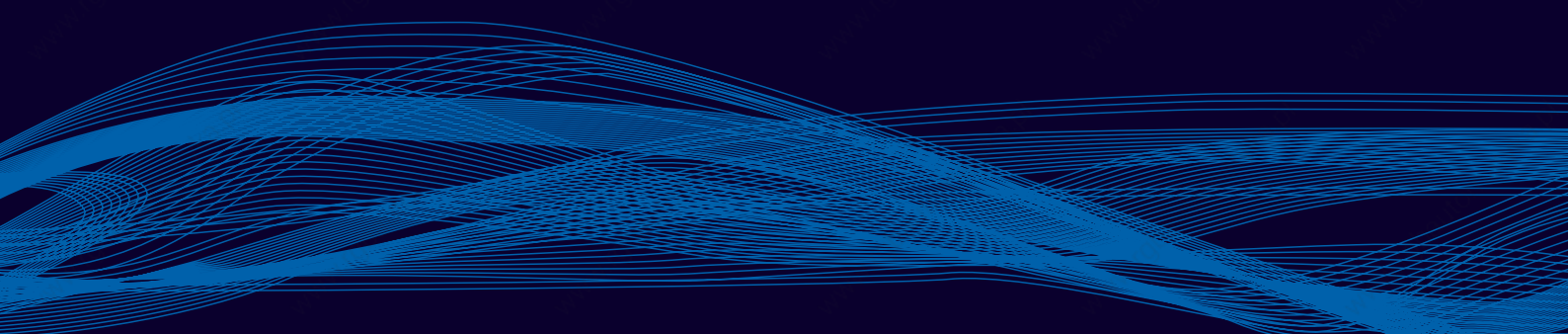


**Rohmann GmbH**



**Eddy Current Test Instruments and Systems  
Product Catalogue**

## The Company

ROHMANN GmbH stands for more than three decades of experience in non-destructive materials testing and more than two decades of specializing in eddy current technology with trendsetting instrument technology.

Offering new and unconventional solutions for a wide variety of applications, ROHMANN GmbH has made a name for itself with domestic and international customers since 1977. In close co-operation with the users and using modern electronic technology, we have developed eddy current systems and probes featuring advanced technology.

The continued development of instruments and probe technology and the experience regarding applications gained in co-operation with our customers ensures the top position of the company and at the same time guarantees maximum performance and testing reliability.

The quality management system of ROHMANN GmbH has been certified by the DQS in accordance with DIN EN ISO 9001:2000.

## Eddy Current Inspection

Our instruments utilize eddy currents to test materials for near-surface damage, defects and physical-technical characteristics. We use eddy currents to do so – but what does that mean?

Simply put, eddy current inspection is a contactless non-destructive inspection method for electrical conductive materials that uses the electric and magnetic properties as follows:

A probe first generates a magnetic field, more specifically a magnetic field that changes over time with the so-called “test frequency”. This magnetic field acts on the surface of the test specimen and generates ring-shaped electric currents, the so-called eddy currents in the layers of the test specimen that are closest to the surface. On the one hand, the extent of these eddy currents depends on the electrical and magnetic properties of the test specimen and on the other hand on defects such as separations of the material of the test specimen.

The eddy currents that are generated by the probe in turn generate magnetic fields that are noticeably weaker, which exit through the surface of the test specimen where they may be measured with suitable sensors. The measurements permit conclusions regarding the material properties and potential defects of the material.

Due to the interaction of various effects on several levels it goes without saying that a considerable degree of specialized knowledge and experience is required to manufacture optimum probes and apply them effectively. We are happy to make just that expertise available to our customers.

# Contents



Jürgen Rohmann in 1959

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# Portable Eddy Current Test Instruments

## ELOTEST M2 V3 –

### The smallest single-hand eddy current test instrument

The ELOTEST M2 V3 is a universal single-hand test instrument for surfaces, bore holes and hidden structures. Additionally, it measures the conductivity of non-ferritic materials and the thickness of non-conducting layers on all conducting materials. The ELOTEST M2 V3 is suitable for dual-frequency inspection featuring a signal mix to examine interference effects and covers the entire frequency range from 10Hz to 12MHz. It offers all filter functions (LP, HP, BP), to optimize the signal for static and dynamic inspections. The crisp LCD-display, featuring LED-background lighting, may be used even in direct sunlight and ensures an optimum display of the test signals. Integrated reference standards make on-site work easier and faster.

The instrument is operated via a clearly structured keypad with well-assigned functionalities. This way, even inexperienced operators are able to handle the instrument quickly and safely. Clear-text messages on the display further support the user-friendliness.



ELOTEST M2 V3 - small, light-weight and handy



ELOTEST M2 V3 - user-friendly with connection to a laptop



ELOTEST M2 V3 and spreadable rotating probes



ELOTEST M2 V3 in a handy tote

# Portable Eddy Current Test Instruments

## ELOTEST M3 in a desk-top housing –

**Light-weight and small in size –  
big in performance**

Anyone who knows the world's smallest universal eddy current test instrument, the ELOTEST M2 V3, is sure to welcome the newest member of this product line: The new ELOTEST M3 features the same performance data as the M2 V3, but comes with a much bigger display.

