BRINELL / KNOOP / VICKERS MICRO HARDNESS TESTER

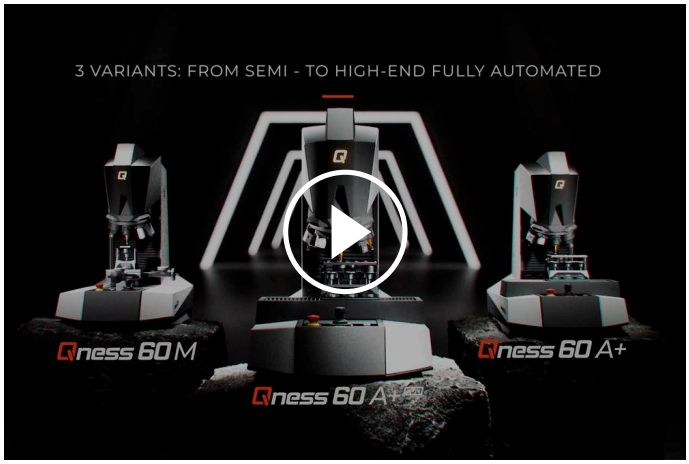
QNESS 60 A+ EVO

The Vickers / Knoop / Brinell / Rockwell hardness tester series Qness 60 EVO takes micro hardness testing to a whole new level: The high-end laboratory devices of the latest generation combine the best of both worlds – hardness testing and microscopy without compromise and with maximum operating convenience. The revolutionary optical system with color camera provides reproducible and reliable results every time.

The innovative „EVO“ model of this Vickers / Knoop / Brinell / Rockwell hardness tester promises perfect automation and comes with a high-precision positioning control for all three axis systems with glass scales.

Flexible XYZ progressions for thousands of analysis points allow for exceptionally high throughput without operator intervention.

QATM micro hardness testers seamlessly integrate with the Verder Scientific IoT platform, featuring remote real-time monitoring, live notifications, effortless backups and automatic software updates.



Click to view video

Product Video

QNESS 60 A+ EVO

PRODUCT ADVANTAGES

- Wide test force range (0.25 g – 62.5 kg)
- Ready to Test package, includes: ASTM+DAkkS certified Vickers diamond and 5x / 20x / 50x lenses
- Dynamic test turret with 8-position tool changer
- Qpix Control2 Software with innovative 3D operation
- M[illegible]on of INSPECT microscopy features
- Rotatable indenter (patented IPC technology)
- Fully automated, unmanned test and analysis cycles
- XYZ axis control with direct optical path measuring system (table position accuracy of +/- 0,2 µm)
- Variant A+ only: Sample image camera with automatic image acquisition (52 x 39 mm)

QNESS 60 A+ EVO

EXPERIENCE THE 3D MODEL IN THE REAL WORLD!

SHARE

CHOOSE PRODUCT:

Qness 60 A+ EVO

AR-Model - Visit the page with your smartphone or scan the QR code under "View in Room" and experience [illegible]he 3D model in the real world!

QNESS 60 A+ EVO

TEST METHODS & FORCE RANGE

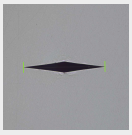
QATM hardness testers accurately analyze according to all standard test methods and cover a wide spectrum.

The electronically controlled, **fully automated test cycles** ensure fast, precise hardness testing, as well as fast method changes and automatic detection of the focal plane. With the **Ready to Test package** all Vickers test methods are possible with the standard scope of delivery.

