



Corporate Presentation Hardness

One partner from nano to macro scale
From series over customized machines to special machines, components and software
From manual to fully automated solutions
Over the entire machine life cycle

Agenda

Overview

Methods and Machines

- / Rockwell
- / Macro / Universal
- / Micro
- / Nano
- / IRHD / Shore

Application

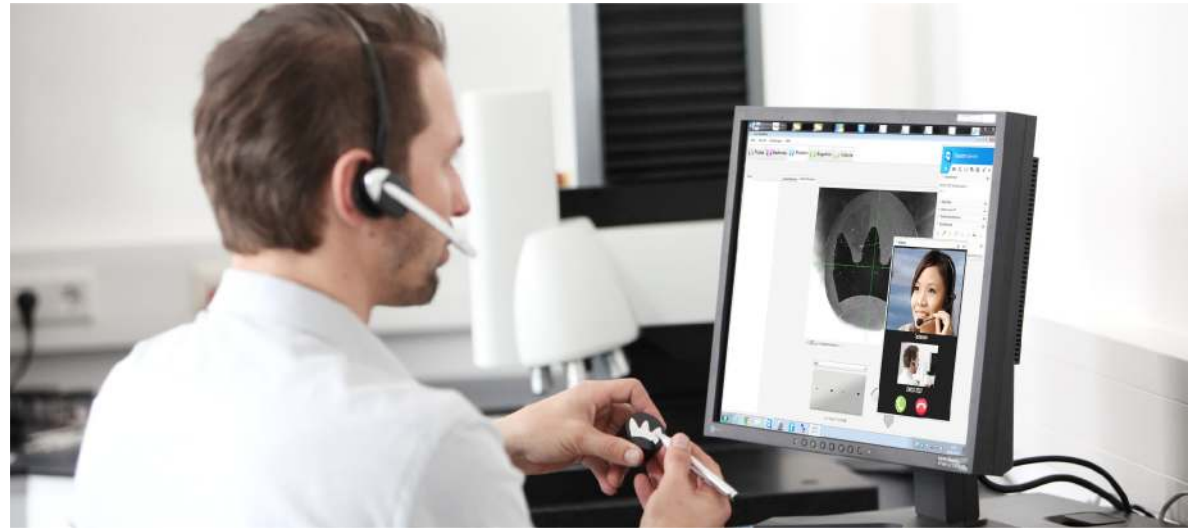
- / Automation
- / Customizing and special machines

Services

testXpo

Your partner for complete solutions for the entire machine life cycle

Starting from the project concept through the entire machine life cycle to personnel development.



Consultation

On-site or remote



Preliminary tests and order verification

In our laboratories in Ulm, Wiehl, Kuchl



Service - on-site and remote

Multivendor-capability, accredited



Modernization, Used-Machines

A new purchase is not always necessary



Financing, Insurance

Rent (installment purchase) , leasing, testXchange



Know-how transfer

(certified operator program)