The new ELOTEST M3 is unbeatable anytime a high resolution is required, when difficult jobs are to be done or when both hands are required and the instrument has to be put down or when several inspectors have to look at the display at the same time.

Yet the typical performance data are quite impressive:

- Full frequency range from 10Hz to 12MHz
- All filter functions (low pass, high pass, band pass) (optimized special filters for rotor operation in ROTOTEST mode)
- Wide amplification range
- Dual-frequency operation; may be independently adjusted (1 probe)
- Pictograph-guided operation via 10 keys
- All commercially available probes may be connected
- Standard rotor-operation capability

The ELOTEST M3 is mainly used to manually inspect surfaces, bore holes and hidden structures and to measure conductivity and layer thickness.



ELOTEST M3



# Portable Eddy Current Test Instruments

## ELOTEST B1 –

The “classic” – It is still around!

The ELOTEST B1 is “the” compact, portable, battery-operated universal eddy current test instrument with a comprehensive range of applications. It has become a “standard” around the world and may be either used in a lab or on site in a mains-independent manner. It handles static and dynamic applications without compromise and is unsurpassed in performance, weight and size.

The ELOTEST B1 distinguishes itself with its wide frequency range, effective, sensitive analysis filters, high amplification and versatile probe adaptation. The analogue precision tube depicts the test signals in a crisp, undistorted manner and with high contrast. All functions are controlled by micro-processors. The test signals are available in an analogue and digital fashion.

The ELOTEST B1 may be integrated into mobile computer-based systems for quality control and assurance. The storage capacity for setting data and test signals may be expanded, almost without limits, by using memory boards. PC-software to transfer parameters and data for documentation and quality management purposes is also available. There is hardly any eddy current application that cannot be solved with this instrument.



ELOTEST B1 V4

## ROTOTEST –

The specialist for the inspection of bore holes

The instruments of the ROTOTEST-line were specially designed for the fast and reliable inspection of bore holes with rotating probes. Compared to the manual inspection of bore holes more than 80% of the time can be saved while increasing the test sensitivity at the same time. The instruments are specially designed to provide user-friendly operation for dynamic applications.

This product line was developed in the founding year of ROHMANN GmbH. Today the third generation of these instruments is manufactured. The instruments remain popular with the users, because they offer unsurpassed value for money.

The inspection of bore holes for rivets and fasteners in aircraft structures is the traditional area of application for ROTOTEST instruments. Other examples for applications are the fast and reliable detection of cracks on bore holes of aircraft engines, rotor discs and other safety-relevant parts that are subject to lots of stress as well as the fast manual inspection of surfaces for minute defects using rotating disc probes to cover larger areas.

The special ROTODISC-version is used to check the surface of steel sheets before they are welded into tubes and containers (as an alternative to magnetic particle or dye penetrant testing).



ROTOTEST B588

## ELOTEST B300 – For lab, training and on-site jobs

Based on the excellent eddy current properties of the ELOTEST B1 the ELOTEST B300 opens the door to new future-oriented dimensions. It offers up to 4 eddy current channels that may be assigned to up to 2 probes.

The use of the latest software and hardware components has resulted in a test instrument that may be optimally used with an external computer due to its network-capabilities. This capability and the option to connect the instrument directly to a digital projector makes the ELOTEST B300 an excellent tool for training.

With additional software (e. g. ScanAnalyzer), the exceptional eddy current properties of the ELOTEST B300 may be used with a wide variety of scanner systems to carry out, and traceably document, inspections with the highest resolution. For this purpose, the instrument features a universal scanner interface.

The ergonomically and sturdily designed housing not only offers a generously sized operating surface (display and keypad), but also maximum protection against blows and shock.

In addition to its basic suitability as universal instrument for lab and field, the ELOTEST B300 comes with a few more extraordinary features:

- **Eddy current C-scans**

A picture says more than a thousand words – thus this option offers an invaluable advantage to all users who require or would like to utilize this display mode.

- **Multi-frequency multi-channel inspections**

Based on the operator's choice, up to four independent eddy current channels may be used and assigned to up to two probes – including a triple mix-function. This way the direct internal inspection of heat exchanger tubes is possible; you only have to connect the right probe.

- **Video-option**

Display of video signals directly on the screen either in the full-screen mode or as "PIP" (picture in picture). This comes in particularly handy when working with an endoscope that is, for example equipped with an eddy current probe. Simply integrate a video card to use this function. The required software is already there.



ELOTEST B300 in use



ELOTEST B300 in a handy carrying case



# In-Line Eddy Current Test Instruments

## ELOTEST IS –

### The efficient system concept for the production line

Ensuring quality in the production line means quickly and reliably detecting parts with unacceptable tolerances, defects, corrosion and wear within a series and reliably removing them as required.

The ELOTEST IS is designed for use in on-site systems and records the status of structures and alloys and variations of conductivity, tensile strength and hardness by evaluating the electromagnetic properties and geometric deviations. The non-destructive inspection using eddy currents permits the detection of material damages such as cracks and other inhomogeneities on almost all conducting materials.