Vickers
DIN EN ISO 6507, ASTM E-384, ASTM E92

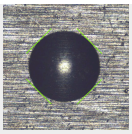
HV 0.00025*	HV 0.0005*	HV 0.001	HV 0.002				
HV 0.003	HV 0.005	HV 0.01	HV 0.02	HV 0.025*			
HV 0.05	HV 0.1	HV 0.2	HV 0.3	HV 0.5	HV 1	HV 2	
HV 2,5	HV 3	HV 5	HV 10	HV 20	HV 30	HV 50	
HV 60*							

Knoop
DIN EN ISO 4545, ASTM E-384, ASTM E92



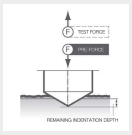
HK 0.001	HK 0.002	HK 0.005	HK 0.01	HK 0.015		
HK 0.02	HK 0.025	HK 0.05	HK 0.1	HK 0.2	HK 0.3	
HK 0.5	HK 1	HK 2				

Brinell
DIN EN ISO 6506, ASTM E-10



HBW 1/1	HBW 1/2.5	HBW 1/5	HBW 1/10	HBW 1/30
HBW 2.5/6.5	HBW 2.5/31.25	HBW 2.5/62.5		
HBW 5/25	HBW 5/62.5			

Rockwell
DIN EN ISO 6508, ASTM E-18



HRA	HRF	HR15-N/T	HR30-N/T	HR45-N/T

Integrated conversions
DIN EN ISO 18265, DIN EN ISO 50150, ASTM E-140

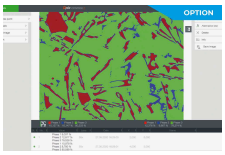
* not according to standards

QNESS 60 A+ EVO

MICROSCOPY & ANALYSIS WITH QPIX INSPECT

PHASE ANALYSIS

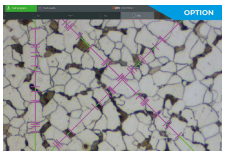
DIN 9042, ASTM E-562



- Automatic image object dimensioning
- Provides analysis results as percentage proportions of a surface or as nominal surface values as tables or diagrams

PARTICLE SIZE DETERMINATION

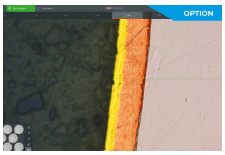
DIN 9042, ASTM E-562



- Particle size determined via linear or circular section method
- Results of the analysis provided as tables or diagrams
- Abrams Circles, Heyn Lines, Snyder-Graff Line

LAYER THICKNESS MEASUREMENT

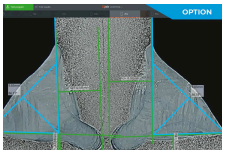
DIN EN ISO 1463



- Determination of layer thickness
- Semi-automated gauging of horizontal, vertical and radial layers.

WELD SEAM MEASUREMENT

DIN EN ISO 5817



- Standardised measurement and evaluation of weld seams
- Prefabricated templates with all relevant measuring tools such as throat thickness, weld reinforcement, penetration depth, etc.

