

Exhibition CONTROL –

Presentation of the ELOTEST IS500



Digital eddy current testing for the metal processing industry. Quality assurance in a compact package, easily and at a competitive price!

With the **ELOTEST IS500**, Rohmann GmbH is presenting for the first time a completely digital eddy current test set within the proven ELOTEST IS series for industrial use.

With its IP67 housing, this universal, modern test set can be used directly in a harsh environment.

In this field, a complete, powerful and opto-decoupled I/O level is just as much part of the standard equipment as are clear and simple operator prompting via the brilliant colour display with its 16:9 aspect ratio and an encapsulated film keyboard with touch feedback.

The equipment is available in four basic versions:

With one standard channel for crack testing, with two crack testing channels, as a pure single channel sorting device for multi-frequency sorting or as a combination device with one crack testing channel and one sorting channel.

For sorting, multi-lot sorting with automatic teaching process, familiar from the high-end equipment series ELOTEST PL500, is used with this instrument.

Together with the available options of displacement compensation for dynamic tests on a rotating component and the multiplex module for near-real time testing with up to 8 sensors per channel, the ELOTEST IS500 can cover a very broad range of industrial eddy current testing tasks in the metal processing industry.

The **ELOTEST IS500** is fully compatible with these software solutions - ScanAnalyzer for imaging eddy current testing and Eloline for automated testing of long steel products.

Please visit us on the CONTROL from 3. - 6. Mai 2011 - hall 1, Stand 1818.

Rohmann Newsletter 11

Eddy-Current-Test Instruments and Test Systems

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Application Motor Vehicle Components Cars/Trucks

Pistons of Internal Combustion Engines (reciprocating piston engine)

Today pistons for reciprocating piston engines are mainly made from aluminium alloys (as opposed to earlier cast-iron designs). Naturally, the areas where a lot of force is applied (high pressure and tensile load) and the areas of high thermal stress must be checked particularly carefully to prevent a subsequent breakdown of the component. This applies particularly to the pistons used in Diesel engines.

Areas of inspection:

1. Piston crown bowl/pinch-off edge
2. Grooves on the piston ring
(in some cases with moulded piston ring carrier)
3. Bore hole for the piston pin

1st area of inspection:

Pinch-off edges of piston crown bowls

The pinch-off edges of piston crown grooves are often reinforced with fiber. Here the density of the distributed fiber, open and hidden pores, blowholes and cracks are of interest. The undercut inside the piston crown bowl presents a particular challenge.

Solution:

Probe head

Automated eddy current inspection of the pinch-off edge using probe levers that may also be guided into the area of the undercut.

Disk probe:

Automated eddy current inspection using rotating disk probes for pistons where the undercut does not have to be inspected.

Design: Depending on the application with up to 12 probe elements.

Probe types:

- MDK-1 in various designs
- KD-62 in various designs

Frequency:

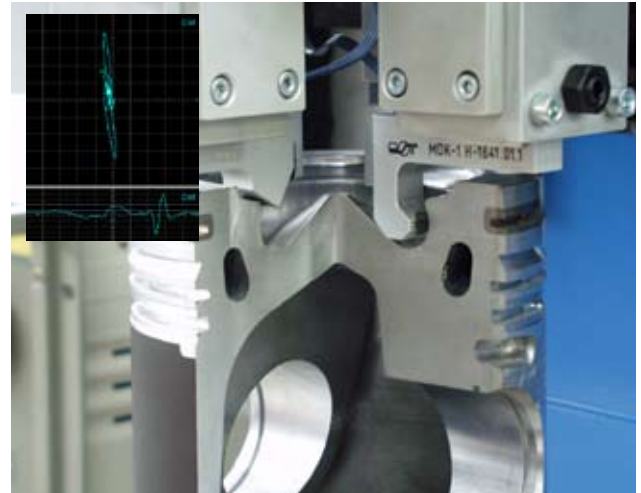
Medium frequency range

Defect size (L x W x D):

