Rohmann GmbH

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Eddy Current Test Instruments and Systems

Product Overview

Company information

Concept, design and production: P. Rohmann, September 2013

Photos: Frank Geldhäuser/ Foto Filling, Steffen Lang

Contents

TABLE OF CONTENTS

Rohmann GmbH is certified in accordance with DIN EN ISO 9001:2000.

Rohmann GmbH

Rohmann GmbH is a medium-size company which has specialised in non-destructive materials testing using eddy currents. Our ELOTEST trademark stands for a pioneering system and innovative testing concepts. The product range includes probes, coils, rotors and universal hand-held equipment, as well as custom-built test systems.
National and international customers from an extremely wide range of industries (e.g. the aerospace, automotive, rail and steel industries) value our unconventional solutions. In close co-operation with our clients, and appropriately to their needs, we have been developing eddy current test systems and probes in leading-edge technology for many years.
We produce user-friendly systems that deliver accurate and reliable test results to the user and in which test signals are depicted precisely.

By continuous development of our instruments and probe technology and the experience gained through close co-operation with our customers and their applications, we guarantee the company's technology and pursue the visions of the company founder, Jürgen Rohmann. He founded Rohmann GmbH in 1977. It was his goal to produce systems delivering optimum performance and inspection reliability; continuously keeping pace with technical developments and meeting our customers' demand for constantly increasing product quality – supporting them in the quality control of their products. The management of Rohmann GmbH has now been passed to the second generation – Petra and Dirk Rohmann.

Jürgen Rohmann in 1959

We have our highly qualified and committed workforce to thank for the leading position we have reached today in almost all eddy current applications.

2009 – Move to new company premises

Your expert contact

Jürgen Rohmann
Company Founder

Ines Rohmann
Purchasing

Dirk Rohmann
CEO

Petra Rohmann
CFO

Alexander v. Hornhardt
Sales Manager Western Europe

Jürgen Lauer
Sales Manager Asia, Spain, Turkey

Thomas Schwabe
Sales Manager Western Germany

Annett Wieduwilt
Sales Assistant

Gerald Schneibel
Special Projects and Systems Manager

Gregor Grzonkowski
Project Engineer

Wolfgang Richter
Electronics Production Manager, Service Systems

Werner Völkl
Production Manager, Design

Michael Gans
Mechanical Production Manager

Alexander Maltry
Sales and Application Laboratory

Christian Ebbinghaus
Application Laboratory

Equipment history

ELOTEST B1 – the „Classic“

When it first came on the market, the ELOTEST B1 was the compact, portable, mains-independent and battery operated universal eddy current test instrument.
It is the standard worldwide for static and dynamic testing tasks without compromise. Launched in 1985, it was the first microprocessor-controlled, portable eddy current test instrument in the world.

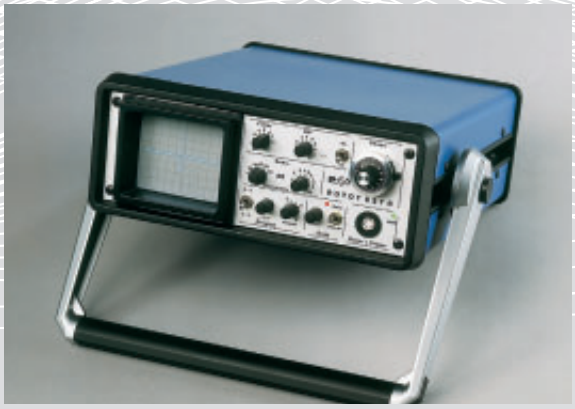
The Classic stands for: a broad frequency range, effective, finely-graduated analysis filters, high signal amplification and versatile probe adaptation. The test signals are available in analogue or digital form: sharp, distortion-free and with a high contrast.

ROTOTEST – the specialist for hole inspection

This product line is currently being manufactured in its third generation: their value for money is unbeatable.
The ROTOTEST line was designed especially for fast and safe hole inspections with rotating probes. The instruments are precisely designed for user-friendly application in dynamic testing tasks.

ROTOTEST instruments test highly-stressed safety components in aircraft construction: Crack detection inside rivet holes and mounting holes on aircraft engines and centrifugal rotors. The rotating disc probes are able to detect minute defects on surfaces.

ELOTEST B1 V4



ROTOTEST B588

Rohmann GmbH

ELOTEST M2 V3

ELOTEST M2 V3 – small and light

The ELOTEST M2 V3 is a universal eddy current test instrument for surfaces, holes and concealed structures. The M2 V3 is the lightest device on the market and distinguishes itself with real one-handed operation. It measures the conductivity of non-ferromagnetic materials, as well as the thickness of non-conducting layers on all conducting materials. Dual frequency testing with signal mixing to suppress interference can be used across the complete test frequency range from 10 Hz up to 12 MHz. It has all filter functions (LP [low pass], HP [high pass] and BP [bandpass]) for signal optimisation for static and dynamic testing. The crisp LCD display with LED back-lighting guarantees ideal test signal depiction. Integrated calibration standards simplify and speed up your work on site.

Ease-of-use is a priority for all our test instruments: a clearly structured keypad with well laid-out function assignment and clear text messages for a safe test procedure – operable with just one hand!

ELOTEST M3

ELOTEST M3 in a desk housing –

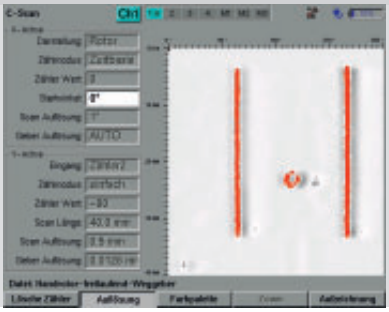
Small and light – great performance

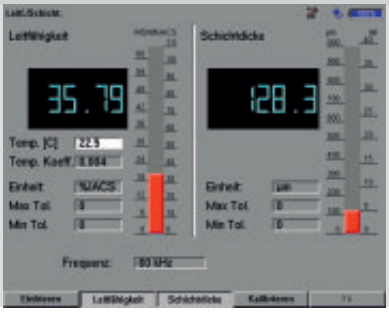
The ELOTEST M3 has the same performance specification as the smallest full eddy current test instrument in the world – the ELOTEST M2 V3 – only with a significantly larger display.
Advantages:

- High resolution screen, daylight-compatible
- Ideal for difficult tasks
- Complete frequency range from 10 Hz to 12 MHz
- All filter functions – low pass, high pass, bandpass (optimised special filter for rotor mode)
- Large amplification range
- 2-frequency operation, independently variable (1 probe)
- Icon-guided operation via 10 keys (double compensation)
- All standard probes can be connected
- Set up as standard for rotor mode

Our customers use the ELOTEST M3 for manually testing surfaces, holes and concealed structures, as well as for measuring conductivity and layer thicknesses.

ELOTEST B300





ELOTEST B300 –

For laboratories, training and portable applications

The ELOTEST B300, based on the outstanding eddy current characteristics of the ELOTEST B1, keeps options open for the future:

- Expandable to a maximum of 4 eddy current test channels and up to 2 probes
- Ideal networking capability, VGA output e.g. for projectors
- Suitable as universal laboratory and field operating device
- USB port for storing and logging data
- Fitted with a scanner interface
- Battery operation up to approx. 6 hours

With our „ScanAlyzer" data capture, analysis and documentation software, you can use the extraordinary eddy current characteristics of the ELOTEST B300 with a wide variety of scanner systems to carry out high resolution tests and document these comprehensibly.