Your partner for complete solutions for all materials, processes and load ranges

All methods for all materials



Rockwell

1 - 250 kgf



Macro / Universal

0,3 - 250 kgf & 3 - 3.000 kgf



Micro

0,00025 – 62,5 kgf



Nano

0.05 mN - 20.000 mN



IRHD/Shore

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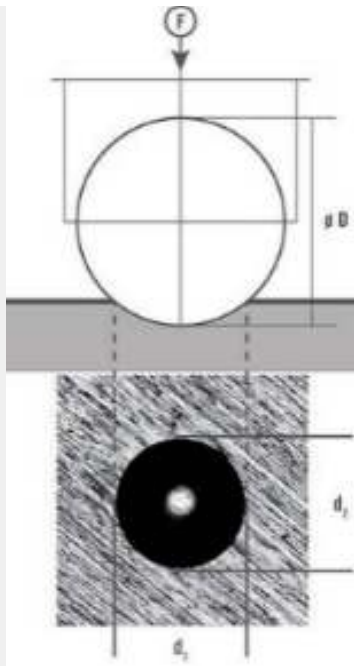
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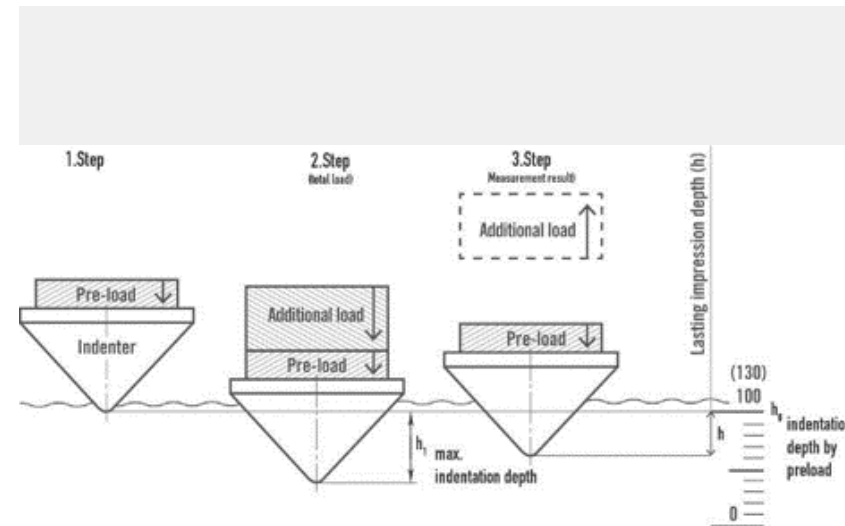
Overview hardness testing

In order to meet different requirements, various hardness testing methods were developed at the beginning of the last century.



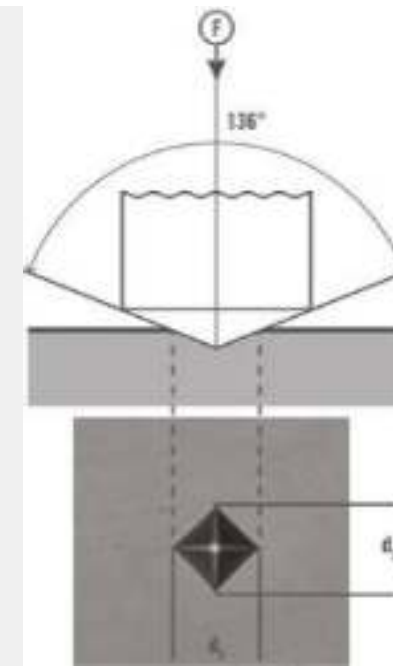
Brinell
~1900

Suitable for testing on soft to medium hard metals.



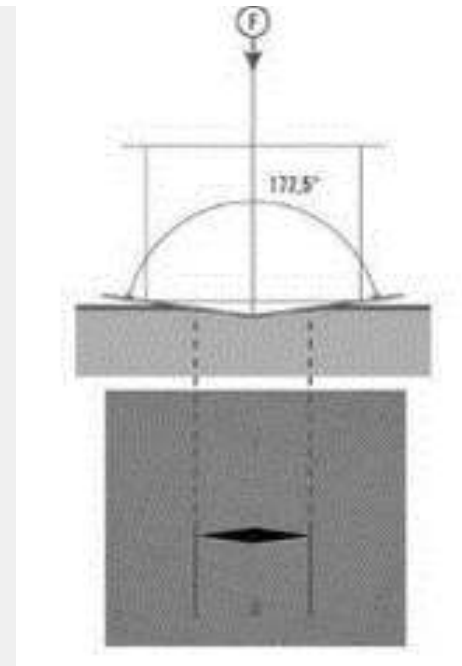
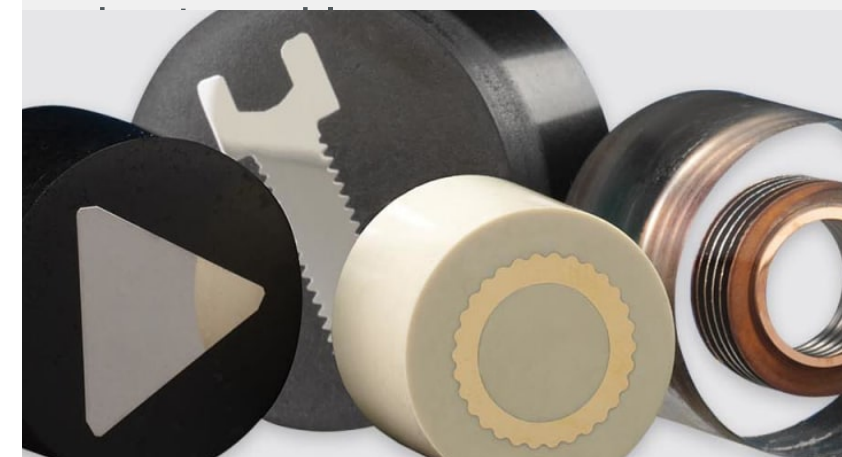
Rockwell
~1920~