Automatic good/bad evaluation and report generation

QNESS 60 A+ EVO

REVOLUTIONARY OPTIC SYSTEM

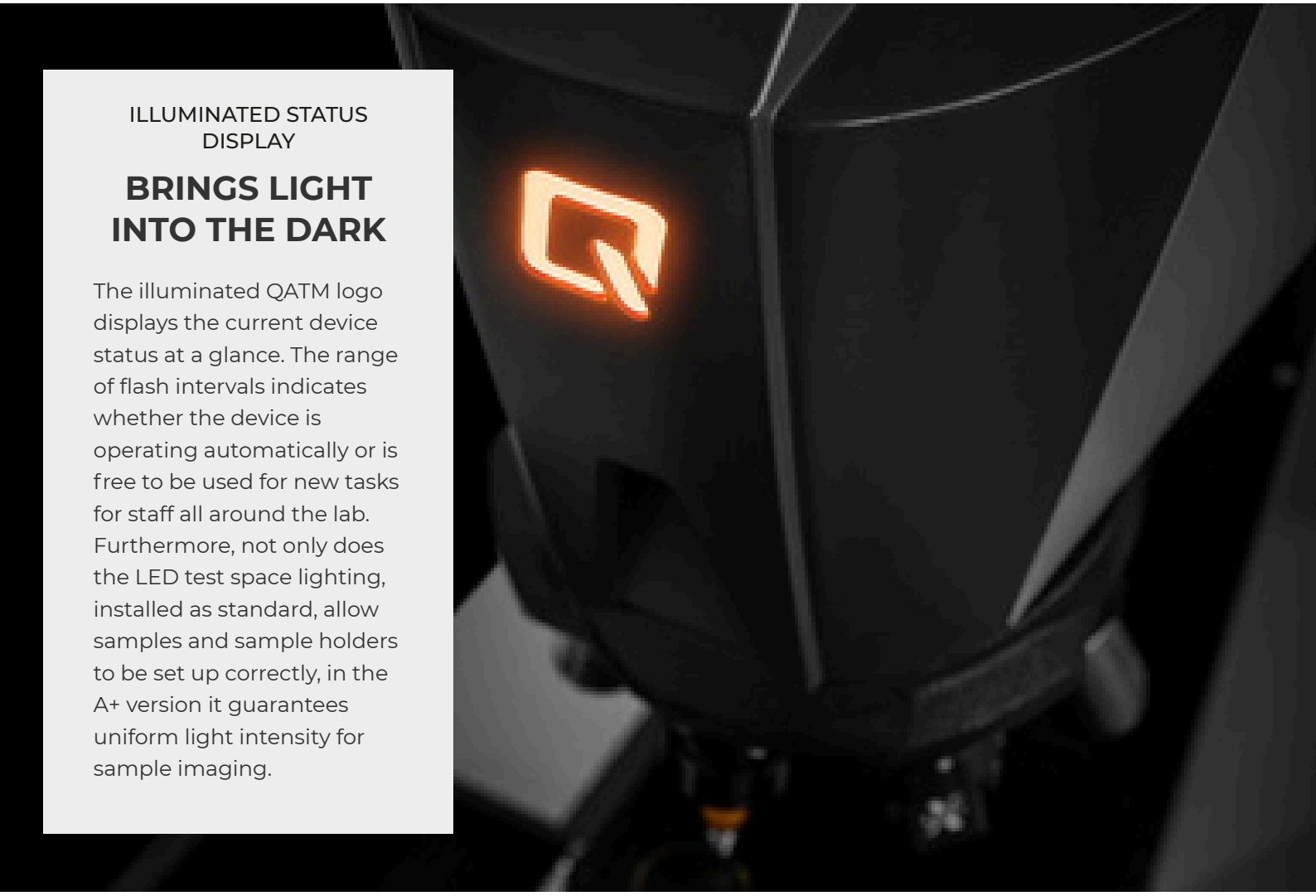
The QATM-developed, in-house manufactured lens system sets new standards. As well as providing crystal clear image quality for hardness testing, Koehler illumination uses white LED light and motor-operated aperture shuttering to produce ideal contrast, even for high magnification images.

Experienced metallurgists agree the image quality provided by the Qness 60 A+ EVO is comparable in all aspects with that of established sophisticated microscopes. The up-to-date concept and new lenses in the optic system enable the device to completely meet even the strictest physical ‘test system definition’ requirements in compliance with DIN EN ISO6507-1/ 2:2018.

INNOVATIVE OPERATION

TEST SPACE LIGHTNING

All devices are equipped with the new LED work space lighting: Simplified positioning of samples for single-piece tests.