Equipment history

ELOTEST PL.E – proven in the production line

The ELOTEST PL.E is a compact universal device for rapid testing in the manufacture of semi-finished products. With 2 test channels, it works independently or in conjunction with host computers, PC or PLC. Its main areas of use are crack detection or verification inspections on mass-produced parts, cycle testing of wires, bars and tubes, as well as laboratory investigations in all eddy current testing areas.

ELOTEST IS – the efficient system concept for production

The ELOTEST IS is optimised for automatic testing and evaluation of continuous materials and mass-produced parts. It detects material damage on almost all electrically conductive materials.
Analysis of the electromagnetic characteristics and geometrical deviations show structural and alloy states, as well as differences in conductivity, strength and hardness.
Quality in the production line means – quickly and safely detecting all out-of-tolerance parts, damage, corrosion and wear; and reliably sorting them out as necessary.

ELOTEST PL.E

ELOTEST IS Box with accessories

ELOTEST IS3

ELOTEST IS3 –

Single channel eddy current test instrument for automated testing tasks

The ELOTEST IS3 in-line eddy current test instrument – for integration in automated testing machines. The single channel test instrument, designed with protection class IP54, can be integrated directly into the production process, for example for automatic screw testing machines. It can be integrated into existing systems with minimal expenditure.
With a frequency range from 10 Hz to 12 MHz, a universal signal filter and I/O interface, this test instrument is an efficient alternative for fast crack detection and sorting tasks.

ELOTEST IS500 Box

ELOTEST IS500 –

For crack detection and/or multi-frequency material testing directly in the production line

The ELOTEST IS500 is characterised by its dynamic of 96 dB (digital) over a frequency range of 10 Hz to 12 MHz and, moreover, its fully digital signal processing chain on the low frequency side (after demodulation) with 10 kHz bandwidth and with fast multiplexing capability of 32 kHz multiplex rate (probe to probe). Up to 8 probes per channel can be connected via an external multiplexer. A maximum of 2 test channels can be used for crack detection and/or structural testing.

The sharpness and brilliance of the display are compelling. This is achieved digitally: the display of an analogue tube display with adjustable fade-out time is simulated, providing an accurate portrayal of the test results.

ELOTEST IS500 19"

ELOTEST IS500 19" –

Digital eddy current testing for the metal processing industry

This equipment series has the same specification as the ELOTEST IS500 box, but is supplied as a 19" version for integration in existing cabinets.

Main features:

- For crack detection and/or structural testing
- Distance compensation
- Multiplex mode
- Sorting channel module with „Bubble Gate"
- Structural testing and sorting check with „Multilot"
- Retroactive teaching with „RetroTeach"
- FastSort Option
- Mix Function

ELOTEST PL500

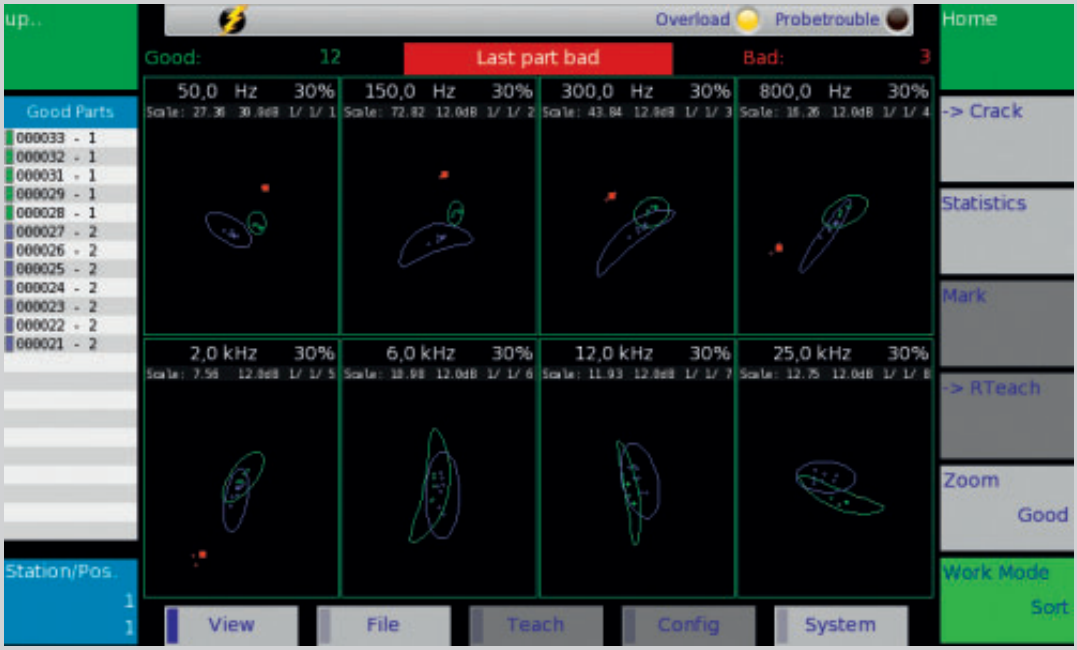
ELOTEST PL500 –

The eddy current test system for use in the production process

The ELOTEST PL500 is the fastest device in its class on the market. It is the first eddy current testing device from the new series, „Specially designed for in-line testing“ with:

- 19“ industrial housing with 4 U
- Extendible by up to 16 channels as standard
- In addition to test channel modules, distance compensation and multiplex modules are available, as well as various I/O modules
- Dynamic of 96 dB (digital) over a frequency range of 10 Hz to 12 MHz
- The latest digital signal-processing technology on the low frequency side with 100 kHz bandwidth
- Fast multiplexing capability of 32 kHz (probe to probe) up to a maximum of 32 probes/ channel
- Very high test speed, as well as very high sensitivity and low noise
- Precise resolution
- Simple integration in client systems through support for current bus-based I/O concepts (e.g. Profibus)

Q-Module for ELOTEST IS500 and PL500 –
Multi-frequency structural testing and sorting check



Q-Module –

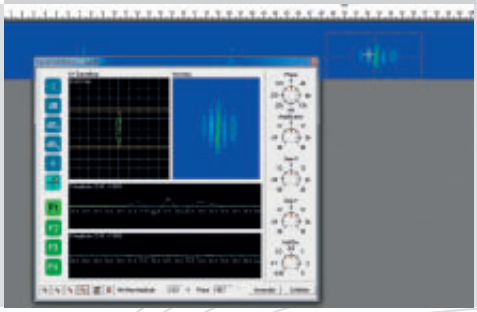
Modern multi-frequency testing

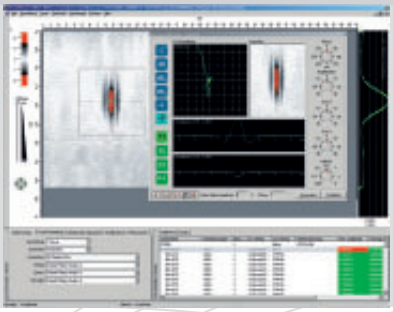
The Q-module secures and simplifies the multi-frequency sorting check. A „fingerprint" of the learned approved parts is created using up to 8 test frequencies. A comparison shows up deviations in the material, heat treatment or other electromagnetically detectable workpiece properties immediately.

We have developed the Q-sorting channel module for automatic, self-learning structural testing and sorting checks with up to 8 frequencies.