The ELOTEST IS was optimized for the automatic inspection and evaluation of continuous materials and the individual inspection of mass-produced parts and is therefore particularly well-suited for the production line.

The instrument is operated via a clearly structured keypad with a clear assignment of the functions. This way, even inexperienced users are able to handle the instrument quickly and safely. The user-friendliness is supported by clear-text messages on the display.

The instrument can store up to 64 applications (instrument settings) which may be called up by the operator or via the RS232-interface. Using the micro-processor control and the communication interfaces, the instrument may be easily integrated into production and inspection processes. Depending on the requirements up to 12 channels may be operated.

In the sort-mode the ELOTEST IS uses a special high-speed technology and is able to inspect up to 10 parts per second (!). Each part generates a dynamic signal whose maximum value is digitally stored and displayed on the screen as a dot. Various gates and counters (also featuring percentage values) are available to evaluate the test results and trigger sorting switches.



*ELOTEST IS in a box-housing*



*ELOTEST IS in a 19"-housing*



*ELOTEST IS with accessories*



## ELOTEST N300 –

### The autonomous test instrument with network control

The ELOTEST N300 is an autonomous eddy current test instrument that can be connected to every modern PC as part of a network. Based on the ELOTEST B300-technology it offers up to 2 test channels (N310 and N320).

The instrument is operated and displays its signals exclusively via the software of an external PC.

The WinClient-software that is included offers the operator the ergonomic user interface of the ELOTEST B300 on the PC-screen.

Alternatively the users are able to write their own software as the protocol of the network interface is disclosed.

Of course, the Scanalyzer software can be used as well to use the built-in universal scanner interface with various scanner systems.

The ELOTEST N300 is designed to be the replacement and successor of the proven PC4-eddy current PC-card and is therefore well suited for labs and research.



ELOTEST N300

## ELOTEST PL300 –

### The compact 19"-system instrument for the production line

The ELOTEST PL300 is another member of the ELOTEST B300-family. Its HD-version which comes with a vibration-absorbent housing is suitable for all kinds of stationary or mobile (e. g. rail-inspection trains), inspection systems that require the highest degree of reliability.

In contrast to the ELOTEST B300, the ELOTEST PL300 permits the use of up to 4 probes which are firmly assigned to a particular channel. Alternatively, the instrument may be used with up to 2 probes in a multi-frequency mode.

Using external software (e. g. Scanalyzer) yields optimum performance data. Here the instrument is completely operated by an external PC via its network interface. This way manifold customised user interfaces may be realised. The ELOTEST PL300 may also be directly operated by connecting a standard monitor and a PC-keyboard.

Of course the ELOTEST PL300 also offers a universal scanner interface to connect all kinds of scanners. The system is completed by a system-capable opto-decoupled 24V I/O-interface.



ELOTEST PL300

# In-Line Eddy Current Test Instruments

## ELOTEST PL300 B –

**B300-technology in a rugged industrial housing for the production line**

The ELOTEST PL300B was developed to have a rugged autonomous instrument with all functions and setting capabilities – including keyboard and screen directly at the inspection site. The ELOTEST B300-technology hides behind a rugged dust and waterproof shell. Just like the ELOTEST PL300, the ELOTEST PL300B is able to operate either up to 4 probes, with each assigned to a particular channel or up to 2 probes in a multi-frequency mode (B300-mode) with mix. Up to 4 independent channels are available.

In addition to the direct user interface in the instrument, the built-in network interface can be used to connect the instrument to a superset data-acquisition system (e. g. to read out documented results via an FTP-server).

Just like the ELOTEST PL300, this instrument offers various system interfaces in an opto-decoupled manner.

## ScanAlyzer –

**The software tool for documentation and evaluation**

ScanAlyzer is a universal software for inspection, documentation and analysis that is also suitable to quickly and reliably generate C-scans. The serial-scan function is especially suitable to monitor maintenance and production. The ScanAlyzer-system combines a high-performance PC-software with modern eddy current technology such as digitisation, storage, analysis and automatic evaluation.

ScanAlyzer offers numerous tools for an imaging display of eddy current signals. The ScanAlyzer system permits an analysis of the signal and the status as well as the documentation of the inspection of safety-relevant components during production and maintenance. It has been approved by leading engine manufacturers, chemical companies and powerplant operators.



