

Our Offer

Test Instruments & Equipment

- non-destructive SHD control (manual, semi-automated and automated scanning)
- instruments for ultrasonic and eddy current testing
- eddy current systems for fast screening and sorting
- development of custom sensor systems

Testing Services

- feasibility studies on parts provided by the customer
- supplementary metallographic examinations by a certified laboratory
- customer support in the factory (process introduction, rules & regulations, tests)

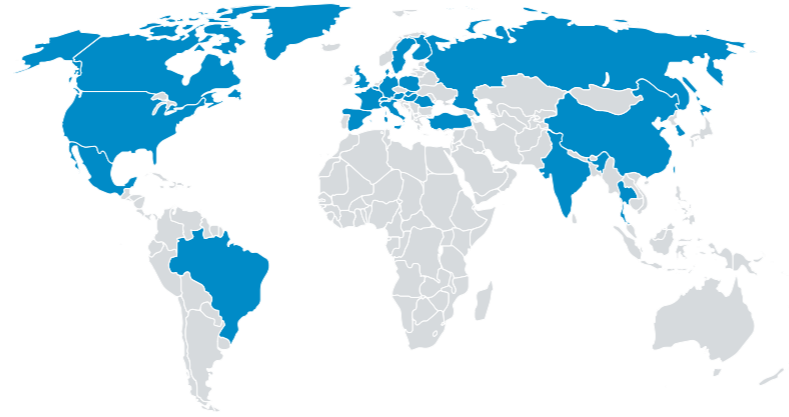
Consulting Services

- advice on the selection of suitable test methods
- support in the specifying and introducing new testing technology
- arranging contacts with institutions of science and technology

Training & Education

- in-house training for test personnel
- one-day and multi-day events possible

www.q-net.de



About Us

The Quality Network (Q NET) offers test instruments and innovative solutions for non-destructive testing of materials, technical components and structures.

Q NET was founded in 1992 as a spin-off company of the Fraunhofer Institute for Non-Destructive Testing (IZFP). Q NET has close links with national and international research and development institutions in the fields of inspection, materials technology and instrument manufacturing. This cooperation enables us to bring current knowledge and the latest results of applied research and development to the market in accordance with the customers' requirements.

The benefit for our customers is our priority: quality costs can be reduced while the verifiable quality and reliability of processes and products is improved. Our customers have access to an international network of companies and benefit from a worldwide technology and service transfer.

QNET

Q NET Engineering GmbH

Altenkesseler Str. 17 B6 • D-66115 Saarbrücken • Germany
Tel.: +49 (0)681 976 71 53 • Fax: +49 (0)681 976 71 58
Web: www.q-net.de • E-Mail: info@q-net.de

Non-Destructive Control of the Surface Hardening Depth (SHD)

QNET

Control of the Surface Hardening Depth (SHD) in induction-, flame- or laser-hardened parts using the Ultrasonic Backscatter Technique.



P 3123
Hardness Depth Tester

Non-Destructive Control of the Surface Hardening Depth (SHD)

Control of the Surface Hardening Depth (SHD) in induction-, flame- or laser-hardened parts using the Ultrasonic Backscatter Technique.



Hardness Depth Tester P3123



Situation

Surface hardening improves the wear resistance and fatigue strength of dynamically stressed components. These functional characteristics are mainly determined by surface hardness, hardening depth and residual stress. An essential quality feature of the surface hardening process is the thickness of the hardened layer (SHD). Currently, the hardened layer can only be tested in random samples using destructive methods, a procedure that is both costly and time-consuming.

Solution

In cooperation with the Fraunhofer Institute for Non-Destructive Testing (IZFP), we have developed an ultrasonic method for fast and easy SHD control. The test instrument is used to optimize manufacturing parameters, reduce downtimes after inductor changes, for production monitoring and quality control. Reduced efforts and costs for testing facilitate rapid production control for a consistently high level of quality.

Method

The test method is based on the effect that the hardened layer is almost transparent to ultrasonic waves while the non-hardened material scatters them back. The backscattered signal received by a probe, is processed by the UT hardware and automatically evaluated by the software. The Surface Hardening Depth (SHD) is calculated and displayed by the software. In most cases the results comply with the results of destructive methods. SHD values down to 1.2 mm are determined using standard equipment. Lower SHDs can be tested with special probe systems.

Features

- 4 ultrasonic channels
- rugged for industrial use (IP65)
- portable for mobile use
- inspection frequencies: 5-25 MHz
- measurement repeatability: $\pm 0,2$ mm

Inspection Software: "SHD-Studio"

- setup mode
- custom test programs
- import / export of test programs
- tools for visualization and analysis of test results
- individual test reports

Advantages

- short set-up times
- simple, uncomplicated calibration
- fast and easy scanning
- high test sensitivity
- comfortable sensor handling
- sensor adaptable to complex geometries
- visualization of the current test point
- testing at small radii and undercuts possible
- individual report templates
- storage of results in data base
- analysis and reevaluation of test results
- line scans and circumferential scans
- automation possible