- 8 time-division-multiplexed test frequencies from 10 Hz - 150 kHz
- Digital full wave demodulation for maximum precision and stability
- Test point calculation in 1.5 wave trains per frequency
- Self-learning „BubbleGate" evaluation thresholds
- With external multiplexer for various test positions controllable sequentially
- Guided learning of approved parts
- Sorting of up to 8 lots („MultiLot")
- Retroactive teaching of lots („RetroTeach")
- Integrated interface and programmable control logic for sorting gates and systems

EloScan





EloScan –

The flexible robot testing system

The EloScan system, with its precise probe guidance, is designed for eddy current testing of rotationally symmetric aero engine components and for complex geometries.
Our test systems meet and surpass many technical test criteria for the automated testing of aero engine components from a wide range of aero engine components manufacturers. The multiple-axis industrial robot works with a Rohmann eddy current device and a special version of the ScanAlyzer software in accordance with various test instructions.
The following main components are integrated in the EloScan system and offer you a user-friendly complete system:

- Precise probe guidance and positioning of the components under test
- Positioning turntable with three-jaw chuck for flexible clamping of components and adapters
- „Teach-in" terminal with colour screen
- ScanAlyzer software: Eddy current signal recording, depiction and analysis
- Optional: CAD-CAM programming for complex tests
- Tool changer for automated processing of a variety of test tasks

Draisine WPG D340

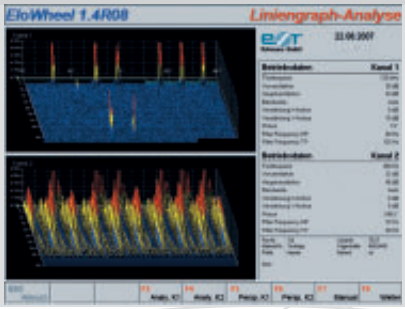
Draisine WPG 340 –

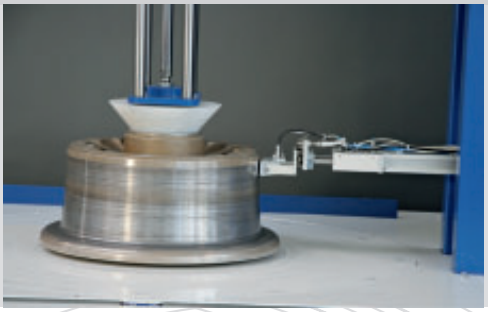
Eddy current technology applied to railway tracks

The Rohmann Draisine was developed specifically for „headchecks" – to detect and analyse cracks on the rail surface. Thanks to ultra-light carbon-fibre construction, the system can be removed quickly from the rail by just one person. Four special probes slide across the surface of the rail, testing an area of 24 mm. They can be adjusted in 20 different positions. The patented magnetic guidance system keeps the entire system safely on the rail, even in banked curves, without any mechanical clamping at all. This guidance system has also made it possible to inspect rails in sets of points without interruption for the first time. The specially developed EloRail software is simple to operate and can be adjusted for different testing tasks. The test can be followed directly on the optional outdoor laptop and special events such as welds or insulation impacts can be marked by pressing a key.

The Draisine WPG 340 eddy current test system has been the official testing equipment of the DB Netz AG (German Railways) since March 2011.

EloWheel 1000





EloWheel 1000 –

Wheel rim test system

With the EloWheel 1000, you can inspect aircraft wheel rims with a diameter of up to 1000 mm and a maximum weight of 250 kg. The associated EloWheel software visualises the eddy current signals so that you can reliably evaluate the test results. Thanks to the user-friendliness of the test equipment, it is possible to compare historic and current data as well as carrying out individual tests or series of tests flexibly and fast.
The system meets the technical and operational test criteria for fault resolution and throughput:

- Fast testing speed at up to 120 rpm for small wheels
- Exact linear guidance, with high quality axial motor control allows
- Vibration-free probe guidance
- Dual testing of the surface and the inside area with a dual test probe possible
- Optional: Semi-automatic hole inspection for individual bolt holes

Probes

Probes –

are the „eyes“ of our test systems

The most important condition for a successful eddy current test is the use of ideal probes. This is why we take particular care with the development and production of probes and probe systems, taking into account national and international standards, as well as manufacturer and user regulations.

With our many years of development work and a range of hundreds of probes, we have the expertise to design individual probes for complex test tasks.

Standard and special probes

Minirotor rotating probe with flexible shaft

Minirotor rotating probe, standard

Minirotor rotating probe for holes larger than Ø 0.8 mm

Minirotor rotating probe with flexible shaft and ball head

KDS 2-2, difference probe in metal housing, high-resolution and shielded

KAS 31-H-1575, absolute probe, geometrically adapted

PLA 33-11, absolute probe, e.g. for material verification testing

Manipulator-compatible probe, adapted for inspecting complex geometry

Probe guide for manually inspecting crankshafts

PKA-5 H-1668, transmission probe, for material verification testing

LD-15 H-1837.06.1, dual difference probe for inspections on the rail foot

KA-33 H-1644, absolute probe for cam inspection

ARK 31-2, standard probe for crack detection on multi-layer aluminium structures

KD-118 H-1869, differential probe with guide for crack detection

LD-15 H-1837.04.3, differential probe for inspections on the rail foot

ULAS-13 H-1469 encircling sorting coil, small size 45 x 45 mm

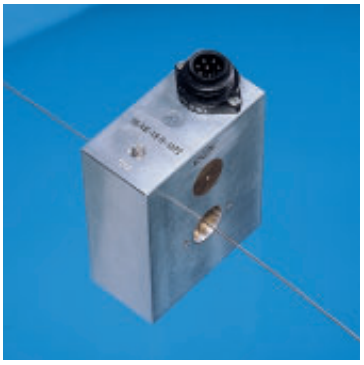
PKA-9 H-1092, standard probe with high penetration depth for aluminium

You can find more information in our probe catalogue.

Miniature sensor, absolute, ready for installation in guide

Applications

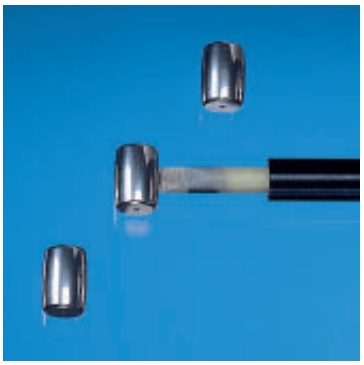
Root and flank defects on tubes with many fins



Longitudinal and transverse defects on fine wires

Grinding burns and cracks on camshafts

Pinholes, cracks and welding defects on multi-fuel valves



Micro-cracks on rollers

Dynamic hole inspection from Ø 0.8 mm

Manipulator-compatible miniature probes

Layer thickness and pinhole inspection for aluminium tubes aluminium tubes

Crack detection on tooth root, contactless

Inspection of grinding burns and cracks on rotating components

Crack detection on complex structures

Hidden cracks on safety-relevant parts

Rotors + probes

Hand-held rotors and rotating probes -

absolute probes, differential and multi-differential probes

Dynamic testing for minute defects with high local resolution and great sensitivity, carried out almost independently of the feed speed. At the same time, the highly developed filtering technology in our test systems is employed to the full and most interfering effects can be suppressed.

We have the appropriate system for all investigations of plane surfaces, small and large holes, pipe interiors and exteriors, - ranging from 0.8 mm to 200 mm.

Reference standards

Reference standards -

From the simple version with groove to complex geometries – also with calibration certificate

Calibration, adjustment, functional checking – this kind of work requires reference standards. As the eddy current method is an indirect testing process, reference standards with artificially produced failure points are needed to reproduce the appropriate comparison signals. We normally use prepared reference standards to test materials for damage. Defects of every kind are visible. For example, we simulate cracks with grooves, corrosion damage with milled out sections, etc. Our systems also detect hidden damage via holes from the rear.

Coils

Encircling coils –

For testing wires, bars and tubes

Comprehensive encircling coils are fitted with differential and absolute systems.
They are used to test wires, bars and tubes with diameters from 2 - 180 mm.
For this purpose, we offer you compact magnetising coils in different gradings, which are convection-cooled without forced cooling.