ELOTEST PL300B



ScanAlyzer-System in use



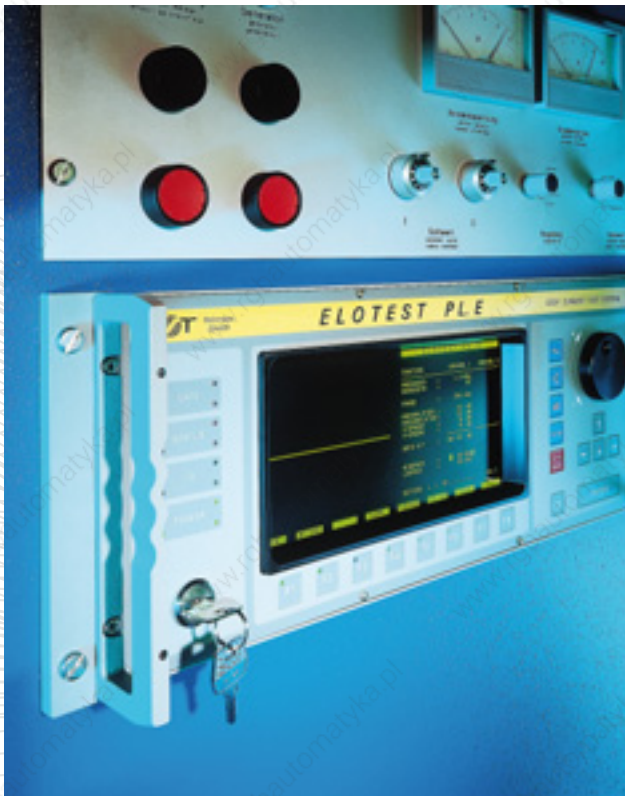
## ELOTEST PL.E –

### Proven in the production line

The ELOTEST PL.E is a compact universal instrument for fast test procedures during the manufacture of semi-finished products. It offers the same performance as the ELOTEST PL.1, but is limited to two channels and works autonomously or in conjunction with a host computer, PC or SPC.

The ELOTEST PL.E is mainly used to detect cracks on, or sort, mass-produced parts, inspect continuous materials such as wires, rods and tubes and to do lab work in all areas of eddy current technology.

With its direct functions, digital turning knob for “quasi-analogue” setting, clear-text guided menu and its option to store parameter settings, the ELOTEST PL.E is easy and reliable to operate.



ELOTEST PL.E

## ELOTEST PL.1 –

### The powerful test system for even the highest requirements

The ELOTEST PL.1 is an open system of test instruments for sophisticated industrial applications that may be expanded to up to 64 channels or functions. There is hardly any eddy current application that cannot be solved with this system. Its modular design ensures the greatest flexibility when it comes to the adaptation to the various applications.

Each channel features its own independent microprocessor. A main processor handles the control of the in-circuit functions, communication with the peripheral devices and the connection to the host computer if needed. For quick access 50 instrument settings may be stored internally.

The system is set and operated via an operator panel with membrane keypad that includes the large display for test signals and parameter settings. It may be operated via a remote control from the host computer, PC or a VT100 compatible terminal.



ELOTEST PL.1 with yoke

# In-Line Eddy Current Test Instruments

## ELOTEST PL500 –

**The ultimate eddy current test instrument for use during production**

Faster, higher, more powerful – the new family of eddy current test instruments with the latest signal-processing technology, very high test speed, very high sensitivity and very high resolution and dynamics has got what it takes to be an overall winner!

The ELOTEST PL500 is the first eddy current test instrument of a new family of instruments “specially designed for inline-testing”. It is in a 19” 4HU industrial housing and as a standard can be expanded to up to 16 channels; with additional racks it can be expanded to 256 fully synchronized channels/modules. In addition to the channel modules, modules for distance compensation, multiplex and assorted I/Os are available.

The main feature of the new family of instruments is the completely digital signal processing chain on the LF-side, with an extremely large bandwidth of 100kHz, and ultra-fast

multiplexing capability featuring a multiplexing rate of 50kHz (probe-to-probe) for up to 64 probes. As an option, a direct digital demodulation is available for frequencies below 100kHz.

Here technology reaches its limits: The ELOTEST PL500 is the fastest instrument in its class on the market. The full dynamics of 96dB (digital) across the entire frequency range from 10Hz to 12.5MHz speak for themselves – extreme dynamics and extremely low noise guarantee crisp eddy current signals with high significance. The display is something special, too: The display of an analogue tube is simulated in a digital manner – simply the best analogue display, if it wasn't digital and thus a low-key combination of traditionally proven and modern technology!

The ELOTEST PL500 supports the easy integration in customer systems by supporting current bus-based I/O-concepts (e. g. Profi-bus).



ELOTEST PL500 with circle gate



# Eddy Current Inspection Systems

## EloScan –

### The flexible robot-based inspection system

The EloScan system was primarily designed for the eddy current inspection of rotating symmetrical components of aircraft engines. Because of its universal design, it can also be used to scan complex geometric structures that require precise probe guidance with high repeating accuracy.

The EloScan system meets all, and exceeds many, technical requirements of the GEAE-specification for the automated inspection of engine components. In addition, the specifications of other engine manufacturers are fulfilled. Special requirements may be realised quickly and to the customer's individual demand.