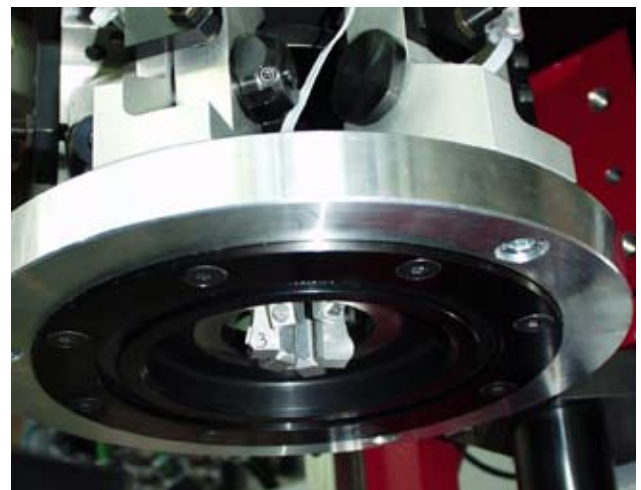
- Groove: 1 mm x 0.1 mm x 0.3 mm
- Groove: 0.5 mm x 0.1 mm x 0.2 mm
- Bore hole: \varnothing 0.3 mm x 0.3 mm (D x D)

Cycle time:

Starting at 7 seconds



Probe head for the automated inspection of pistons with up to 6 probe levers



Probe head for the automated inspection of pistons with up to 12 individually adjustable probe heads



Disk probe – positioning



Multi-channel disk probe

Events – A Look Back



11th Stuttgart International Symposium “Automotive and Engine Technology”

On February 22nd and 23rd, 2011, more than 750 participants met in Stuttgart’s Haus der Wirtschaft for the 11th Stuttgart International Symposium on Automotive and Engine Technology in order to find out more about the latest developments in automotive engineering and engine technology.

With around 80 expert presentations in four parallel sessions, all current topics were covered and technical issues regarding new automotive and engine concepts (which are the focus of the program this year) from aerodynamics, driving dynamics, and car body technology all the way to vehicle electronics and software and battery technology. The symposium thereby provided an opportunity to gather information and discuss current research and development topics. The expert trade show with around 40 pre-

senters was held at the same time to supplement the symposium.

Even Rohmann GmbH was represented with a presentation. The topic was the innovative eddy current testing of lightweight construction components demonstrated on aluminum crankcases and aluminum engine components. The focus of the presentation was the combination of modern eddy current testing technology with traditional image evaluation methods which allow even complex testing solutions to be established in an inexpensive and flexible way in the production process. The presented concept therefore offers enormous potential for further system solutions and challenging testing tasks while simultaneously simplifying operation through the visual presentation of the test result.



Mr. Schneibel present



Events – A Look Back

1st Automotive Symposium in Frankenthal



Words of Praise for our 1st Automotive Symposium in Frankenthal

There was great interest in the 1st Automotive Symposium held in our headquarters in Frankenthal on March 16th, 2011. Many companies from the automotive and semi-finished product sectors took advantage of the opportunity to find out more about the topic of "the non-destructive testing of vehicle components."

In the fully packed presentation hall, the visitors listened to interesting presentations in which experts from international companies reported on their experiences in locating material defects, various testing methods, and the significance of quality testing in the automobile industry. We would like to take this opportunity to once again thank the speakers who contributed to the success of the symposium by providing extensive information on the topic of eddy current testing and its associated requirements.

The integrated in-house trade was very well received. Visitors as well as presenters took advantage of the opportunity to exchange information and make new contacts.

The final presentation was "ZfP ist Zauberei" ("Non-Destructive Testing is Magic"), which formed a casual transition to the subsequent "culinary" get-together with musical accompaniment.



EDDY CURRENT LEVEL 1 & 2 TRAINING IN FRANKENTHAL

REGISTER NOW AT: WWW.VECTOR-TUB.DE

Where safety is important, questions are asked of experts, experts who guarantee stability, durability loading capacity and therefore safety.

