DEFECTOMAT® DI

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

proof.

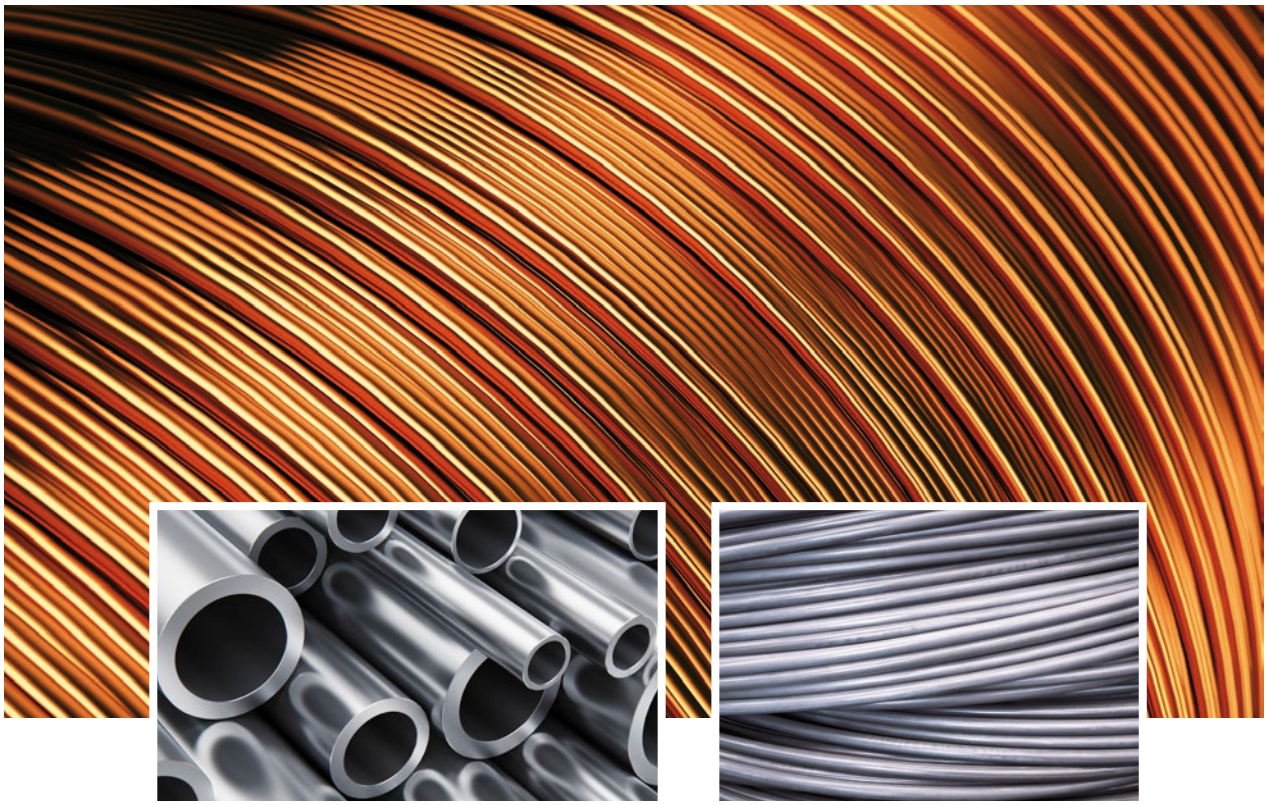
The Company

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 Test 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 defects 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® DI



Structured quality assurance made easy

Automated process monitoring to ensure product quality has become standard in the production of semi-finished products. The DEFECTOMAT DI from FOERSTER has been designed as a compact entry-level instrument for the eddy current testing of tubes, bars, wires and profiles. The testing instrument enables sensitive surface testing for defects, such as short and transverse flaws. Both austenitic, ferromagnetic and non-ferromagnetic metals can be tested with the two-channel DEFECTOMAT DI.

The DEFECTOMAT DI is equipped with comprehensive features, but quits an integrated operation unit. An external computer connected via Ethernet performs all operation, administration, and archiving tasks. The module's deceptively plain design hides a multitude of functions inside. An integration directly into the production process is easy to achieve thanks to the compact size of the system.

Testing principle for a wide range of applications

The DEFECTOMAT DI 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 defect testing. The phase-selective evaluation facilitates the suppression of interference signals. 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 defect signals over selectable limit values produces up to six quality statements.

In casting/rolling lines for producing rolled copper wire, the simultaneous use of an eddy-current channel to detect defects and a FERROMAT channel to detect ferrous inclusions is possible.