The EloScan system consists of a multi-axis industrial robot in conjunction with a ROHMANN eddy current test instrument and a special version of the ScanAnalyzer software. The instrument and the software fulfil all requirements of the inspection guidelines "GE SPM 70-32-10" and "CFMI SPM 70-38-11". Additionally, the system may be equipped with a ROHMANN

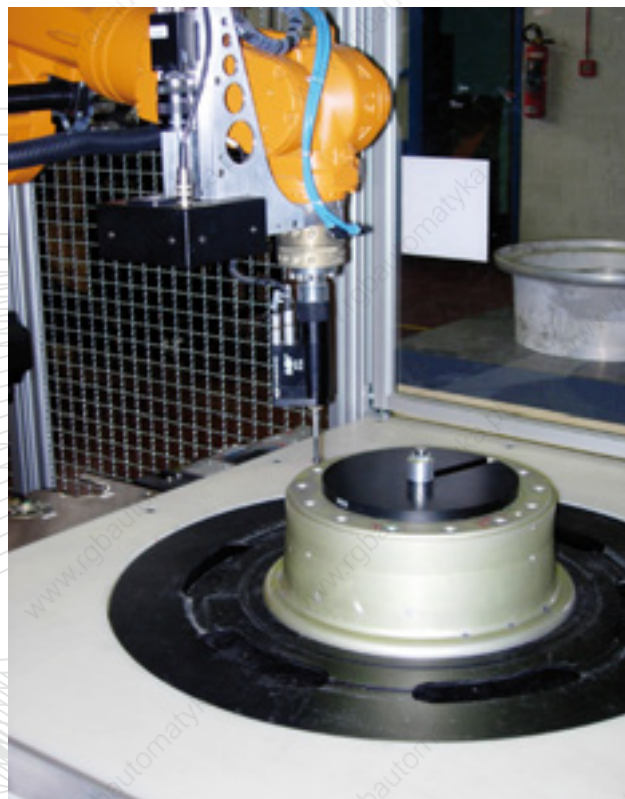
rotor scanner to inspect components in accordance with inspection guideline "GE SPM 70-32-07". The following main components are integrated into the EloScan system and thus offer a user-friendly system:

- Reliable multi-axis industrial robot for exact probe guidance
- Positioning turntable with flat mounting plate (Ø 800mm) for a steady rotating speed and the precise positioning of the components that are to be inspected
- Teach-in with colour display
- ScanAnalyzer software to acquire, display and analyze the eddy current signals
- IP54-cabinets including an industrial PC

For the inspection of (aircraft) wheels there is the WheelTester, a customized version to check for geometry, defects along the surface and the back wall and heat damages by measuring the conductivity.



EloScan



EloScan -WheelTester

# Eddy Current Inspection Systems

## ROHMANN–Rail Trolleys– “Draisines”

### Taking eddy currents to the rails

Railroad tracks are also subject to ageing and wear. Therefore railroad networks around the world that are subject to high stress are inspected – usually using ultrasound, with special rail inspection trains.

In recent years it has become evident that the degree of damage along the head of rails can be quantified particularly well with eddy currents. The damage consists of cracks along the running edge, so-called headchecks, and local cracks along the running surface (squats). In addition to detecting critical depths of deterioration, the system may also be used to optimize the grinding process.

Particularly for the manual inspection, ROHMANN developed rail trolleys that offer some outstanding features: they are ultra light-weight and can therefore be operated by just one person and may be removed from the track within seconds. At the same time the quality of the eddy current inspection leaves nothing to be desired: special optimized probes

measure the depth of the damage precisely and reliably even in difficult areas such as switches and in any type of weather as tests in the Canadian winter have proven.

To cover any conceivable applications the following versions are available:

**Rail Trolley “light”** featuring the ELOTEST M2 V3 test system. One probe may be connected; the position along the head of the rail is adjustable.

**Rail Trolley 300** “4-channel” with ELOTEST D300 test system and outdoor laptop for control and analysis. Four probes may be connected; their position along the head of the rail is adjustable.



*Rail Trolley D300 in working situation*



*Rail Trolley D300 in Canada*



*Outdoor – laptop with Rail Trolley D300*



# Probes

## Probes –

### The “eyes” of our test systems

The most important prerequisite for successful eddy current inspections is the use of optimum probes. That is why we put a special emphasis on the development and manufacture of probes and probe systems.

For many applications there are national and international standards as well as standards by manufacturers and users that specify the minimum requirements for a test system.

Almost always the solution to difficult applications boils down to the development of special probes. Due to our experience, we are able to quickly and flexibly react to such challenges. Having developed hundreds of probes over many years we have the know-how and are able to fall back on existing or similar solutions for the benefit of our customers.



*Customized probes*




*Accessories for rotor inspection*



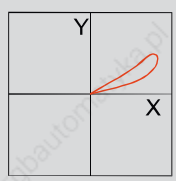
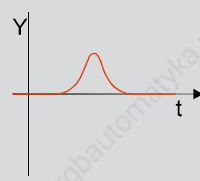
*A small selection of our hand-held probes*

# Typical Probe Types –

**Absolute probe**

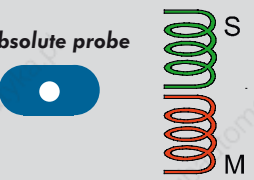


parametric (absolute)

