires, bars, profiles or tubes. Firmly established and in use for decades, these sensors have been delivering reproducible test results for dependable quality and process control. From sensor systems for through-type or segment coils to demagnetization units and probes: FOERSTER's end-to-end systems are assembled from components that achieve real customer objectives, so they integrate perfectly into real-world production lines.



Encircling Through-Type Coils

Encircling through-type coils are used for testing long products for surface cracks and hole-like defects. A broad range of coils are available corresponding to the cross section of the test piece. For cylindrical material, fine gradations are offered for diameters from 1 – 240 mm.

Special profile coils can also be custom-made according to customer specifications to achieve the highest possible defect resolution.



Coils and Sensor Systems for Small Diameters

Special through-type coils and sensor systems have been developed especially for eddy current testing of fine wires. The coils are available in fine gradations for material diameters ranging from 0.1 – 2 mm.

The DEFECTOMINI sensor is perfectly suited for testing thin wires and tubes with diameters ranging between 0.3 and 4 mm. The use of permanent magnets allows testing of all metals, including ferrous material.



Segment Coils and Weld Seam Probe

For eddy current testing of weld seams, shape adapted segment coils are available for tube diameters between 10 and 180 mm. Alternatively longitudinally welded tubes can be tested easily using a weld seam probe and the corresponding holder.

Application Lab – Training – Global Service



Application Lab

In order to provide its customers with comprehensive technical advice, FOERSTER runs its own in-house application lab. Equipped with the latest test equipment, the lab is ideally suited for solving new customer specific application scenarios. Using material provided by the customer, various tests are carried out. Based on test results, the best possible solution is defined both for the technical equipment as well as for the parameter setting. FOERSTER application specialists possess in-depth industry knowledge. They provide comprehensive support to find the best possible solution, also directly on site.

Training

FOERSTER training courses focus on the practice-oriented application of FOERSTER test electronics and sensor systems, as well as the configuration of important parameters for adapting the systems to the test procedures and tasks at hand; in-depth training courses for service and maintenance are also offered.

The training content can be modified to suit an individual customer's needs and delivered on-site, directly at the test line.

FOERSTER Service

FOERSTER's team of highly qualified service engineers is available to meet customers' high quality standards. An additional 24-hour emergency hotline is available 365 days throughout the year, so that FOERSTER service specialists can initiate a systematic error analysis on the telephone. For software installation or configuration queries, remote access provides a quick solution, allowing a device to be quickly functioning again.

foerstergroup.de



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The FOERSTER Group is being represented by subsidiaries and representatives in over 60 countries – worldwide.

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