

Newage **KK**[™]
hardness testing

- In-line and At-line measurement
- Feedback data for heat treatment process control
- Pass/fail quality control
- Complete turn-key systems

AUTOMOTIVE
HARDNESS
TESTING ■



NEWAGE
HARDNESS TESTING
EXPERT SOLUTIONS
CUSTOM DESIGNED
FOR THE AUTOMOTIVE
INDUSTRY. ■

About Us

Newage Hardness Testing is an A2LA accredited organization with a rich history of supplying Rockwell, Brinell and Microhardness hardness testers to major automotive manufacturers as well as a host of tier one suppliers.

Specialized systems for the automotive industry are designed to withstand the rigors of the production environment and allow hardness measurements to be made directly by the side of the manufacturing line or as an integral part of the process. Newage Hardness Testing specializes in engineering, manufacturing and installing “turn-key”, custom hardness testing systems that ensure seamless transfer of components to the tester for fast and precise measurement.

Newage Hardness Testing is a part of AMETEK Test & Calibration Instruments, which offers expert test solutions for all types of applications. AMETEK TCI offers a range of leading brands for test and calibration instrumentation - including JOFRA, Lloyd Instruments, Chatillon, Davenport and Mansfield & Green.

-
- In-line and At-line measurement for high production automotive components
 - Feedback data for heat treatment process control
 - Pass/fail quality control
 - Wear and strength characteristics of rotating and/or cast parts in the engine or drive line
 - Testing for components such as crankshafts, camshafts, transmission shafts, bearings, axles, gears, wheels, suspension parts, engine blocks and transmission cases
 - Complete turn-key systems manufactured in the USA

Contents

4

Testing in the automotive industry

6

Pass/fail testing
Automated hardness testing

5

In-line and At-line process control

7

Worldwide Sales & Service

Testing In the Automotive Industry

Hardness testing of ferrous and non-ferrous components to internationally recognized ASTM standards is a well-established process.

The wear and strength characteristics of rotating and/or cast parts in the engine or drive line following heat treatment are critical parameters in the automotive industry. Improperly heat treated parts can cause costly machining issues that can lead to costly rework and lost production time while early field failure can lead to increased warranty costs and customer dissatisfaction and in a worst case scenario, have passenger safety consequences.

Hardness testers from Newage Hardness Testers can be used directly by the side of the manufacturing line or integrated into the production process. This allows for increased sampling rates for better production and quality control. Even 100% inspection is possible with minimal impact on production speeds for safety critical parts.

Case hardening of rotating parts such as gears, bearings, and crankshafts, provides a hard surface that resists wear and a softer tough core that gives the part strength. Newage Testing Instruments offers both standard Automated Case Depth Hardness testers as well as the ability to design and build custom systems that vastly reduce these time-consuming measurements.



At-Line Process Control

Having a hardness tester close to manufacturing reduces transportation of samples to a metallurgy laboratory for testing and puts the measurement data in the hands of the production engineers very quickly. In these instances, the measured data can be used in real time to help control the manufacturing process.

As an example, specialized Rockwell test stations designed for I-4 and V-6 crankshafts allow the operator to quickly measure all the designated areas such as pins, mains and oil seals as directed by on-screen directions. All data is stored according to measured location and also by individual part. These test stations are located on the manufacturing floor, adjacent to the crankshaft heat treatment area. Parts can be removed from the production process and then easily returned after measurement.

In-Line Process Control

With in-line process control, hardness testers can be incorporated into the manufacturing line and the measured data is used to directly control the heat treatment process.

The image to the right shows aluminum automotive engine blocks being measured directly on the transfer line immediately after cooling from the heat treatment process. The blocks are clamped in the tester, milled to create a suitable surface for measurement and then measured according to the ASTM-E-103 Rapid Indentation method. (An optical reader could alternatively be used to measure the impressions to conform to the ASTM E10 specification.) Parts in this application can be measured at a rate of one every 45 seconds. The part handling system is directed to remove out of tolerance parts to be re-heat treated, all data is saved with part serial number for reference if needed.

This type of test station can be designed to measure a variety of parts, engine blocks, cylinder heads, transmission cases, suspension parts, agriculture equipment parts etc.