DEFECTOMAT® DI

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

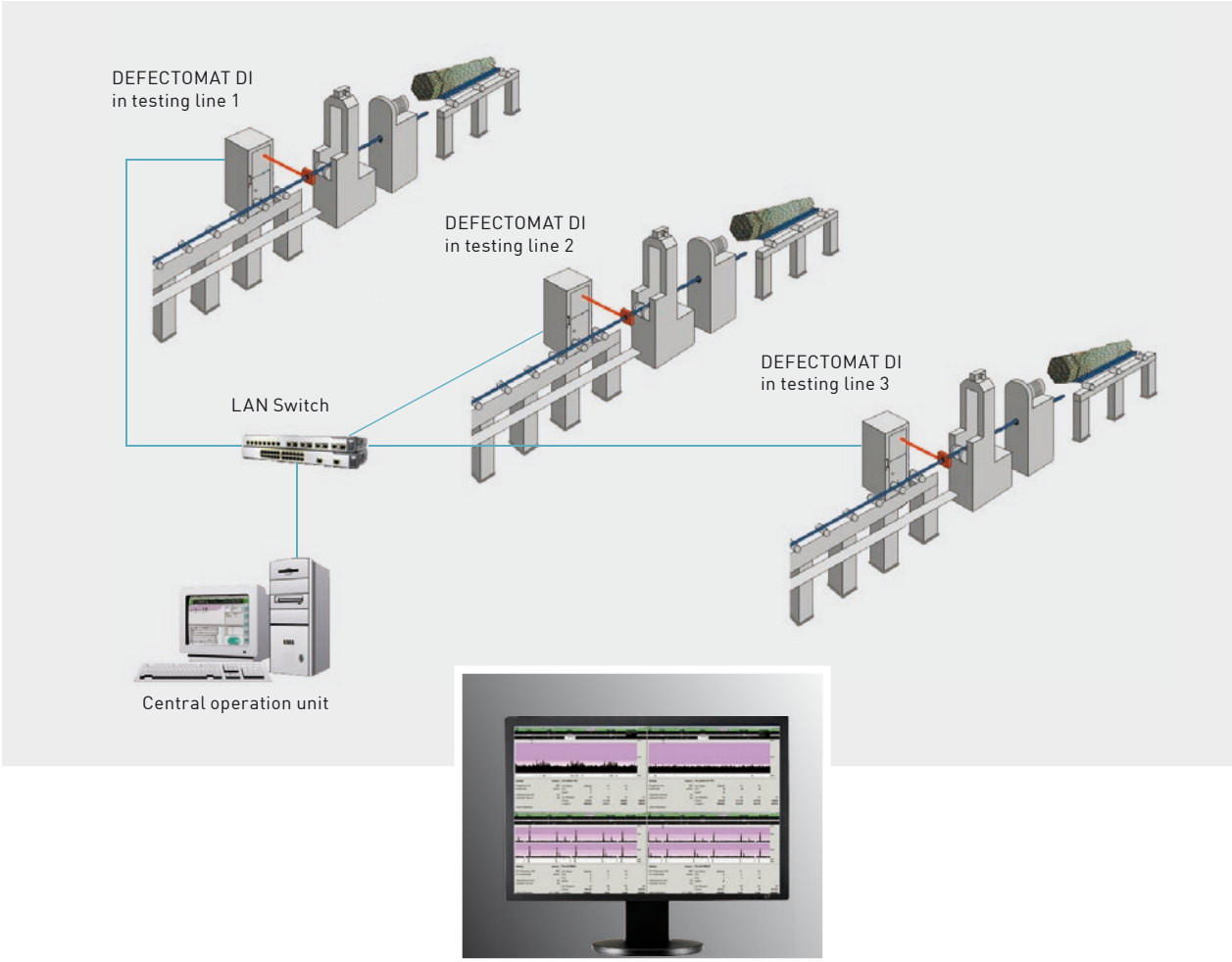
The field of application is diversified and varies from the 1-channel evaluation for many standard applications to the optional 2-channel evaluation, which allows e.g. the simultaneous use of the differential and absolute channel, 2-frequency applications and simultaneous signal evaluation in the eddy-current and FERROMAT channel.

DEFECTOMAT® DI
The DI series covers all functions necessary for the most common application fields. Operation and setting of the DEFECTOMAT DI, as well as the archiving of test results, is easily conducted at an external PC connected via Ethernet.

Advantages of DEFECTOMAT® DI
- 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
- Operation PC can be provided by customer
- Multiple DEFECTOMAT DI instruments can be controlled through the same PC

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

Multi-line support



The DEFECTOMAT DI integrates all necessary functions and interfaces for eddy-current testing, and permits the connection of maximum two test coils or probes. The compact dimensions of the DEFECTOMAT DI allow close integration to the testing line.

Separated test and operation unit

The DEFECTOMAT DI is characterized by the stringent separation of the test unit (electronics for eddy current testing and interface to the testing line) and the operation unit (electronics for signal display and storage of test results).

Data communication from the test unit to the central operation unit is done via an Ethernet interface. It is possible to have a distance of more than 100 m using copper cabling, and even more than 1000 m distance using fibre optic cable.

The separation of the test and operating unit allows for the multi-line support:

Central control of multiple testing lines

The operator may control several product lines with DEFECTOMAT DI from one central operation monitor, and has the complete quality inspection of production at a glance. Even multiple testing lines which are separated by space can be monitored from one central place.

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 defect detection on such semi-finished products 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 encircling 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 coils
Encircling 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.

DEFECTOMINI

Coils and sensor systems for small diameters
Special encircling 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.

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