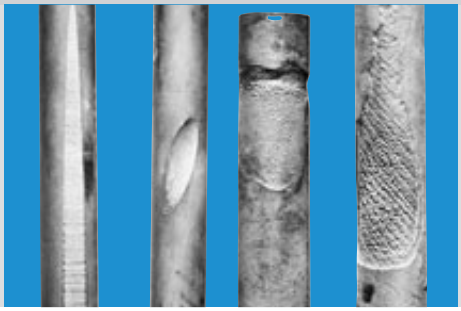
Sorting and segment coils –

up to 200 mm in diameter are also included in our standard range.

Customised coils –

can be requested at any time.

Coils/internal rotors



IHR-rotors

Available standard sizes:

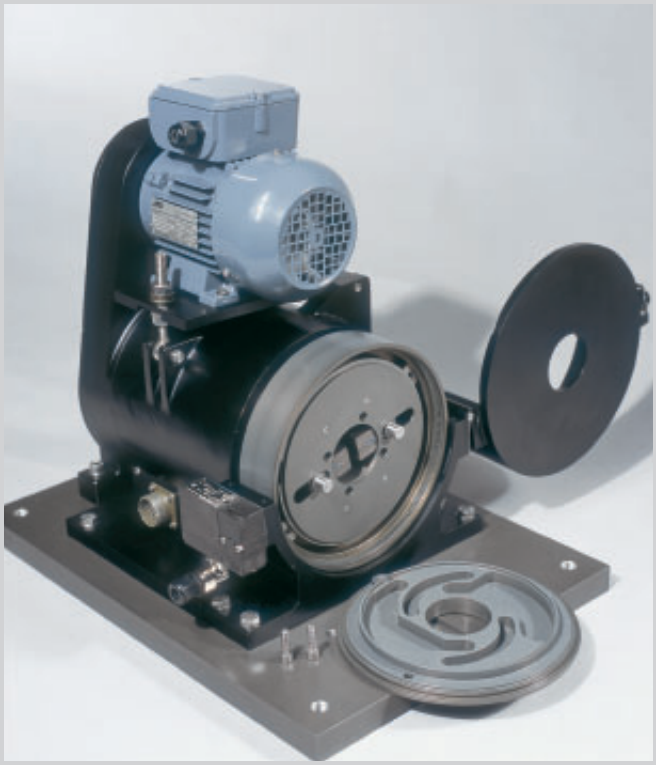
RotorTyp	internal ø min	internal ø max
IHR16	17,5 mm	25,0 mm
IHR18	23,0 mm	30,0 mm
IHR25	30,0 mm	50,0 mm
IHR40/2-2	ab: 40,0 mm	
IHR60/2-2	ab: 60,0 mm	

Tube interior inspection –

For simple inspection of built-in tubes

With our internal coils, you can check tubes with diameters from 5 to 50 mm – using bridge coils in a differential circuit. Whereas point and circumferential failure points are visible with this method, dynamic tube testing with an interior rotor also enables detection of longitudinal damage, as well as checking for eccentric wear on the tube.

Rotors



Available sizes:

- **EC15** for a maximum diameter of **15 mm**
- **EC20** for a maximum diameter of **20 mm**
- **EC30** for a maximum diameter of **30 mm**
- **EC60** for a maximum diameter of **60 mm**
- **EC100** for a maximum diameter of **100 mm**
- **EC130** for a maximum diameter of **130 mm**

Caution:
These figures refer to the free clearance.
The permissible material diameter is generally 10% smaller due to all the tolerances involved.

Rotors for –

a large measurement range in a wide variety of designs

Rotors and encircling coils are the most common probe systems for inspecting semi-finished products and finished parts.
In standard rotors, our patented probe systems even inspect hexagonal and octagonal semi-finished products up to a width across flats of approx. 30 mm.
Test part dimension ranges from 20 to 130 mm at speeds of up to 18,000 revolutions per minute are possible – using test rotors in 2- and 4-channel versions, with and without distance compensation, with fixed or variable probes.
Rohmann's customers use robust heavy-duty rotors with disc probes up to 300 mm in diameter to test for surface damage to sheet metal, billets, rails and sections – quickly and cost-effectively. Using high-resolution internal rotors, even the smallest surface defects are detected in tubes and deep holes from 14 mm to 300 mm diameter.

EC15 compact rotor

EC 15 compact rotor –

The high performance rotor in a high-strength anodised aluminium housing

The EC 15 compact rotor is a compact, high performance rotor for contactless in-line testing of circular materials, such as wires, bars and tubes in a range of dimensions from 1.5 to 15 mm.

The compact construction of the rotor means it can easily be built into test lanes or transport lines. It is only 139 mm long and 70 mm wide and has an average run-through height of 35 mm. Detection of longitudinal and transverse defects with longitudinal components upwards of 20 µ defect depth is possible with the appropriate surface and structural quality.

The test track width is defined via the task using appropriate probe systems.

A 24V motor provides the drive. With a speed of 3,000 rpm, the contamination-protected (labyrinth seal) rotor, mounted in precision bearings, operates efficiently with contactless, zero-maintenance test signal transmitters.

BoltScan

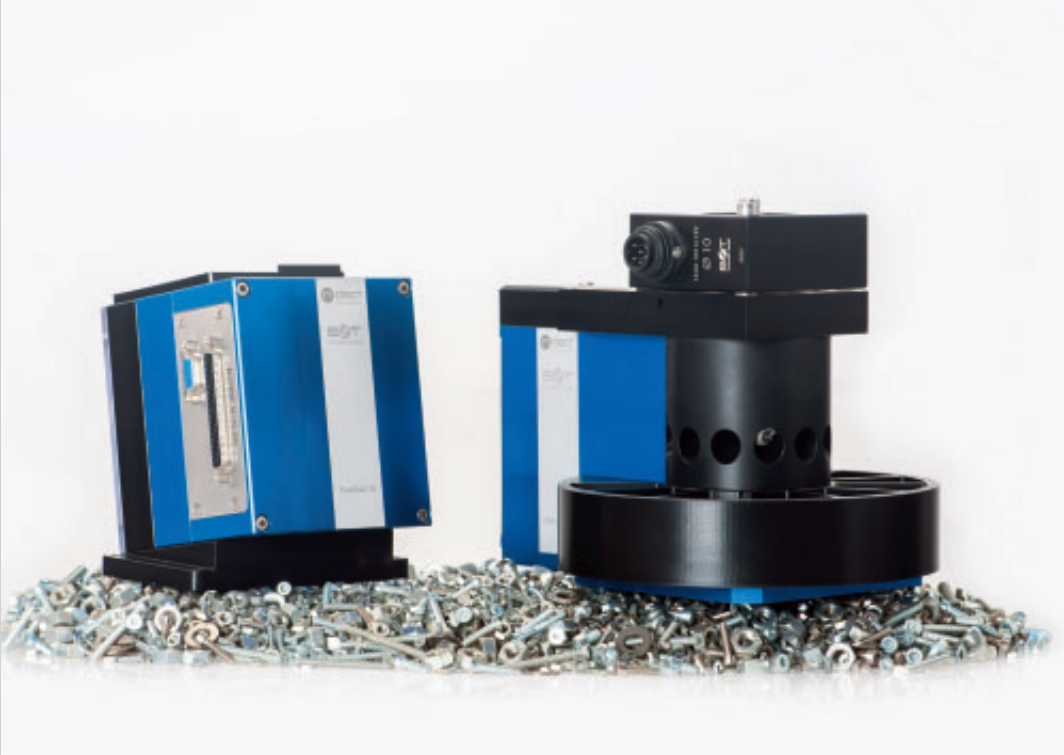
BoltScan –

Universal bolt tester

BoltScan is a semi-automatic bolt testing device for detecting defects in a thread, running circumferentially and longitudinally, as well as in the transition region from the bolt head to the shaft.

