

G3 - New way to measure stresses



G3's design without tilting arc leaves room under the goniometer allowing easy measurements on earlier hard-to-reach areas.

Easy positioning is not the only candy G3 brings to the X-ray residual stress measurement world. In addition to the versatile features known from XSTRESS 3000, it is now also possible to change measurement distance, and to take into account sample alignment by software correction. G3 includes as standard capability to measure a line stress distribution e.g. over weld seam.

G3 recognizes the serial number of the tube automatically and helps thus to keep track of total tube operating time. Measurement points can be located accurately with the help of the laser pointer through collimator.

G3 has internal dial indicator with an accuracy of 0.001 mm in all movements thus allowing automatic measurement of removed material thickness. New detectors bring increased efficiency and shorter measurement times.

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More stories

- G3 - New way to measure stresses
- Editorial
- Stresstech expands to hole-drilling with PRISM

- DaimlerChrysler relies on Barkhausen method
- ICBM6 in France in 2007
- Visit us at
- Order your copy

EDITORIAL



“Difficult we do every day, impossible takes a little time, miracles by appointment only” is a saying we once used to describe our work. This is today more true than ever, and it seems our appointment book is filling up fast. The parts and applications coming in and needing reliable and fast inspection method or stress measurements are becoming more complicated needing more of our designers’ time and special skills to be solved. Examples of such are our recently developed drill bit and injection nozzle ID inspection systems.

Because of our long experience of the quality control we can, however, call some applications such as camshafts, crankshafts, bearings, gears almost easy. For those we already have various different solutions and products from simple manual systems to automated and robotized inspection systems, independent or implemented to the customer’s production line. Customizing them according to the individual customer’s needs make them a small challenge to us.

Whatever your part is, there already might be an easy and reliable inspection solution for it. Or it can be created by modifying some earlier solution. Or we develop it. Just ask.

Lasse Suominen, President of Stresstech Oy

STRESSTECH EXPANDS TO HOLE-DRILLING

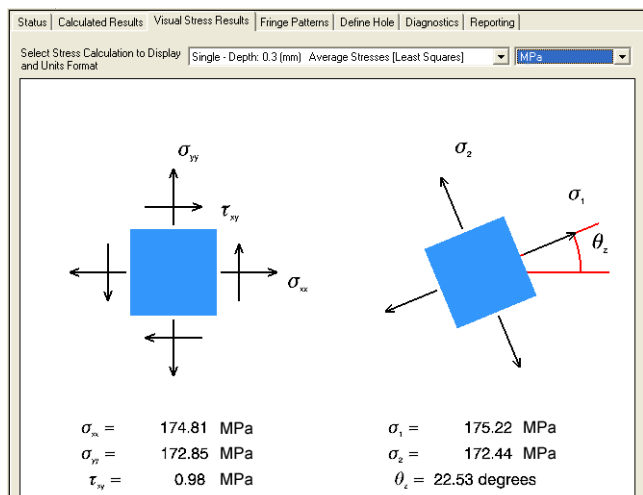
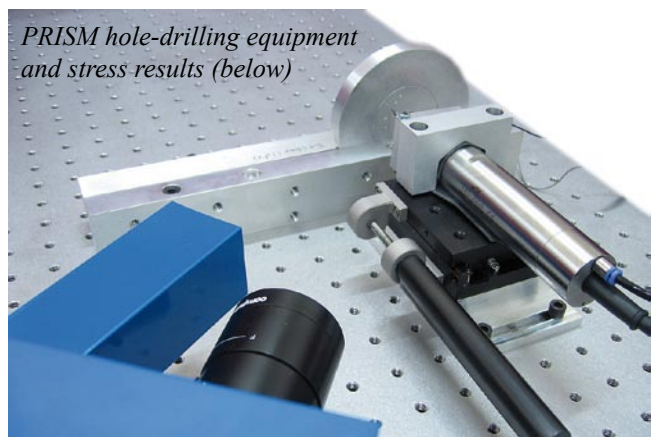
Stresstech Group has bought PRISM residual stress measuring technology from HYTEC, Inc. in the beginning of 2006. With the sale product rights are transferred to Stresstech Group, which will manufacture, market, sell and service the equipment from 2006 on. Also measurement services with the hole-drilling technology will be offered to customers as well as with the present equipment.

With this deal Stresstech Group expands its stress testing know-how to hole-drilling technology in addition to its present Barkhausen noise and X-ray diffraction techniques and becomes thus a full-service stress testing expert.

PRISM offers accurate residual stress measurements, quick and without the need for painstaking bonding of strain gages. The system incorporates a high-speed precision drill that is fully computer controlled for drilling single depth holes or incremental drilling. The resulting stress relief which causes minor distortion of the part is detected and measured by ESPI, electronic speckle pattern interferometry. This method uses a stationary laser and digital camera to create and record interference patterns. Image analysis is automated on a regular PC and produces highly accurate stress results in just a couple of minutes.

PRISM is an attractive alternative to strain-gage and other traditional residual stress measurement techniques, particularly where repeated measurements are made and rapid results are required.