Suitable for large and very hard specimens.



Vickers
~1925

Suitable for coarse measurements, thin sheets and



Knoop
~1939

Testing on thin layers and brittle materials.



Rockwell

Entry Rockwell Hardness testers with intuitive interface



- / Rockwell hardness testing machine – Simple, cost effective hardness testing
- / Innovative nose mounted indenter – Test the internal surfaces of pipes or bearings
- / Intuitive user interface – Easy, natural workflow with simplified test set up and process indication
- / Reliable test results – Automated operation produces accurate and reliable test results
- / Flexible result handling – Analyse measurements, view statistics, save data to memory stick and testXpert
- / Multiple languages – Change the user interface to operate in a convenient language
- / Full range of Rockwell options – Robust and reliable models with fixed weight or electronic load application

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Rockwell

ZHR8150CLK - for more than 30 different applications

Range of application

- / Ball indentation hardness testing on plastics and rubber according to ISO 2039-1
- / Rockwell hardness testing according to ISO 6508, ASTM E18
- / Rockwell hardness for carbonaceous materials according to DIN 51917, DIN IEC 413

The closed-loop control load application enables hardness tests in a wide range of applications with only one instrument. Automatic test sequence and automatic conversion in alternative hardness scales save time and guarantee a high level of repeatability.

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Rockwell

DuraJet - proven in harsh environments - since five generations



- / Load range 1 - 250 kgf
- / Short test cycle times and easy operation
- / Robust machine design and 7" Touch-Display
- / Electronically controlled test sequence (PLC / closed loop via load cell) and automatic evaluation of the test indentation without any further settings by the operator
- / LED- illumination (can be dimmed) for precise placement of test points even in difficult lighting conditions.
- / Rockwell according to DIN EN ISO 6508, ASTM E18
Carbon testing according to DIN EN 51917
Plastic testing according to DIN EN ISO 2039
HVD, HBD depth measurement (non-standard)



Rockwell

N4, N6, N7 - portable Hardness tester

- / Load range 15 – 187,5 kgf
- / N4 Testing clamp in different dimensions
- / N6 Hardness tester in bores
- / N7 Tooth flank hardness tester



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Macro / Universal

DuraVision for the highest demands



- / Load range 0,3 - 250 kgf oder 3 - 3.000 kgf
- / Electronic control of the test load prevents environmental influence
- / Automatic image analysis and brightness control minimises operator influence
- / 7-fold star turret, protected by robust clamping jaws for workpiece fixation
- / Ergonomic operation via 10" touchscreen display or external PC
- / Handwheel device, motorized test head adjustment and fully-automated version
- / Intuitive operation software ecos Workflow enables quick familiarization and efficient working
- / The patented Brinell Smart Light enables repeatable and precise evaluation of Brinell indentations, even with soft materials.
- / PLC modules for machine control ensure easy maintenance and long availability of spare parts.
- / Brinell according to DIN EN ISO 6506, ASTM E10
Rockwell according to ISO 6508, ASTM E18
Knoop according to DIN EN ISO 4545, ASTM E384, ASTM E92
Vickers according to DIN EN ISO 6507, ASTM E384, ASTM E92
Carbon testing according to DIN 51917
Plastic testing according to EN ISO 2039