Since 1993 SECTOR Cert GmbH has qualified and certified non-destructive testing experts. SECTOR Cert offers industries highly respected certification through the use of a Europe-wide network of training and testing centers, continuous checks on the network partners as well as the special practical-oriented training and testing. So; only those who are certified are qualified!

In co-operation with Rohmann GmbH, VECTOR and SECTOR Cert GmbH are holding eddy current level 1 and 2 training and exams 1+2 in Frankenthal.

Course content:

- The difficult part of level 1 training is the basics of behavior of magnetic induction, eddy current technology and impedance plane display.
- Intensive familiarisation with generic and special instruments.
- An overview of industrial applications including pressure tank manufacture, tube production and aviation.
- For participants from all industries material sorting is covered.

Training Dates 2011:

Course E1-106: 11.04. – 20.04.2011
 Course E1-108: 29.08. – 07.09.2011
 Course E2-67: 10.10. – 19.10.2011

Please check our home page for the dates of the practical training and exams

Prices:

Level 1: (5 Day course) 1.250,- EUR
 Level 2 (5 Day Course) 1.250,- EUR

Practical training with exam preparation (2 Days) 660,-EUR
 Exams Level 1 or 2 + Certificate + Licence (1 Day) 710,- EUR



Register at:
VECTOR GmbH
 Frau Britta Rademacher
 Am Walzwerk 17
 45527 Hattingen
 Tel: 02324.919820
 Fax: 02324.9198209
 Mail: info@vector-tub.com
www.vector-tub.com

Exhibition Dates 2011

Control in Stuttgart 2011, Germany
 3. - 6. Mai 2011

CNS Symposium, Potsdam, Germany
 6. Mai 2011

iaf Kongress, Münster, Germany
 17. - 19. Mai 2011

CONFREND Dunkerque, France
 24. - 26- Mai 2011

DGZfP-Jahrestagung 2011, Bremen, Germany
 30. Mai - 1. Juni 2011

HK - Härterei Kolloquium, Wiesbaden, Germany
 12. - 14. Oktober 2011

20. testXpo, Zwick, Ulm, Germany
 10. - 13. Oktober 2011



Rohmann GmbH stand at CONTROL 2010 in Stuttgart

Application –

Non-Destructive Eddy Current Testing

Application report by PRAE-TURBO GmbH & Co. KG and Rohmann GmbH

The parts and components of turbochargers are subjected to the greatest strain. Due to the low engine displacement and high number of revolutions, the turbocharged engines currently being used are dependent upon the application of highly precise and reliable charging technology. One particularly challenging part in this context is the centrifugal compressor (Image 1; red outline).