Pass/Fail Testing

Hardness testing can also be used for testing of processed components as part of a final pass/fail quality inspection.

Newage Hardness Testing has designed Rockwell Test stations for pass/fail measurement of transmission pawls at a 100% sampling rate. This is important, since wear in transmission pawls can lead to movement in automatic transmission vehicles if they are parked without the parking brake applied. Those that fail can be re-heat treated until they conform to design specifications.

Test stations such as these can be tailored to fit a specific part such as the transmission pawls or a family of parts, such as crankshafts, camshafts, transmissions shafts, gears, suspension parts, drive line components, bearing parts etc.

These systems can be completely automated or with different levels of operator involvement depending on parts and sampling rates. Data is always collected from each measurement. Measurement instructions and visuals can be custom designed to aide the measurement process.



HARDNESS

is measured from the depth of penetration ■

Automated Case Depth Hardness Measurements For Process Control

Newage Hardness Testing has developed automated microhardness testers that allow the measurement and documentation of cross-sectional samples of case-hardened parts to be completely automated. Performing a traverse for case depth analysis is so fast that it can be used for process control.

Traditional case hardness using Vickers measurements requires multiple indentation measurements at high magnification on highly polished samples to determine at what point from the surface of the part a specific hardness is reached. However, the Newage C.A.M.S.® Computer Assisted Measurement System, in combination with a dedicated microhardness tester provides an automatic measurement of the Vickers indentations and completely removes operator influence.

For even greater speed, the MT-90 uses the Rockwell Test Method. Hardness is measured from the depth of penetration rather than using an optical system to determine hardness based on the Vickers impression size. This not only vastly speeds up the measurement process, but also can vastly reduce the polishing needed to accurately measure the samples. Entire case depth analysis can be made in a few minutes with an individual test cycle of six seconds, what took hours can now take minutes.

These systems can store predefined test sequences and also chart data from an individual part or overlay a number of case depth charts for historical comparisons of the heat treatment process.

Worldwide

Sales & Service Support

Newage Hardness Testings sales and service staff and our associates have the capability to support hardness testing needs anywhere in the world. We provide a loaner/rental program for some models (subject to availability) to keep our customers in operation while their test equipment is serviced. For details call 800-806-3924 (or 215-355-6900 in Pennsylvania and outside the US).

Sales and Support

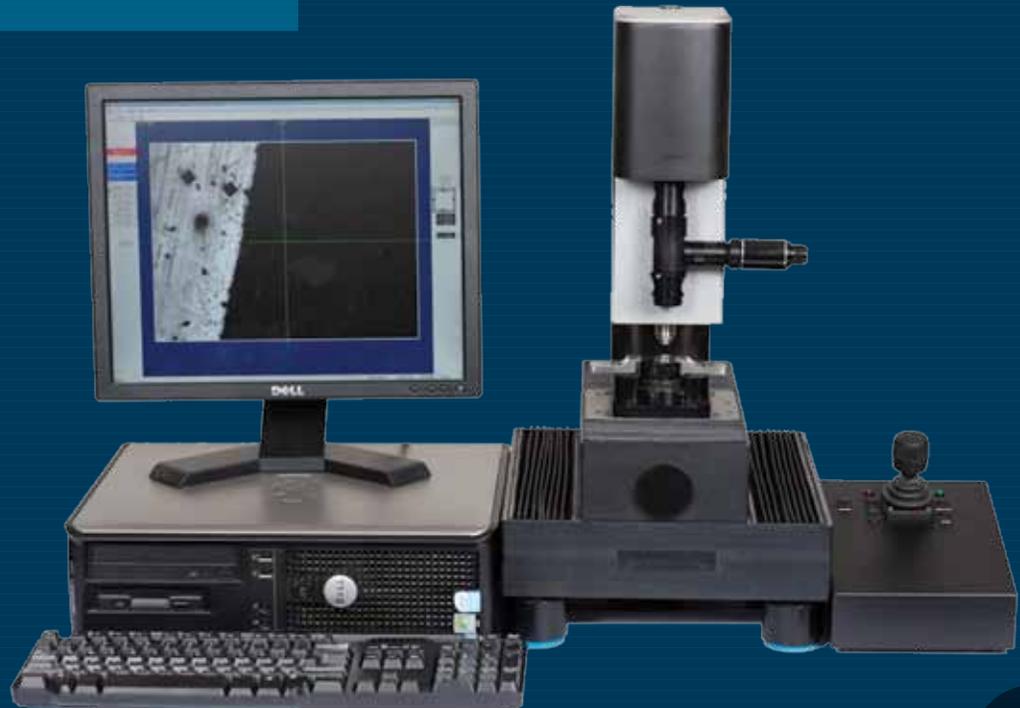
Industry leading hardness testing equipment and accessories ■