Micro**DuraScan - highest efficiency for your lab**

- / Load range: 0,00025 – 62,5 kgf
- / Electronically controlled test sequence (PLC / closed control loop via load cell) and automatic evaluation of test indentation
- / With motorized test head and automatic test height adjustment
- / 12 Mpix colour camera with 4-step zoom with fully automatic brightness control and autofocus
- / The ecos workflow software offers high level functions combined with a self-explanatory user interface
- / From single measurement to fully automated serial measurement
- / Semi-automatic and fully-automatic models
- / Control via touch display or external PC
- / 3-fold measurement turret manual or optional 6-fold measurement turret
- / large, automatic linear table & overview camera
- / Vickers according to DIN EN ISO 6507, ASTM E384, ASTM E92
Knoop according to DIN EN ISO 4545, ASTM E384, ASTM E92
Brinell according to DIN EN ISO 6506, ASTM E10

The ZHN/S Nanoindenter is tailored to standard test tasks in industry and research, robust and simple to use



- / Nanoindenter for measurements between 0.05 mN to 20.000 mN
- / Micro compression tester in the same force range
- / Fatigue tester up to 2 Hz quasistatic or up to 300 Hz with dynamic module
- / Dynamic mechanical tester (DMA) up to approximately 100 Hz with dynamic module
- / Scratch and wear tester without coefficient of friction measurement
- / For fast mapping of hardness and elasticity with up to 10 measurements per minute

IRHD / Shore

Shore-Hardness testers for all relevant standards

Range of application

- / SHORE A, B, O, C, D, D0, 00, 000, (Asker C)
- / Constant contact pressure ensured during the use of the test stand
- / Digital Instruments: Optical and acoustic signals for reading measured values
testXpert III data transmission

Relevant standards:

- / ISO 7619, ISO 868
- / ASTM D 2240
- / BS 903 Part A 26, NF T 51-174





IRHD / Shore

IRHD Micro Compact Hardness tester for quick production control of plastics and rubber

Application range

- / Hardness testing according to IRHD micro (IRHD: International Rubber Hardness Degree)
- / Suitable for specimen with a min. width of 0,5 mm, such as O_rings, seals, moldings, hoses and pipes
- / testXpert III data transfer

Relevant standards:

- / ISO 48, ASTM D 1415
- / NFT 46003, BS 903 Part A26



IRHD / Shore

Modular IRHD/Shore-hardness tester for fast, fully automatic and operator-independent testing in all Shore and IRHD ranges

Range of application:

- / Module for IRHD-M (micro), IRHD-ss, IRHD-N (normal), IRHD-H, RHD-L (soft), Shore A/B/0, Shore D/C/D0, Shore 00/000, Micro Shore
- / Coded module auto identification
- / testXpert III data transfer

Relevant standards:

- / ISO 868, ISO 7619, ISO 48
- / ASTM D 2240, ASTM D1415
- / NFT 51-174, NF T 46-003, BS 903 Part A26

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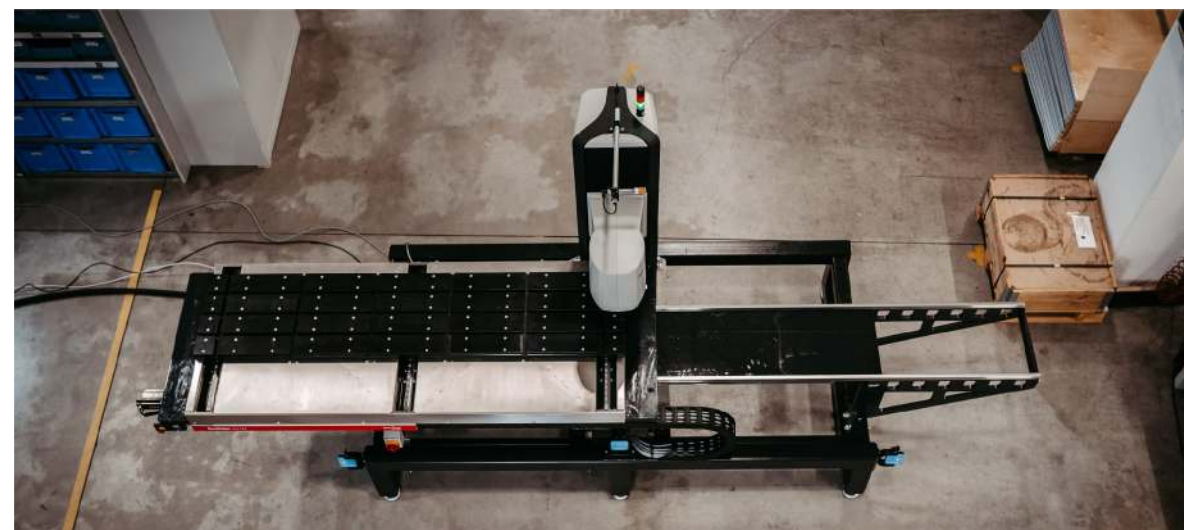
testXpo

Competitive advantages for our customers through individualization

Customization of Hard-and Software. Integration, Special machine, Automation.



Customizing
customized solutions



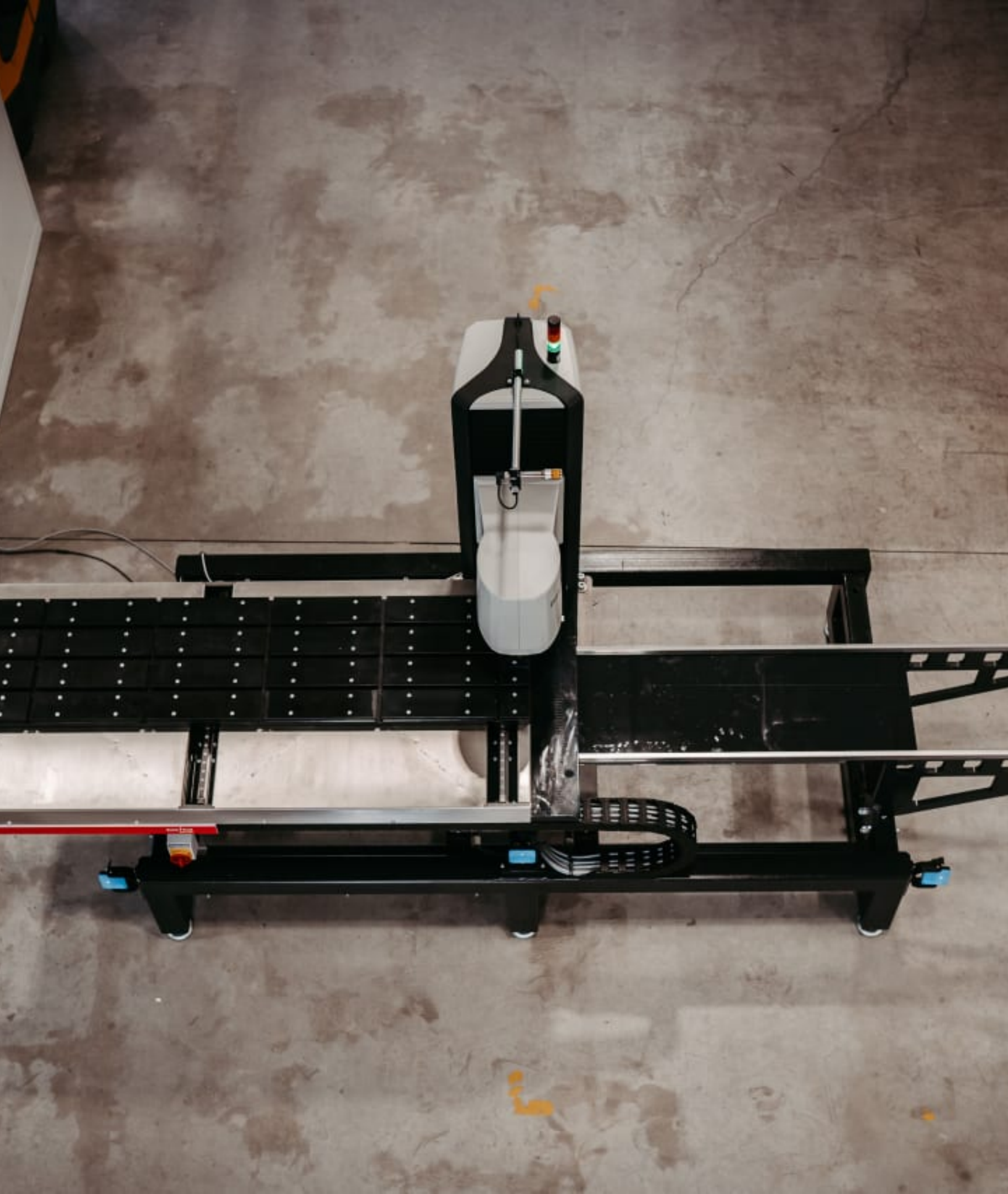
Special machines
Integrated sample preparation