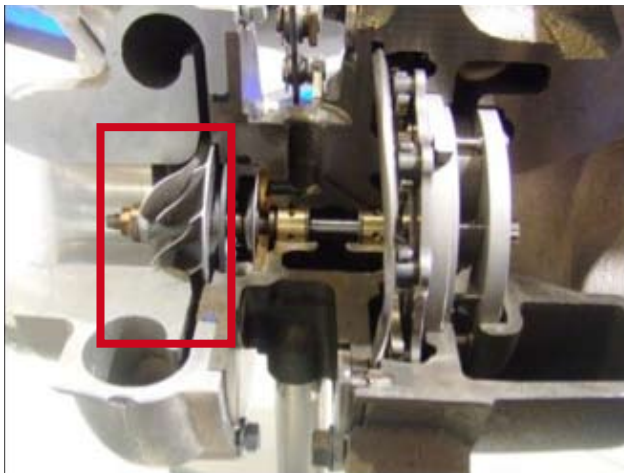


Image 1 / Cross-section of an exhaust turbocharger

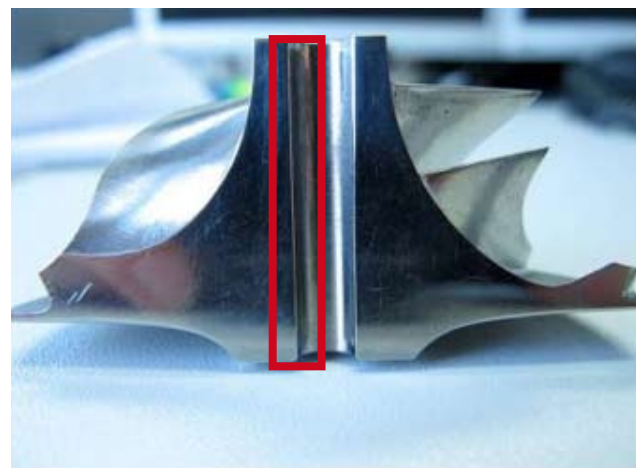


Image 2 / Cross-section of a centrifugal compressor

One of the zones of these centrifugal compressors subject to the greatest strain is the area of the central bore, which connects the compressor to the shaft of the turbocharger (Image 2; red outline). Due to a defect whereby a crack in this critical area of the compressor led to the breakdown of the turbocharger, a testing procedure using eddy current technology was developed in cooperation with Rohmann GmbH. In order to check the error signals, the manufacturer conducted extensive material inspections (Image 4) on the test pieces and detected a segregation (segregation consisting of titanium depending upon the production) running through the fracture pattern (Image 3) which caused the final crack in the compressor as a result.



Image 3 / Broken centrifugal compressor after use in a turbocharger



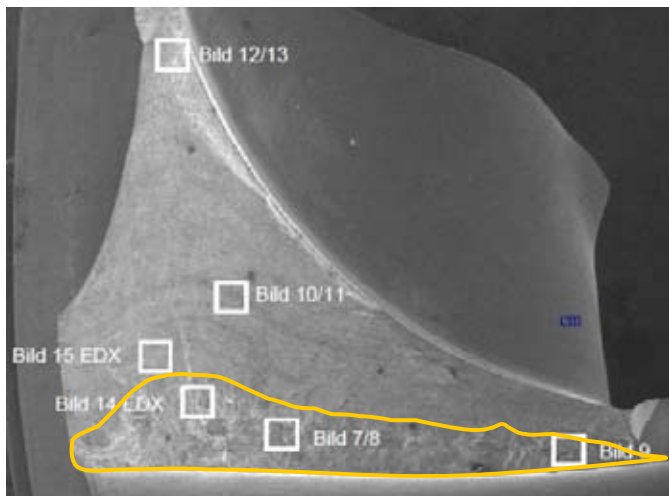
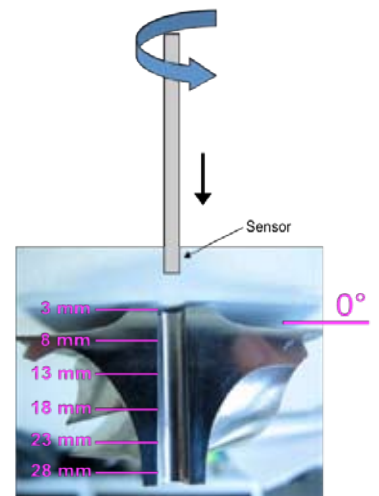


Image 4 / EDX analysis of the fracture surface with titanium segregations (orange area)



Image 5 / Manipulator and schematic presentation of the different measuring depths



Using a rotating test probe with a corresponding manipulator, the segregations in the centrifugal compressors were able to be detected before the finishing operations were conducted on a CNC milling machine. Not only does this mean that the individual batches can be checked for segregations, but it also saves expensive and extensive CNC machining.

During the testing at different measuring depths, eddy current signals (Image 5; Image 6) clearly showed titanium segregation which enabled the defect location to be precisely located in the inspected bore.