Screws and bolts with head diameters from 5 to 20 mm and thread lengths of up to 100 mm are inspected. The basic unit is fitted with an adjustable linear unit with dual guide and probe mounts for thread testing and/or an individual guide with an adjustable probe arm for lateral radius testing in the transition region from shaft to head.

Sorting Gates

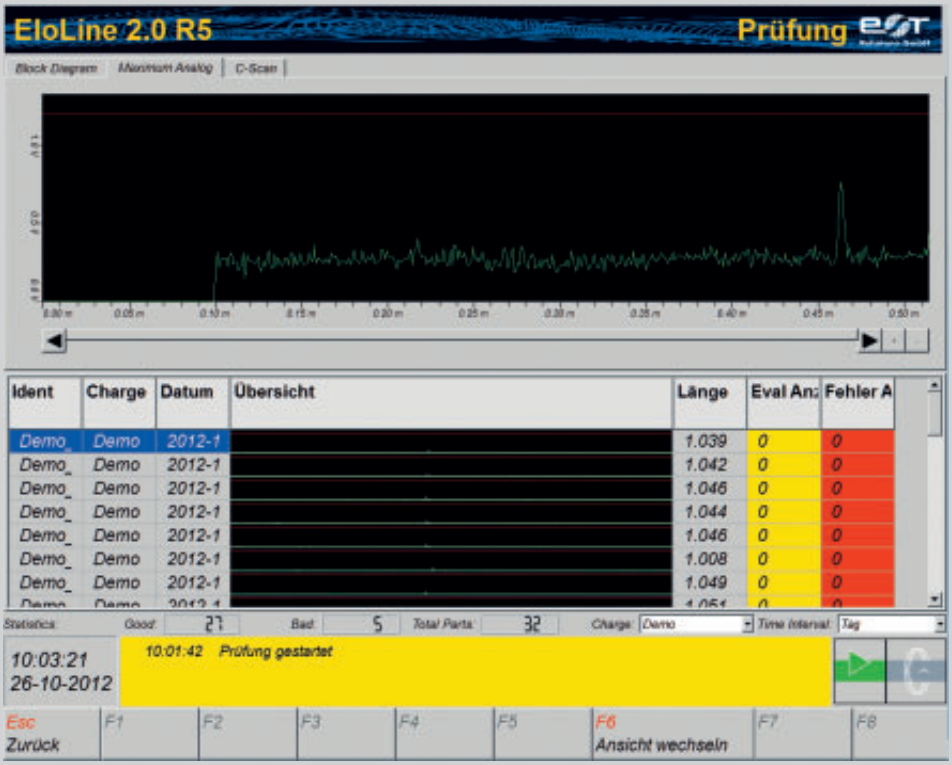


NovoSort and TwinSort –

Sorting gates

The NovoSort and TwinSort sorting gates are designed for fast manual testing or for constant operation on a production line.
They are controlled and powered from the connected test instrument (e.g. ELOTEST PL500, IS500). All mechanical positions (gates, stoppers) are also monitored by proximity switches. A flange supports the sorting coil. All wear parts are easily accessible and exchangeable.

EloLine



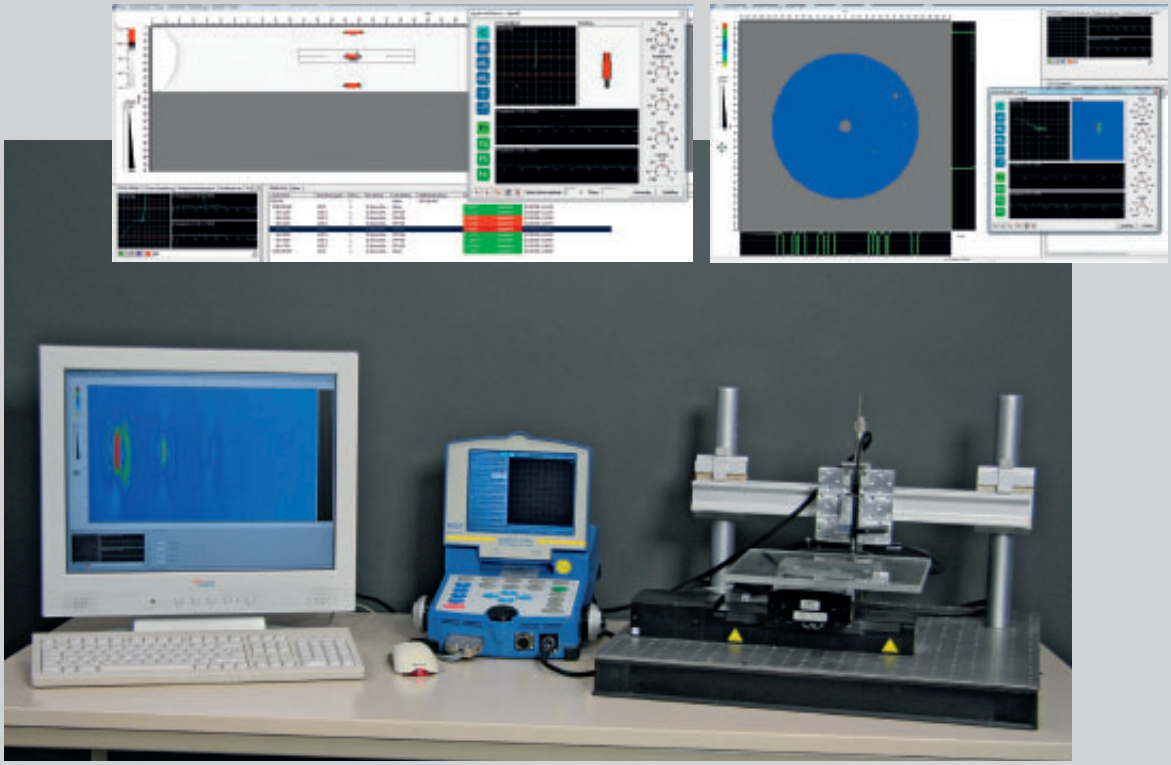
EloLine –

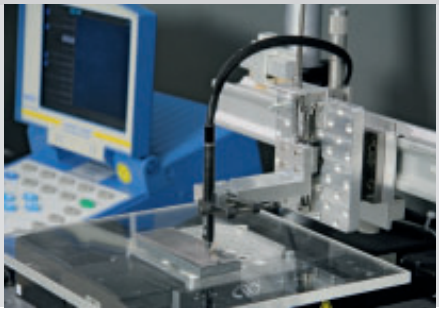
Software for documentation of test results on long products

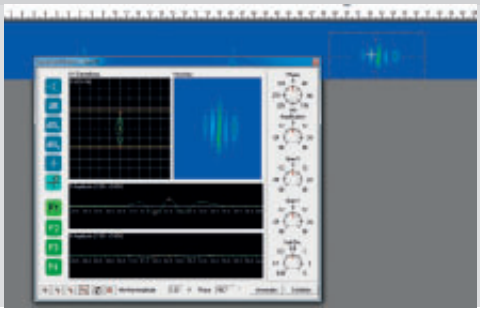
EloLine is a standard software for visualising and documenting test results for eddy current testing of long products. For our customers, the software works with simple, encircling coil systems all the way up to complex multi-channel rotor or multiplex applications:

- Processing and analysis of a maximum of 8 test channels possible
- Documentation of the test results proves the defects found have been marked accurately
- Compatible with the ELOTEST PL500 equipment platform and the latest operating systems
- Various forms of visualisation representation

ScanAlyzer







ScanAlyzer –

The software tool for documentation and analysis

ScanAlyzer is a universally applicable testing, documentation and analysis software for fast and safe creation of C scans. Leading powertrain manufacturers, chemical companies, automotive suppliers and power station operators work with this software. The system combines powerful PC software with modern eddy current testing systems and in this way offers precise signal and condition analyses.

