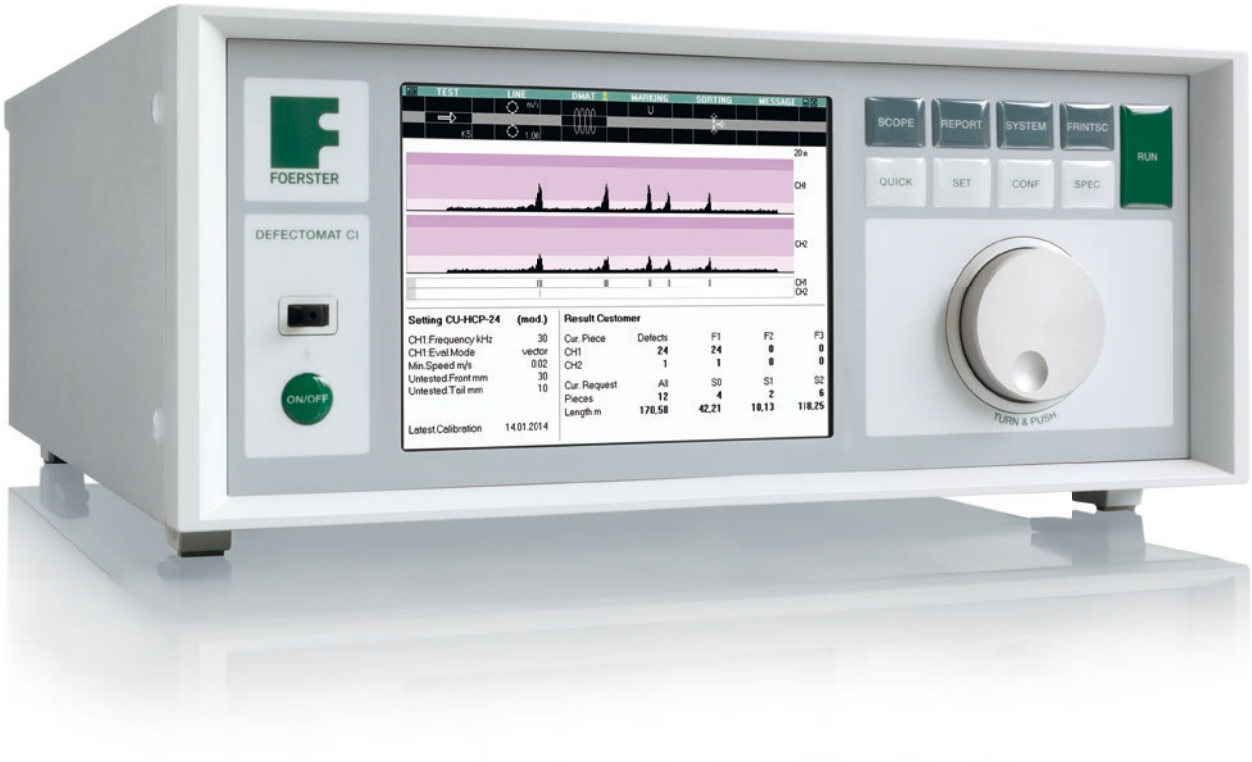
# DEFECTOMAT® CI

Non-destructive eddy current testing of
long products like tubes, bars, wire and profiles




proof.