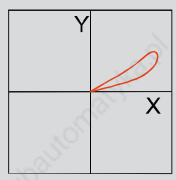
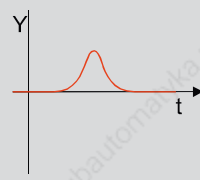



resonance principle;  
highly sensitive to small defects

**Absolute probe**

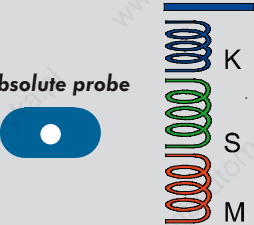


transformer absolute

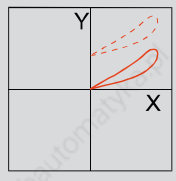
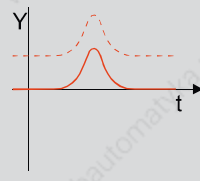



material sorting;  
any defect orientation

**Absolute probe**




transformer absolute with compensation

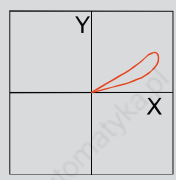
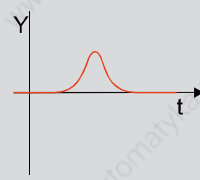



material sorting;  
any defect orientation;  
highly dynamic

**Absolute probe**

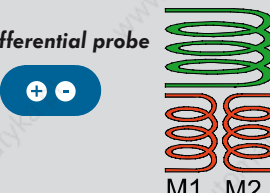


transformer (reflexive) absolute

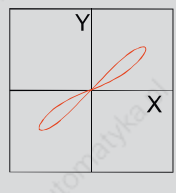
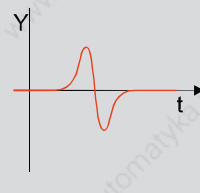



low-lying defects  
(up to several mm below the surface)

**Differential probe**

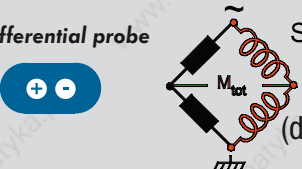


transformer differential

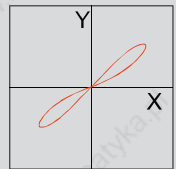
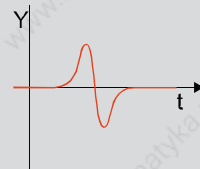



high sensitivity;  
for dynamic inspections with filter;  
horizontal defects

**Differential probe**



bridge (differential)

inner tube inspection;  
detection of cracks in ferritic weld seams

S = sending coil, M = measuring coil, K = compensation coil

The probes in our data sheets are marked with these pictographs:



**Absolute probe**



**Absolute probe, shielded**



**Differential probe**



**Differential probe, shielded**



**Multi-differential probe**



# Applications

## Examples of applications



Defects along the base and flank of ribbed tubes



Longitudinal and circumferential defects of fine wires



Overheating when grinding and cracks on camshafts



Pores, cracks and welding defects on multi fuel valves



Minute cracks on roll barrels



Dynamic bore hole inspection starting at Ø 0.8mm



Manipulator-capable miniature probes



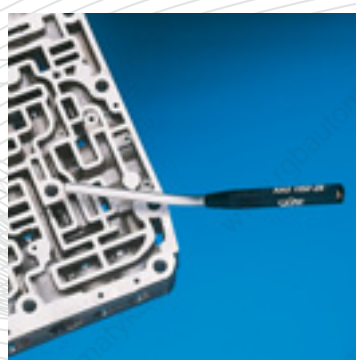
Inspection of layer thickness and for pores on aluminium tubes



Crack detection along the base of a tooth, contactless



Inspection for grinding defects when grinding and cracks on rotating parts



Crack detection on complex structures



Hidden cracks on safety-relevant parts

# Reference Standards

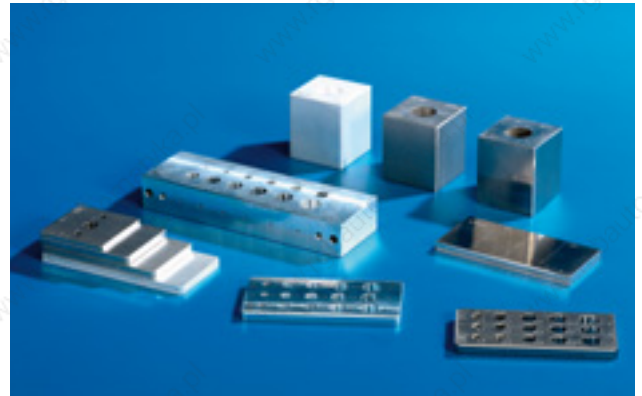
## Reference Standards –

Calibration, alignment, function checks – this is where reference standards come in. Since the eddy current-based inspection is an indirect measuring procedure, the reference standards establish the reference to the physical and the testing parameters that are the basis of the inspection.

Conductivity, layer thickness, hardness, depth of hardness, tensile strength etc. could be physical-technical parameters.

To check materials for defects such as cracks one usually uses reference standards that have been processed in a manner that the modifications come as close to the defects that are to be detected as possible. Flaws are for example imitated with notches, corrosion with removal by milling and hidden defects with bore holes that originate from the back of the part.

ROHMANN offers a wide variety of reference standards ranging from a simple one with a notch to complex structures. Upon request the standards come with a certificate of calibration.