The serial scan function enables this software to be used for the maintenance and production monitoring of safety-relevant components.

It can also be combined with conventional image processing for fully-automated testing.

Test systems

Efficient semi-finished product testing

on wires, bars and tubes

Inspecting wires / bars using encircling coils

Inspecting wires / bars using encircling coils –

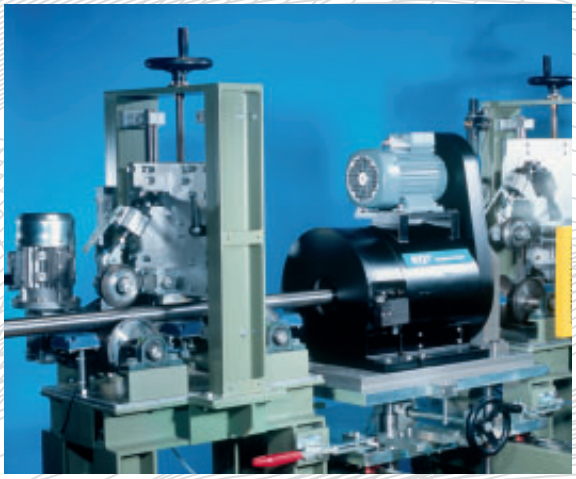
Contactless, fast and reproducible. These are the advantages of eddy current testing compared with all other non-destructive test processes. Whether single or twin channel with encircling coils in the magnetising coil, or with segment coils with permanent magnetisation – in the most confined spaces.

Equipment:
- ***ELOTEST PL500, 4-channel***
- ***M170 magnetising coil***

Multi-channel inspection with coils

Multi-channel tube testing with coils –

Ten-channel, with independent coil array for individual evaluation on ten production lines.



EC100 rotor in test rig for testing bars and tubes

EC100 rotor in test rig for testing bars and tubes –

Surface damage from 50 µm upwards can be demonstrated using our precision rotors for dimensions ranging from 2 mm to 130 mm. Lifting and sliding table with V-roller driver, also for integration in existing lines.

Equipment:
- ***ELOTEST PL500, 4-channel with distance compensation***

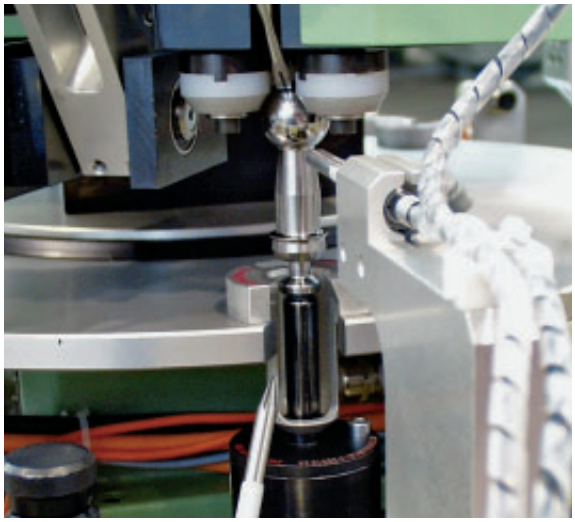
Efficient component testing

for mass inspection and single part inspection

System for fully automated crack detection on ball studs –

Surface crack detection on ball studs as a final inspection of the finished machined component. In this case, as a substitute for magnetic powder detection, cracks from 3 mm in length and 0.1 mm in depth are detected.

Equipment:
- ***ELOTEST PL500, 3-channel with 1 distance compensation***

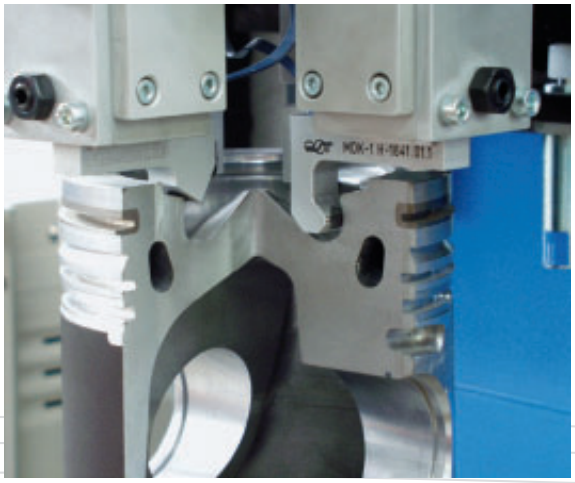


Fully-automatic crack detection on ball studs

System for automated inspection of pistons –

Defect inspection on the bowl rim of automotive and truck pistons with up to 12 individual probes per test head. Depending on the design, defined minimum defects from 0.3 mm in diameter can be detected reliably by turning the piston or by using a multi-channel rotating head.

Equipment:
- ***ELOTEST PL500, 12-channel also available as a 2-channel version, multiplexed***

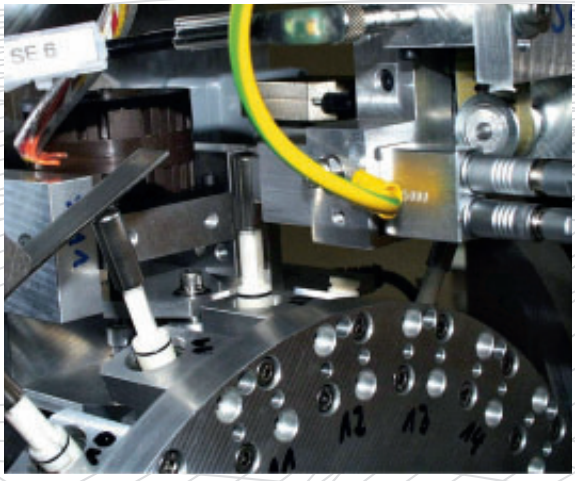


Automated inspection of piston

Crack detection system for deep-drawn bushings –

Maximum precision in a cycle lasting only seconds. The external surface of up to 4 deep-drawn bushings per second are inspected for typical drawing defects.