More at www.stresstechgroup.com



DAIMLERCHRYSLER RELIES ON BARKHAUSEN METHOD

Drivers of DaimlerChrysler cars can be proud to own top quality vehicles. Several engine components have always required the special competence of the manufacturers. One of those core parts is the camshaft, which is driving the inlet and exhaust valves for each cylinder. Doing so, it has to carry high loads, but is directly responsible for a smooth, powerful and environmentally clean running engine. On the other hand, a very precise and costly manufacturing process is required.

Quality control at DaimlerChrysler plants is strict and well-organized. Often, one basic principle is followed: By proper processes, no defective parts will be produced. To assure this goal, machining processes need to be optimized and controlled to a very high level. The last machining operation on a camshaft is lobe grinding, which will create the special shape and surface smoothness as designed by the engineers.

In 1997 a row of new engines with new camshafts was developed by Daimler-Benz AG. At the same time, it became obvious that old fashioned Nital etch procedure to monitor grinding quality needed to be replaced by a technologically better and more environmentally friendly quality control method.

Key requirements for the new technology were speed, possibility for automatisisation and placement of whole testing system in between the grinding machines for immediate feedback.

Barkhausen method was carefully studied, and found to be the answer to their needs [Hillmann, R]. Since then it has been in everyday use at DaimlerChrysler plants. Along with years passed by experiences gathered first with manual systems led to ordering semiautomatic camshaft inspection stands to various plants.

Every day, thousands of camshafts are manufactured at several DaimlerChrysler plants. A certain percentage is checked for optimal grinding quality by Stresstech inspection stands, using Barkhausen Noise technology. Four semiautomatic inspection systems of type CamScan 500 are in use at Berlin and Stuttgart production lines.

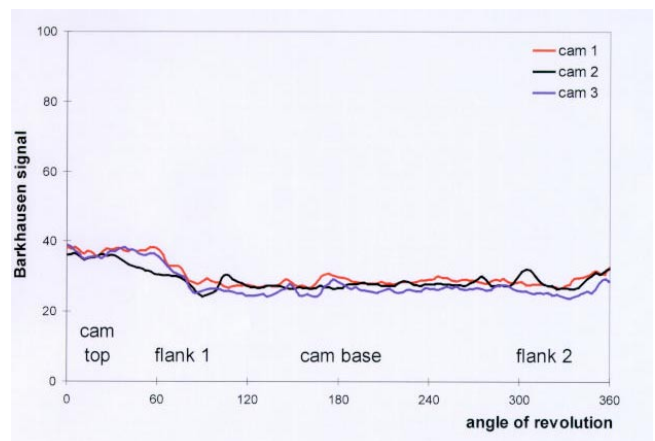
The Rollscan camshaft inspection system, CamScan 500 system is semi-automated, requiring only manual loading and unloading of the camshaft. Rotating the camshaft and sensor movements from lobe to lobe are handled with programmable logic controller. The stands in use have 1-3 sensors for Barkhausen Effect testing. For operating the system, the operator chooses the type of shaft and desired inspection routine preprogrammed to the PLC. The Barkhausen signal is monitored, and measurement results are handled by the ViewScan software. The stand is also equipped for easy and regular sensor cleaning.

REFERENCES:

Hillmann, R. Combined NDT Testing of Camshafts. 1st International Conference on Barkhausen Noise and Micromagnetic Testing. Conference Proceedings. Stresstech Oy 1999.



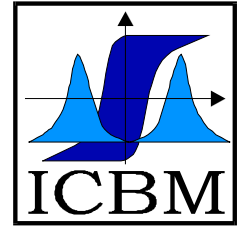
Mr. Richter, Mr. Ziegler and Mr. Rybarczyk from DaimlerChrysler with the fourth CamScan 500 at Stresstech Oy.



Example measurements on camshafts. The BN signal is on a rather constant level which varies from camshaft to camshaft. No peak, which would indicate undesired surface condition, is detected. [Hillmann, R].

ICBM6 IN FRANCE IN 2007

6th International Conference on Barkhausen Noise and Micromagnetic Testing will be held on July 9-10, 2007 at the University of Valenciennes, Valenciennes, CEDEX, France and is hosted by the University and coorganized by SNFA and Stresstech.



ICBM is a conference for experts in research and development, manufacturing and quality management.

Conference Topics:

State of the Art
Industrial applications: aerospace, automotive, gas & oil, steel
Trends in development
Process innovations and the outlook

The widespread acceptance of the BNA inspection method by the aerospace and the automotive industries is reflected in numerous new publications, reports and specifications. The program of the conference will include both papers and posters covering the industrial applications as well as the physical phenomenon of the Barkhausen Noise Analysis.

The conference language is English.

Call for papers has been announced, see www.icbmconference.org

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Mr. Luigi Debarberis from the hosting Joint Research Centre of European Commission opening the 5th ICBM in Petten, the Netherlands, in 2005.



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ECRS 7 on Sep 13-15, 2006 in Berlin, Germany
Seminar on quality control equipment on Sep 19-20 in Valtice, Czech Republic
Seminar on quality control equipment on Sep 20, 2006 in Zilina, Slovakia
MS&T on Oct 16-19, 2006 in Cincinnati, USA

12th Asian NDT Conference on Nov 5-11, 2006 in New Zealand
6th MFN Asian Shot Peening Workshop and Conference on Nov 13-15, 2006 in Singapore
Bearing 2006 on Nov 28-Dec 1, 2006 in Shanghai, China

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