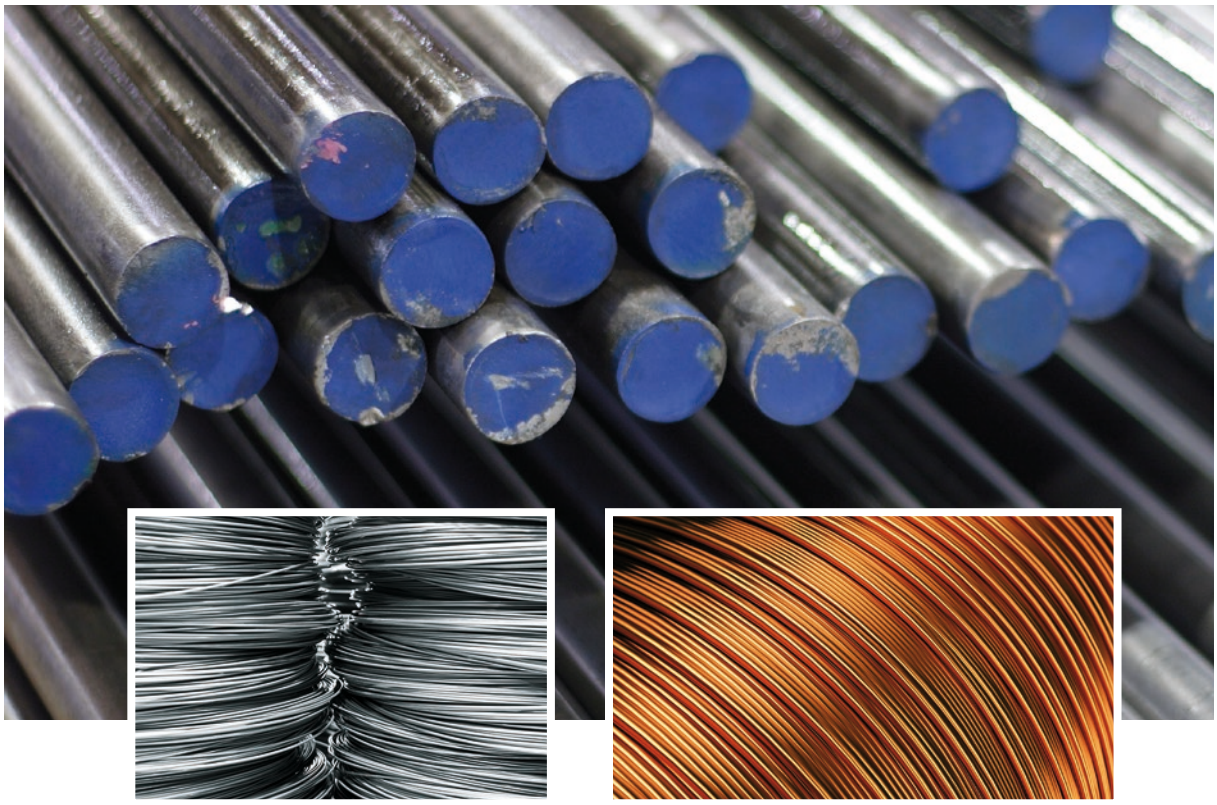
# The company

**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 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



**For reliable quality control and process monitoring**
Skyrocketing quality requirements in the manufacture of semi-finished products make it necessary to automate the monitoring of your production processes. This is why FOERSTER developed the DEFECTOMAT CI as a compact, entry-level instrument for eddy current testing. The testing equipment is specially designed for quality inspection and process monitoring throughout the entire production chain of long products. It allows you to examine the surface of semi-finished products such as tubes, bars and wires for spot and transverse defects. Austenitic, ferromagnetic and non-ferromagnetic metals can all be tested.

The eddy current method inspects your material non-destructively and without contact. A large selection of different sensors makes it possible to adapt the system exactly to your particular application. And parameters gathered during inspection help you to continuously optimize your processes.

**Two-channel testing for a wide range of applications**
Its compact dimensions make the DEFECTOMAT CI easy to integrate into your existing production line. Our two-channel inspection system can be used in tube welding lines, tube finishing lines, continuous wire lines, and casting and rolling lines, among others.

In **tube welding lines**, you can monitor the weld quality using the weld seam probe or the segment coil; with the optional absolute (Abs) channel, you can also detect slit tubes.