Equipment:
- ***ELOTEST PL500, 4-channel, multiplexed***

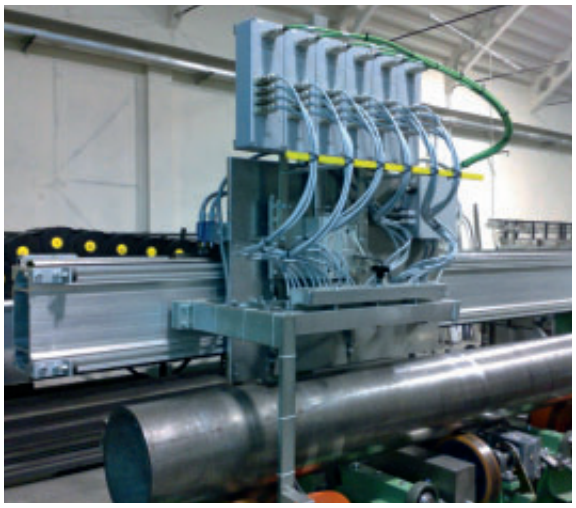


Crack inspection on deep-drawn bushings

Test systems

Efficient semi-finished product testing

on wires, bars and tubes

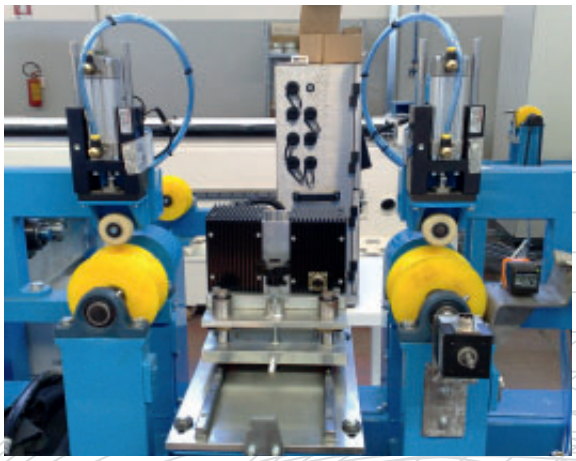


Tube inspection in China

Tube testing system –
Large tube testing in the production line

TUB.EC 300 eddy current test system for automatic testing for surface defects (cracks, scales, pinholes) on hot-rolled tubes. Diameter range of the tubes to be tested: 50 - 300 mm.

Equipment:
- ***ELOTEST PL500, 6-channel with 8 × multiplex and 48 probe array***

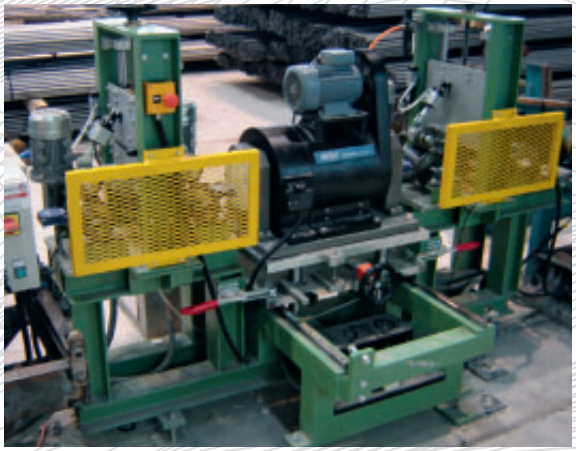


Tube inspection with M40

Tube testing in M40 magnetizing coil –

Tube testing in the production line Eddy current test system for automatic testing for surface defects (cracks, scales, blowholes, pinholes) on tubes (welded or seamless). Diameter range of the tubes to be tested: Up to Ø 40 mm

Equipment:
- ***ELOTEST IS Box, 2-channel***



Steel bar inspection with EC100 rotor

Steel bar testing –

Bar testing in the production line. Steel bar testing for diameters 10 mm – 95 mm with EC100 rotor (4 channels).

Equipment:
- ***ELOTEST PL500, 4-channel with 2 x A-Komp***

Efficient component testing

for mass inspection and single part inspection

Eddy current crack detection on cylindrical components

Throughput:
10 parts/second conveying speed, max. 100 mm/s

Typical defect specification:
Longitudinal cracks 0.05 mm deep × 0.05 mm wide × 3.0 mm long.
The parts are fed into the line, for example, by means of a vibrating bowl. The parts are gripped between the drive and brake discs and conveyed precisely and evenly by the rotating head.

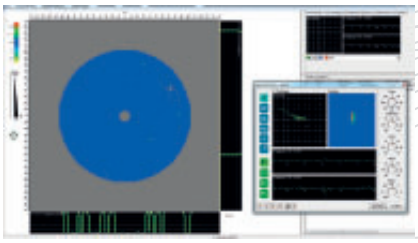
Equipment:
- ***ELOTEST PL500, 2-channel***

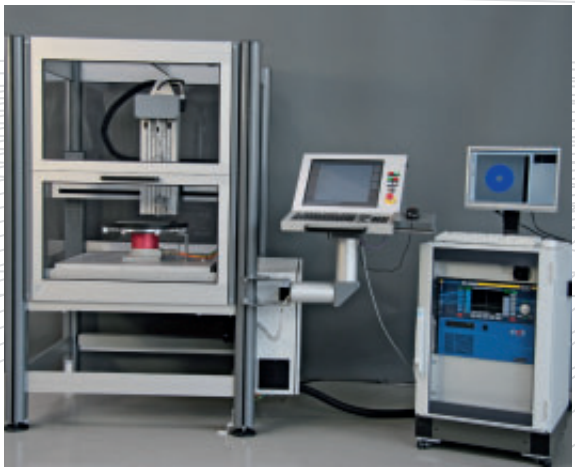
Crack detection system with PL500

Metal plate test system –

Testing of niobium sheets for minute tantalum inclusions (ø 0.1 - 0.2 mm)

Equipment:
- ***ELOTEST PL500, 2-channel***

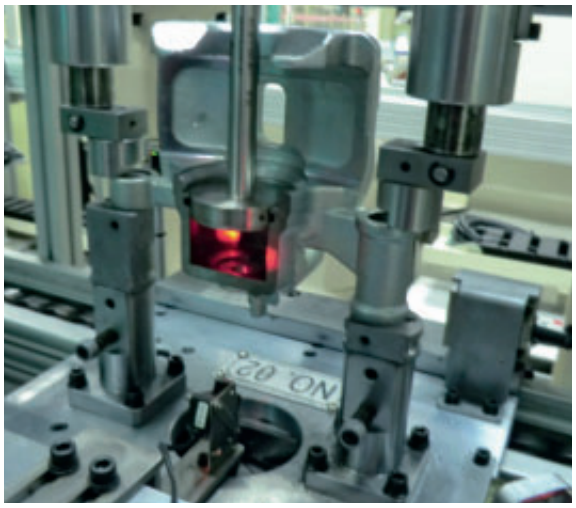




System with ELOTEST PL500

Test systems

Efficient component and semi-finished product testing



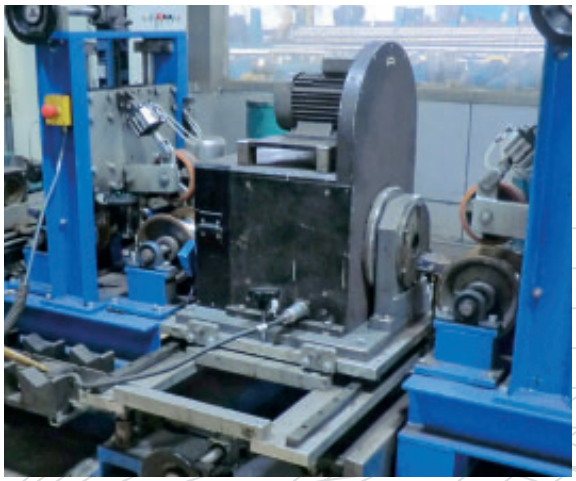
Brake calliper testing

Brake calliper testing –

Locating metallic impurities, such as chips, in the sealing groove on a brake cylinder housing. The rotating probe penetrates the hole on the positioned part and inspects the region of the groove.

Equipment:

- ***Test instrument, single channel, with rotor and rotating probe***



Bar inspection using EC100

Crack detection –

For longitudinal defects on steel bars from a depth of 50 µm upwards. Material verification testing with ULAS sorting coils. Test speeds of up to 2 m/s bar feed

Equipment:

- ***4-channel rotor with distance compensation***
- ***Coils for material sorting***
- ***ELOTEST PL500, 7-channel:***
  - ***4 channels for crack detection***
  - ***2 channels for distance compensation***
  - ***1 Q-module for the 8-frequency material sorting***

Steering rods testing

Crack detection on steering rods –

For cracks on the shaft and in the gear teeth. Hardness deviations in the vicinity of the gear teeth.