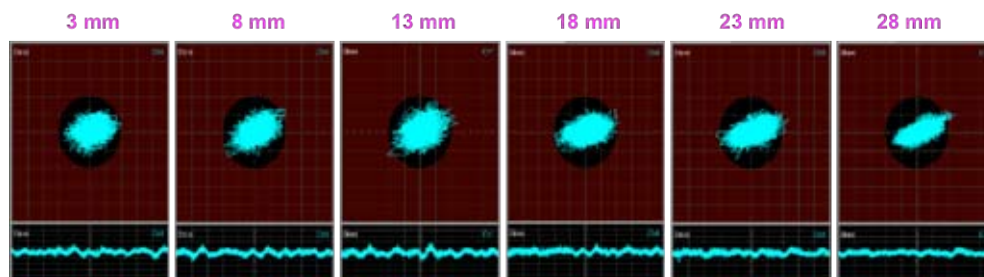


Image 5 / Eddy current signal of the different measuring depths for a non-defective part

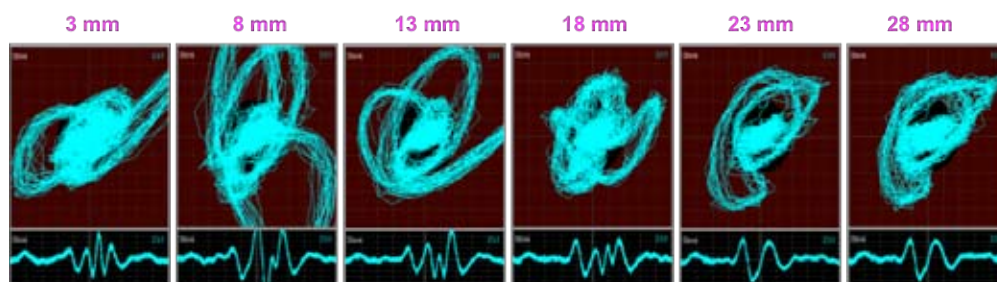


Image 6 / Eddy current signal of the different measuring depths for a defective part

According to the knowledge gained about the use of eddy current testing for the detection of material segregations, it will now take less time to test centrifugal compressors produced in the future and that will therefore prevent a crack in the centrifugal compressor while it is in operation.

The article was able to be published through close cooperation with graduate engineer Ms. Angela Au (Head of Materials Engineering at PRÄWEST) and graduate industrial engineer Mr. Stephan Reich (Head of Quality Assurance at PRAE-TURBO GmbH & Co. KG)

Presentation –

Mr. Schwabe Takes Over the North/West Sales Area

Mr. Thomas Schwabe, a Rohmann employee, took over the north/west sales area for THETA testing systems on January 1st, 2011.

Graduate engineer Mr. Reinhard Krause has retired. We would like to take this opportunity to once again thank him deeply for his commitment and years of good work together with us.

Due to his many years of experience in the field of 100% quality testing in the automobile industry, graduate engineer Mr. Thomas Schwabe was able to jump right into the active sales activities seamlessly. The north/west sales area will now be handled by our new field office in 53773 Hennef/ NRW. Mr. Schwabe will handle the Benelux nations from there in the future.

Mr. Schwabe's first public appearance for Rohmann was at the Automotive Symposium in March. His professional presentation was met with applause by everyone in the audience. We wish Mr. Schwabe much success!



Mr. T. Schwabe

Rohmann GmbH

Thomas Schwabe
Bohnenhof 24
53773 Hennef/ GERMANY
Phone: + 49 (2248) 90 98 855
Fax: + 49 (2248) 90 98 856
E-Mail: schwabe@rohmann.de

Presentation –

CNS Introduces Itself

Mr. Lutz Lindecke became an independent businessman almost one and a half years ago and is now the CEO of CNS. Previously he was head of the Berlin regional sales office for Rohmann which covered Eastern Germany and Eastern Europe.

CNS continues to sell Rohmann products in these areas. In addition, products for magnetic powder and dye penetrant testing from the Czech company ATG are now in the product portfolio as well.

As an eddy current testing specialist, he supplies major customers including those from the aviation and automobile industry and is also a reliable contact for the rail sector.