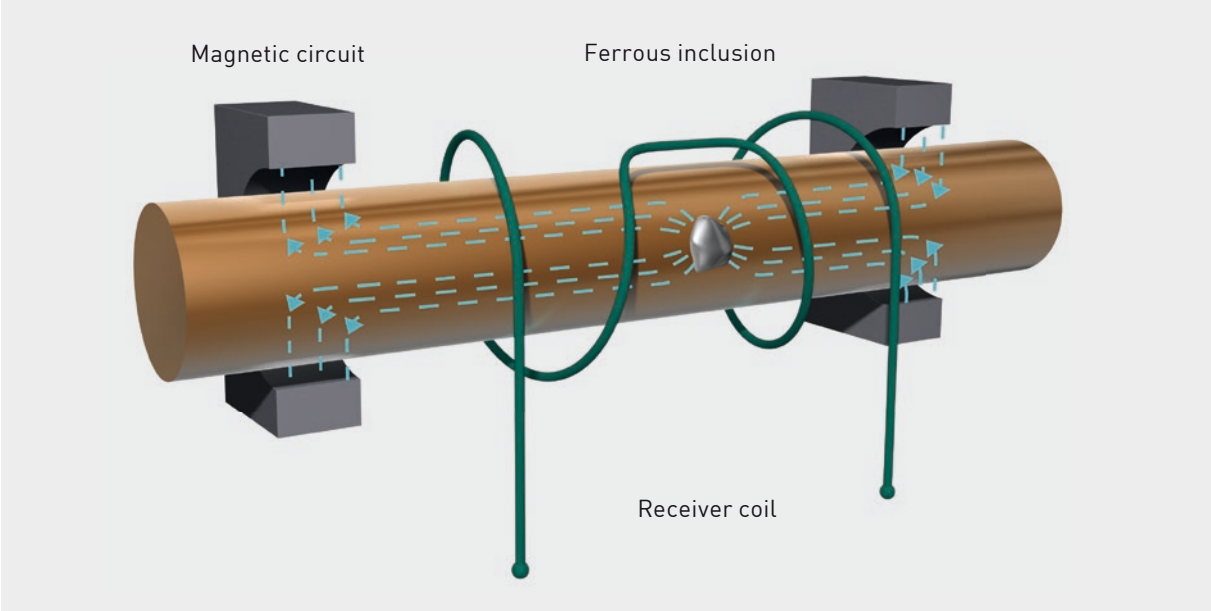
In **tube and bar finishing lines**, the differential channel (Diff) is used for surface defect inspection. Evaluation by sector enables phase-selective suppression of noise. A static absolute signal helps you check for potential material mix-ups, to guarantee the correct material properties.

In **continuous wire lines**, e.g. drawing lines or rewinders, you can generate up to six quality statements using sector-based evaluation of the defect signals against selectable limit values.

# DEFECTOMAT® CI


**The benefits**

- **Two-channel testing:** Optional 2-channel evaluation Diff/Abs, Diff/Diff, Diff/Ferromat, with 12 test frequencies ranging from 1–1000 kHz.
- **Many technical functions** including automatic filter tracking, location-true marking, and sector signal evaluation with 2 trigger thresholds.
- **Simple and intuitive operation:** Function keys and a turn-and-push button ensure maximum ease of use. Password-protected operating levels allow you to control access rights.
- **Visualization of the test sequence:** The status bar quickly displays all relevant information. Important test parameters are always visible.
- **Settings parameters are stored:** Take advantage of the unlimited settings archive and the stored sensor list with specific features.
- **Interfaces for full network integration:** For test-task management and to transfer the results, the instrument can be connected to higher-level computer systems for quality monitoring or production control (Level 2). In addition, you can quickly adjust the settings via remote control.
- **Comprehensive documentation:** Results data are transferred directly; the standard-format XML document structure ensures easy presentation of the documentation in Internet Explorer.