Automation
Self Teaching, serial testing



Integration
Integration of hardness testing in existing devices



Customizing and special machines

From special accessories to special devices with test point preparation for hardness testing.

- / **Customer-specific** test anvil, specimen holders, test heads and mounts
Depending on the application, our customers require special test anvils in order to test the widest variety of components in compliance with standards.
- / We offer **external operation options** and signalling units for our series devices in order to operate the hardness testing machine remotely. Our solutions are designed to comply with the local legal requirements and include a signalling unit to determinate the status of the machine remotely.
- / The **VR5C** is a fully automatic hardness testing system for demanding Brinell-tests. The system is operated by a Siemens S7 controller in conjunction with the proven ecos Workflow test software. The test cycle and test point evaluation take place fully automatically. The sytem comes with an integrated milling fixture for the specimen surface preparation. Adaptions such as hydraulic punches are possible.





Automation

Meet high requirements and at the same time relieve highly qualified laboratory staff.

- / Automated test systems have become indispensable in modern testing laboratories in order to meet the high demands placed on the performance of materials testing..
- / They take over the handling of the samples and perform the tests according to standard specifications in a repeatable and comparable manner.
- / Our automation concept for hardness testing is used especially for large test volumes. The highly qualified laboratory staff is relieved of routine activities and is available for more demanding tasks. (High safety through reduction of operator influence).



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Services and After Sales.

Your reliable and strong partner for the complete machine cycle.

Accredited calibration laboratory ISO/IEC 17025

ZwickRoell is your first stop for testing machine services. With a worldwide service network, hundreds of service employees, and numerous international accreditations according to EN ISO/IEC 17025 for our calibration laboratories, you are in good hands with ZwickRoell. Our testing machine calibrations are verifiably independent, efficient and precise.

Consultancy and Application engineering

Our experts will advise you individually and in detail before buying a machine. Together, we will find the ideal testing solution for you.

Maintenance and Inspection

Regular maintenance and inspection keeps your testing systems running and ensures your safety and the safety of the machine. Additionally, you can significantly minimize wear and reduce downtime.

Calibration

We operate calibration laboratories across the globe. We perform calibrations amongst others according to DAkkS, COFRAC, UKAS, A2LA, NMETRO, TÜRKAK and NABLL.

Software Services

Our experienced software engineers develop individual solutions for every task and every need.

Online Services

We continuously work on expanding our digital services, from system monitoring to web demos. We provide you with perfect digital support.

Hotline and customer support

Do you have questions or are in need of support? Our service engineers are always available for you. We are standing by to quickly and competently troubleshoot your issue whether it is concerning your hardness tester or testing software.

Modernization

We would be happy to support you in modernizing your existing hardness testing device. This secures your investment in the long term.

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testXpo

testXpo

Visit us on the metal island (A4)

- / Presentation of new software **ecos™ III**
- / See live our automation solution
- / Showing the complete hardness product portfolio





Zwick / Roell