Reference standards



## Hand-Held Rotors and Rotating Probes –

The inspection of flat and round materials using rotating probes offers special advantages: It permits dynamic inspections for small defects with high local resolution and sensitivity regardless of the feed that may be very low – in extreme cases even “at a standstill”. Here the filter technology of the dynamic inspection takes effect and most interferences can be suppressed.

Disc probes are used to inspect large areas. Hand-held rotors are used for small bore holes whilst internal rotors are used for bigger bore holes and the inside of tubes. The outside of tubes is inspected with external rotors. The internal and external rotors are available for diameters ranging from 0.8mm to 200mm.

Absolute, differential or multi-differential probes are used depending on the specific application.



Hand-held rotors

## Inspection of built-in Tubes –

Built-in tubes are usually inspected with internal coils. Bridge coils with differential connections are used for diameters from 5mm to 50mm.

Whilst these coils detect mainly punctiform and circumferential defects, the dynamic inspection with an internal rotor also permits the detection of longitudinal defects or the inspection of off-centre wear on the tube.



Damaged tubes



Internal rotor

## Coils –

Based on the European terminology standard, they should be called "feed-through probe", but the term coil has become so familiar that we will stick to it as well.

Circumferential standard coils with differential and absolute systems are offered for the inspection of wires, rods and tubes ranging in diameter from 2mm to 180mm.

If required, compact magnetising yokes that are convection cooled and do not require separate cooling are available in various graduations. Sorting coils with diameters of up to 200mm are also part of our standard product range.



Coils to detect defects



Coils to check material properties



## Rotors –

Rotors and coils are the most common probe systems for the inspection of semi-finished and finished products.

ROHMANN specialises in the development and manufacture of these systems for a wide range of dimensions and versions.

Nowadays patented sensor systems in standard rotors even inspect hexagonal and octagonal semi-finished products with a width across flats of up to 30mm. Test rotors with 2 or 4 channels, with and without distance compensation, with fixed or adjustable sensors cover test parts with diameters ranging from 2mm to 200mm at rotating speeds of up to 18,000rpm.

Rugged heavy-duty rotors featuring disc probes with diameters of up to 300mm are used to inspect sheet metal, billets, rails and profiles for surface defects in a fast and efficient manner. Using high-resolution internal rotors, even smallest surface defects are detected in tubes and deep bore holes with diameters ranging from 14mm to 300mm.

### Available sizes:

- **EC20** for diameters up to 20mm
- **EC30** for diameters up to 30mm
- **EC60** for diameters up to 60mm
- **EC100** for diameters up to 100mm
- **EC130** for diameters up to 130mm
- **EC200** for diameters up to 200mm

### Note:

*These data refer to the free passage. Due to all tolerances the permissible diameter of the material is usually 10% less.*



HDR-rotors with disc probes



EC100-rotor with test instrument



EC100-rotor

## Efficient Inspection of Semi-Finished Products such as Wires, Rods and Tubes



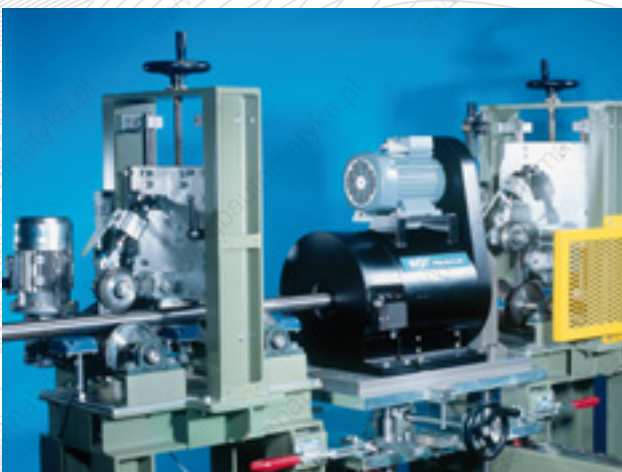
Inspection of wire resp. rods

**Contactless, fast and reproducible: Those are the advantages of eddy current inspection in comparison to all other methods of non-destructive testing. Be it one or two channels with circumferential coils in a magnetising yoke or segment coils with permanent magnetisation in a confined space.**



Multi-channel inspection with coils

**Ten channels with an independent array of coils to individually evaluate ten production lines.**



EC100-rotor in a mechanical system to inspect rods and tubes

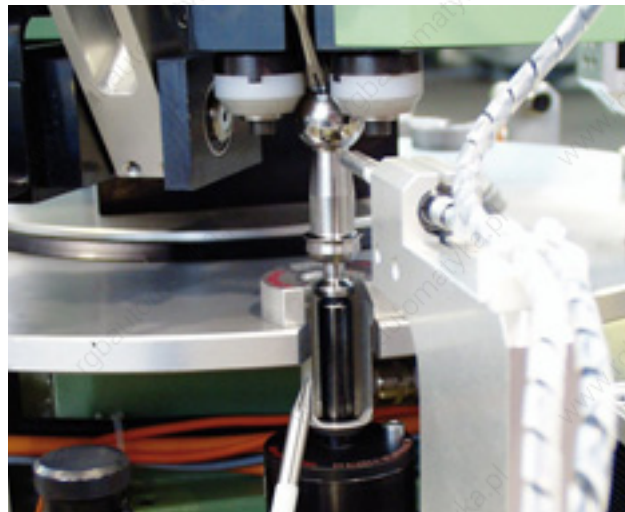
**Surface defects greater than 50  $\mu\text{m}$  can be detected with our precision rotors for dimensions from 2mm to 200mm on a lifting table with V-roller driver that may also be integrated into existing lines.**