*Principle for the detection of ferrous inclusions*

**More convenience with DEFECTOMAT® CI**
The DEFECTOMAT CI is controlled directly on the unit using the built-in function keys and the intuitive turn-and-push button. This makes it fast and easy to set all relevant test parameters. You can also connect a keyboard, mouse and external monitor to the instrument. For transferring data, an Ethernet port makes it simple to connect to a higher-level process computer.

**Clear depiction of your production process**
All production information is displayed clearly on the built-in, high-resolution monitor. The status bar, for example, shows the current line speed along with line outputs for marking and sorting of test pieces. From this information, the operator can quickly extract the data relevant to the test at hand. Structured data from the test signals and test events are exported in real time and at line speed. The test signals can be displayed as |V|, Y or XY.

**Test reports for comprehensive 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. To ensure complete documentation, protocols can be designed individually and printed automatically.

**Detecting ferrous inclusions with DEFECTOMAT® CI**
We optionally equip the DEFECTOMAT CI with a FERROMAT channel for detection of ferrous inclusions. Especially in casting/rolling lines for producing copper wire, it's common to use a FERROMAT channel in parallel with eddy current testing for defect detection. Since a single FERROMAT signal generally leads to rejection, the limit values are set differently in the two channels. To detect ferrous inclusions, the eddy current coil is supplemented with permanent magnetization.

# Application-specific sensors and sensor systems

**High-quality sensors – made in Germany**
Each customer has a vastly different set of inspection tasks – that's why FOERSTER is constantly developing new sensor technologies to ensure that you always get the best possible results. We offer a wide range of sensors with different profiles and dimensions. They are the fundamental tool for exact detection of defects on semi-finished products like wire, bars, profiles or tubes. Firmly established and long in use, for decades our sensors have delivered reproducible test results for dependable quality and process control. Our expertise with sensors encompasses encircling coils, segment coils, demagnetization units and probes, among others. Thus, we can assemble end-to-end systems that achieve real customer objectives and that integrate perfectly into real-world production lines.

**Encircling coils**
With an encircling coil, you can check semi-finished products for surface cracks and hole-like defects. We offer a broad range of coil shapes suited to an array of sample cross-sections. For round material, fine gradations for diameters from 1 – 240 mm are available. On request, we can develop customer-specific coils for special geometries; this ensures the highest possible defect resolution.