Calibration Services for all makes of testers, accredited to A2LA ■

A2LA Accredited Proficiency Testing for metallic and non-metallic scales ■

Here is what you can expect from the Newage Service Network:

- Newage Testing Instruments offers calibration service which is accredited to A2LA, All our service staff is A2LA certified and able to service most brands of hardness testers.
- For emergency service, you'll receive fast, on-site response by a qualified technician
- Standardized procedures with detailed documentation that will pass your internal and external audits
- Verification, calibration, preventative maintenance and repairs on many different types of hardness testing systems, regardless of make and model. Newage stocks commonly used spares for testers from other manufacturers
- All vehicles and service personnel are fully insured for liability for on-site service at your facility
- Call 800-317-1976 to schedule on-site service of your hardness tester
- Call 800-806-3924 (or 215-355-6900 if you are either in Pennsylvania or outside the US) for advice on any aspect of hardness testing or hardness testing applications



ABOUT AMETEK

AMETEK Test & Calibration Instruments

A business unit of AMETEK Measurement & Calibration Technologies offering the following industry leading brands for test and calibration instrumentation.

Newage Hardness Testing

Newage offers a comprehensive range of hardness testers, durometers, optical systems and software for measurement, data acquisition and analysis.

LLOYD Materials Testing

Materials Testing Solutions

Materials testing machines and software from Lloyd Instruments guarantee the highest level of performance and capability for production testing, quality control, laboratory testing, research and education to provide expert materials testing solutions.

Davenport Polymer Test Equipment

Allows critical polymer parameters to be determined, including melt flow index and melt flow rate, intrinsic viscosity (IV) measurement of moisture-sensitive PET polymers and polymer density measurement.

Texture Analysers

The comprehensive program provides the platform to perform rapid, general food testing and detailed texture analysis on a diverse range of foods.

Chatillon Force Measurement

Chatillon has been a hallmark in the industry since 1835. The hand held gauges and motorized testers have earned their reputation for quality, reliability and accuracy and they represent the de facto standard for force measurement.

JOFRA Calibration

The inventor of the portable high precision dry-block temperature calibrators. The calibration instruments program also covers precision thermometers and temperature baths, temperature sensors handheld instruments for pressure calibration and process signal calibrators for easy control loop calibration, measurements and simulation.

M&G Calibration

Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading.

AMETEK[®]
TEST & CALIBRATION INSTRUMENTS

www.hardnesstesters.com

UK

Lloyd Instruments Ltd
Tel +44 (0) 1243 833 370
Mail uk-far.general@ametek.co.uk

Germany

AMETEK GmbH
Tel +49 (0) 2159 9136 510
Mail info.mct-de@ametek.de

Singapore

AMETEK Singapore Pte Ltd
Tel +65 6484 2388
Mail aspl@ametek.com.sg

Denmark

AMETEK Denmark A/S
Tel +45 4816 8000
Mail ametekdk@ametek.com

USA

AMETEK Measurement & Calibration Technologies
Tel +1 (215) 355 6900
Mail newage.info@ametek.com

China

Beijing • AMETEK Inc.
Tel +86 10 8526 2111
Mail lloyd@ametek.com.cn

France

AMETEK S.A.S
Tel +33 (0)1 30 68 89 40
Mail general.lloyd-instruments@ametek.fr

India

AMETEK Instruments India Pvt Ltd.
Tel +91 22 2836 4750
Mail ametekdk@ametek.com

Shanghai • AMETEK Commercial Enterprise Co. Ltd

Tel +86 21 5868 5111
Mail lloyd@ametek.com.cn

Guangzhou • AMETEK Inc.

Tel +86 20 8363 4768
Mail lloyd@ametek.com.cn