Thanks to his support, in 2011 we received approval for the eddy current trolley WPG 340 for rail testing.

CNS now has 4 employees and is headquartered in Potsdam/Caputh.

On May 6th, 2011, CNS will be holding its second symposium that has already made a name for itself among experts in the industry.



Mr. L. Lindecke

CNS UG (haftungsbeschränkt)

Im Gewerbepark 20A
14548 Schwielowsee/ GERMANY
Phone: +49-33209-72533
Fax: +49-33209-20924
E-Mail: info@cns-ndt.de

Contact Information

More addresses you will find on our homepage: www.rohmann.de

GERMANY - Head office

Rohmann GmbH
Carl-Benz-Str. 23
67227 Frankenthal
Germany
Tel: +49 (0) 6233-3789-0
Fax: + 49 (0) 6233-3789-77
E-Mail: info@rohmann.de
Internet: www.rohmann.de



Agency in North-East Germany

CNS UG (haftungsbeschränkt)
Gartenstr. 28
14548 Schwielowsee
Germany
Tel.: +49 (0) 33209 72533
Fax: +49 (0) 33209 20924
Mobil: +49 (0) 170 4859052
e-mail: info@cns-ndt.de



Agency in South Germany

Gollub Werkstoffprüfung GmbH & Co. KG
Viktor-Scheffel-Str. 8
74177 Bad Friedrichshall
Germany
Tel: +49 (0) 7136 2 21 95
Fax: +49 (0) 7136 2 21 97
E-Mail: gollub-zfp@t-online.de
Internet: www.gollub-werkstoffpruefung.de



Sales office in North-West Germany

Rohmann GmbH - Herr Schwabe
Bohnenhof 24
D- 53773 Hennef
Germany
Tel.: +49 (0) 2248-909 88 55
Fax: +49 (0) 2248-909 88 56
Mobil: +49 (0) 172-624 87 42
E-Mail: info@rohmann.de
Internet: www.rohmann.de



Agency in FRANCE:

IC Escoffier
Parc d'activités
de la Route des Lacs
27106 Val de Reuil Cedex
France
Tel: +33 (2) 32 63 34 97
Fax: +33 (2) 32 59 20 66
E-Mail: bruno.fefeu@areva.com
Internet: www.intercontrole.com



Agency in ITALY:

Ecomag srl.
Via Pisa 250
20099 Sesto San Giovanni
Italy
Tel: +39 (02) 24 41 67 75
Fax: +39 (02) 24 30 82 60
E-Mail: baroni@ecomagsrl.it
Internet: www.ecomagsrl.it



Agency in CHINA:

Jadeshine
TYG Center B-1102
Dong San Huan North Road Bing 2
Chaoyang District
100027 Beijing
P.R. China
Tel: +86 (10) 84 47 18 76
Fax: +86 (10) 84 47 17 67
E-Mail: jadeshine@263.net.cn
Internet: www.jadeshine.com



Agency in South KOREA:

VASTEK
201-506, Bucheon Technopark
192, Yakdae-dong
Wonmi-gu; Bucheon-si
420-733 GYEONGGI-DO
South Korea
Tel: +82 32 3 28 90 20
Fax: +82 32 3 28 76 64
E-Mail: hajc7@yahoo.co.kr
Internet: www.vastek.co.kr



Agency in Great Britain:

Rohmann (UK) Ltd
Unit 6 Glenmore Business Park
Bumpers Farm Industrial Estate
Chippenham Wiltshire
SN14 6BB
United Kingdom
Tel: +44 1249 65 93 46
Fax: +44 1249 44 30 97
E-Mail: sales@rohmann.co.uk
Internet: www.rohmann.co.uk



Agency in the USA:

Rohmann LP
111 Corporate Drive, Suite D
Spartanburg, SC 29303
USA
Tel: +1 - 864 - 208 - 0480
Fax: +1 - 864 - 208 - 0484
E-Mail: info@rohmann.com
Internet: www.rohmann.com