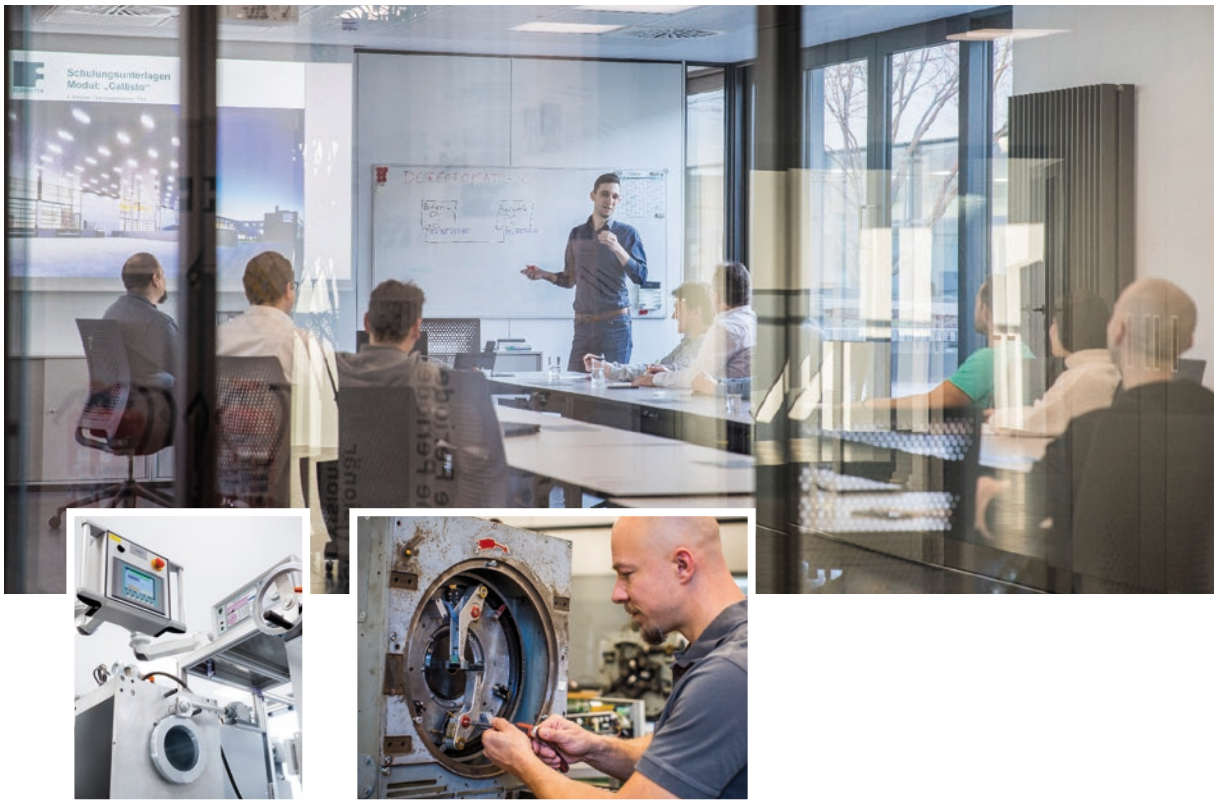

DEFECTOMINI

**Coils and sensor systems for small diameters**
For eddy current testing of fine wire, we've developed special encircling coils and sensor systems. Test coils are available in fine gradations for material diameters between 0.1 and 2 mm.

For wires and tubes with material diameters between 0.3 and 4 mm, the DEFECTOMINI sensor is ideal. Its permanent magnets allow you to inspect all kinds of metals, including ferritic materials.

**Segment coils and weld seam probes**
Shape-adapted segment coils for tube diameters of 10 – 180 mm are available for eddy current testing of weld seams. Alternatively, you can inspect longitudinally welded tubes using a simple weld seam probe and the corresponding holder.

# Application Laboratory – Training – Service




**Application Laboratory**
Our application specialists are always at the ready to provide our customers with comprehensive technical advice. Equipped with the latest test equipment, the Application Laboratory is perfectly suited for individualized testing of your application scenarios. Various tests are carried out on customer-provided test pieces. Depending on the test results, we find the optimal solution and the best parameters for your system. Due to their wide-ranging technical expertise, our application specialists can provide you end-to-end support in finding specific solutions – even on-site.

**Training**
Our courses concentrate on the practical handling of FOERSTER test electronics and sensor systems, but the ideal configuration of key parameters for your instrument is just as important for optimal alignment to the test line and task at hand. Plus, we also offer in-depth training courses for service and maintenance. The training content can be tailored to suit your individual needs and delivered on-site, directly at your test line.

**FOERSTER Service**
Our team of experienced and well-qualified service engineers ensures the highest standards in maintenance and service. And when problems occur outside normal working hours, FOERSTER has a 24-hour emergency hotline that can be reached 365 days a year. FOERSTER service specialists can even initiate systematic error analysis over the telephone. When software installation or configuration questions arise, remote access can help clear up problems immediately, so your instrument is quickly ready for use again.

**foerstergroup.de**

FOERSTER

## Worldwide sales and support offices

**Headquarters**

- Institut Dr. Foerster GmbH & Co. KG, Germany

**Subsidiaries**

- Magnetische Pruefanlagen GmbH, Germany
- FOERSTER Tecom, s.r.o., Czech Republic
- FOERSTER France SAS, France
- FOERSTER Italia S.r.l., Italy
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The FOERSTER Group is being represented by subsidiaries and representatives in over 60 countries – worldwide.

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