# Efficient Inspection of Components

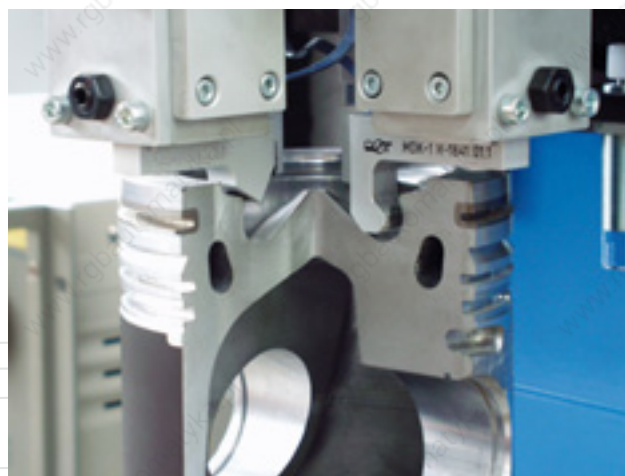
## As inspection of mass-produced and individual parts

**Detection of surface cracks on ball pivots as final control of the finished part. Replacing the magnetic particle inspection cracks with a length of more than 3mm and a depth of more than 0.1mm are detected.**



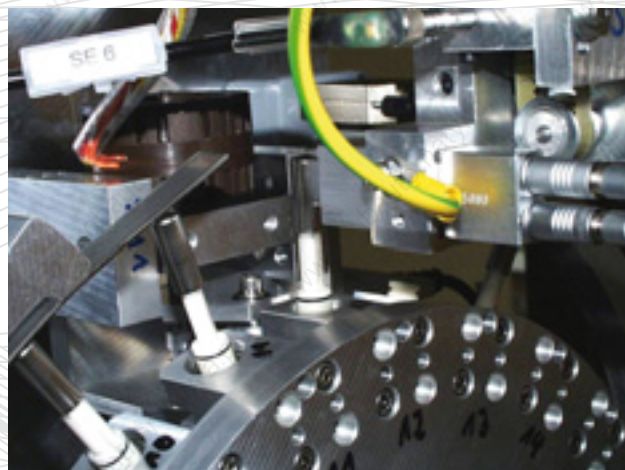
System for the fully automated detection of cracks on ball pivots

**Detection of defects along the edge of pistons for cars and trucks with up to 12 individual sensors. Depending on the concept of the system on the rotating piston or using a multi-channel rotor head specified minimum defects with a diameter of greater than 0.3mm may be reliably detected.**

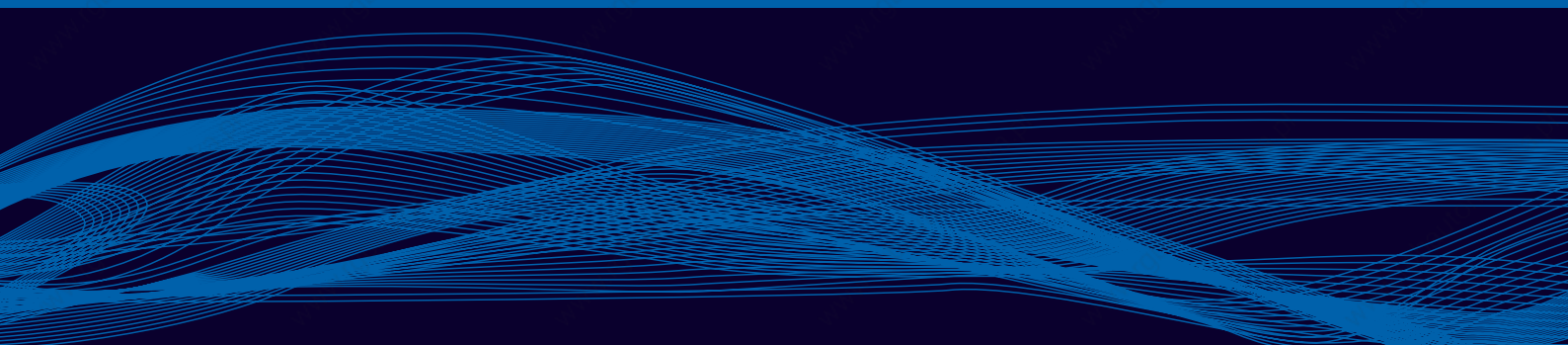


System for the automated inspection of pistons

**Highest precision second-by-second. Up to 4 deep-drawn bushings are checked on their outer surface for typical drawing defects each second.**



System for the inspection of deep-drawn bushings



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