Equipment:

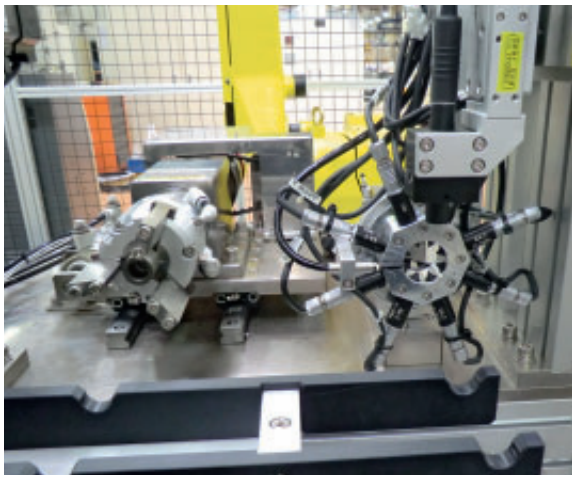
- ***ELOTEST PL500, 7-channel:***
  - ***1 channel with MDK probe for longitudinal cracks and transverse cracks in the cylindrical area***
  - ***2 channels with KDS probes for cracks starting to the right and to the left of the gear teeth***
  - ***3 channels with PLA probes for crack detection in the gear teeth***
  - ***1 channel with coil for hardness testing- 1 Kanal mit Spule zur Härteprüfung***

Driveshaft testing –

Structural deviations in the hardened regions of driveshafts, hardness cracks on the shaft, in the grooves and in the gear teeth.

Equipment:

- ***ELOTEST PL500, 5-channel:***
  - ***1 channel for hardness testing***
  - ***3 channels for crack detection on the rotating part***
  - ***1 channel with multiplex and 7 probes for crack detection in the gear teeth***



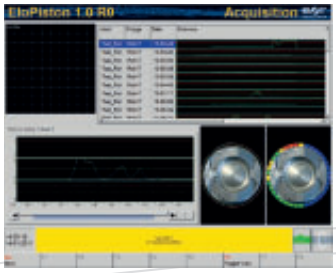
Testing driveshafts

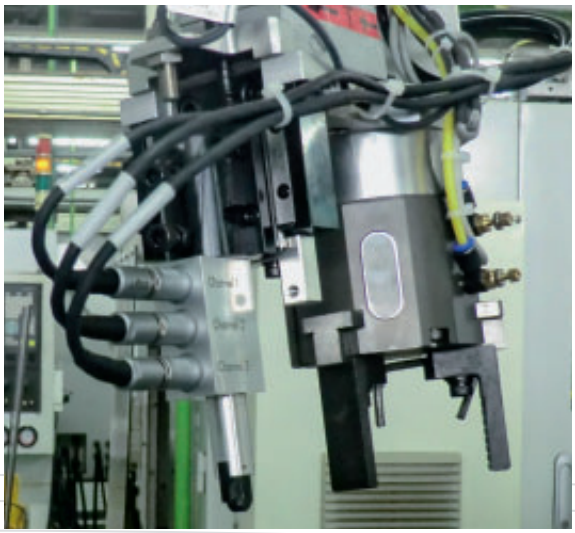
Piston testing with robot –

Bowl rim testing at the piston robot-guided 3-channel probe.

Equipment:

- ***ELOTEST PL500, 3-channel, with formed triple probe***





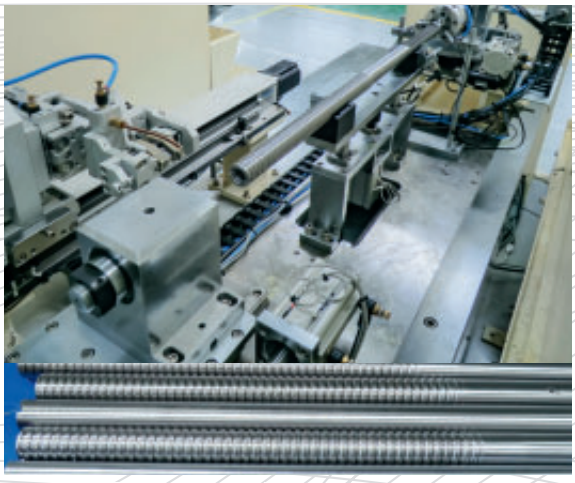
Piston testing with robot

Crack detection on the recirculating ball races of steering rods –

Longitudinal and transverse defects from 2 mm length and 0.1 mm depth in all areas of the recirculating ball race.

Equipment:

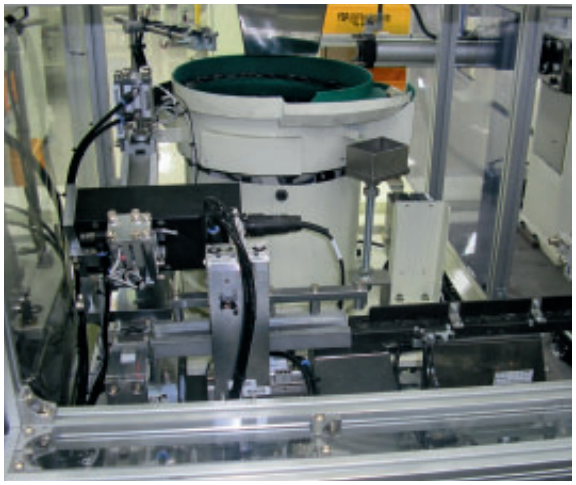
- ***ELOTEST PL500, 6-channel:***
  - ***3 channels with formed special probe for testing in the base of the recirculating ball race***
  - ***3 channels with formed special probe for testing the flanks of the recirculating ball race***



Steering rod recirculating ball races

Test systems

Efficient component and semi-finished product testing



Testing discs

Testing disks –

Hard/soft sorting, material verification and dimensional check.
The test is performed in slippage before assembly.

Equipment:
- ***Test instrument, single channel, with ULAS sorting coil***

Eddy current and ultrasound tube testing system

Tube testing –

Defect inspection on rotating tube using a combination of eddy current and ultrasound. Eddy current testing for surface defects Ultrasonic testing for defects inside the tube wall.

Equipment:
- ***ELOTEST PL500, 1-channel, with multiplex and 6× array probes***

Testing the cylinder lining

Engine block inspection –

for cracks, pinholes, material structure and layer properties in the cylinder lining.

Equipment:
- ***ELOTEST PL500, 6-channel, with 6 high performance rotors and the use of formed special probes***

Weld seam testing –

Defects in the longitudinal seam of welded tubes in the production line

Equipment:

- ***ELOTEST test equipment, single channel, with adjustable weld seam probe***

Testing the weld seam

Transmission component test –

Imaging eddy current test of transmission components for cracks and pinholes.
Fully-automated surface testing and analysis using highly precise probe guidance with a surface clearance of 0.4 mm along geometrically complex structures – and additional imaging analysis of the eddy current data recorded in the C scan. Compliance with the required cycle time for direct integration in the production line.

Equipment:

- ***ELOTEST PL500, 1-channel***

Transmission component test system

Screw testing –

Sorting for hardness differences with sorting coils or probes for up to 5 test parts per second and up to 8 test frequencies.
Crack detection on the screw head with 2-channel HDR rotor for up to 5 parts per second.

Equipment:
ELOTEST IS500 and PL500 with different channel numbers and configuration matched to the testing task.

- ***Coils and probes for detecting hardness differences***
- ***Rotating 2-channel probes on the rotor for crack detection on the screw head***
- ***Probes for crack detection in different positions on the rotating component***

Screw testing system

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