ILLUMINATED STATUS DISPLAY

BRINGS LIGHT INTO THE DARK

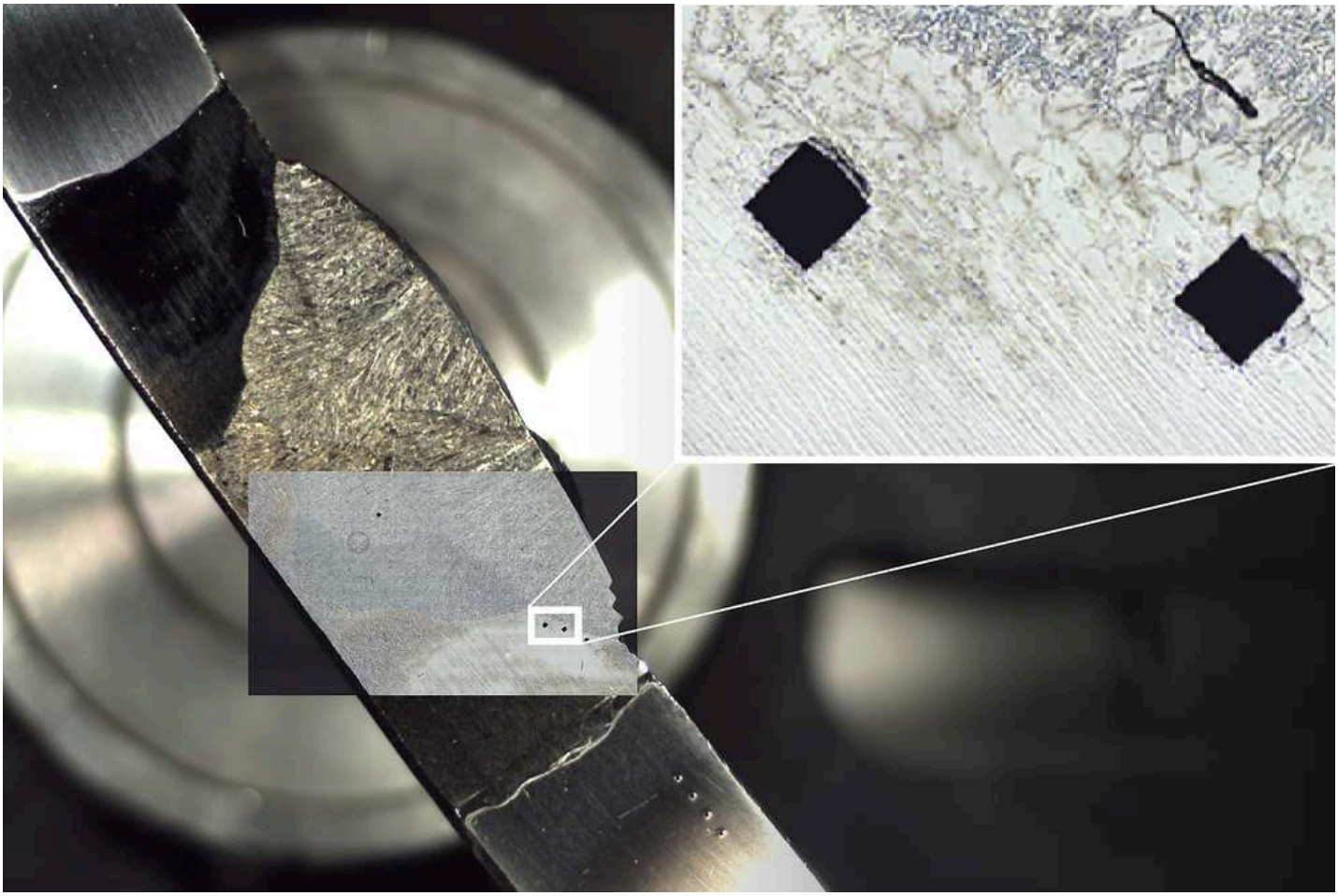
The illuminated QATM logo displays the current device status at a glance. The range of flash intervals indicates whether the device is operating automatically or is free to be used for new tasks for staff all around the lab. Furthermore, not only does the LED test space lighting, installed as standard, allow samples and sample holders to be set up correctly, in the A+ version it guarantees uniform light intensity for sample imaging.

QNESS 60 A+ EVO

PIONEERING TECHNOLOGY - UNIQUE IMPLEMENTATION

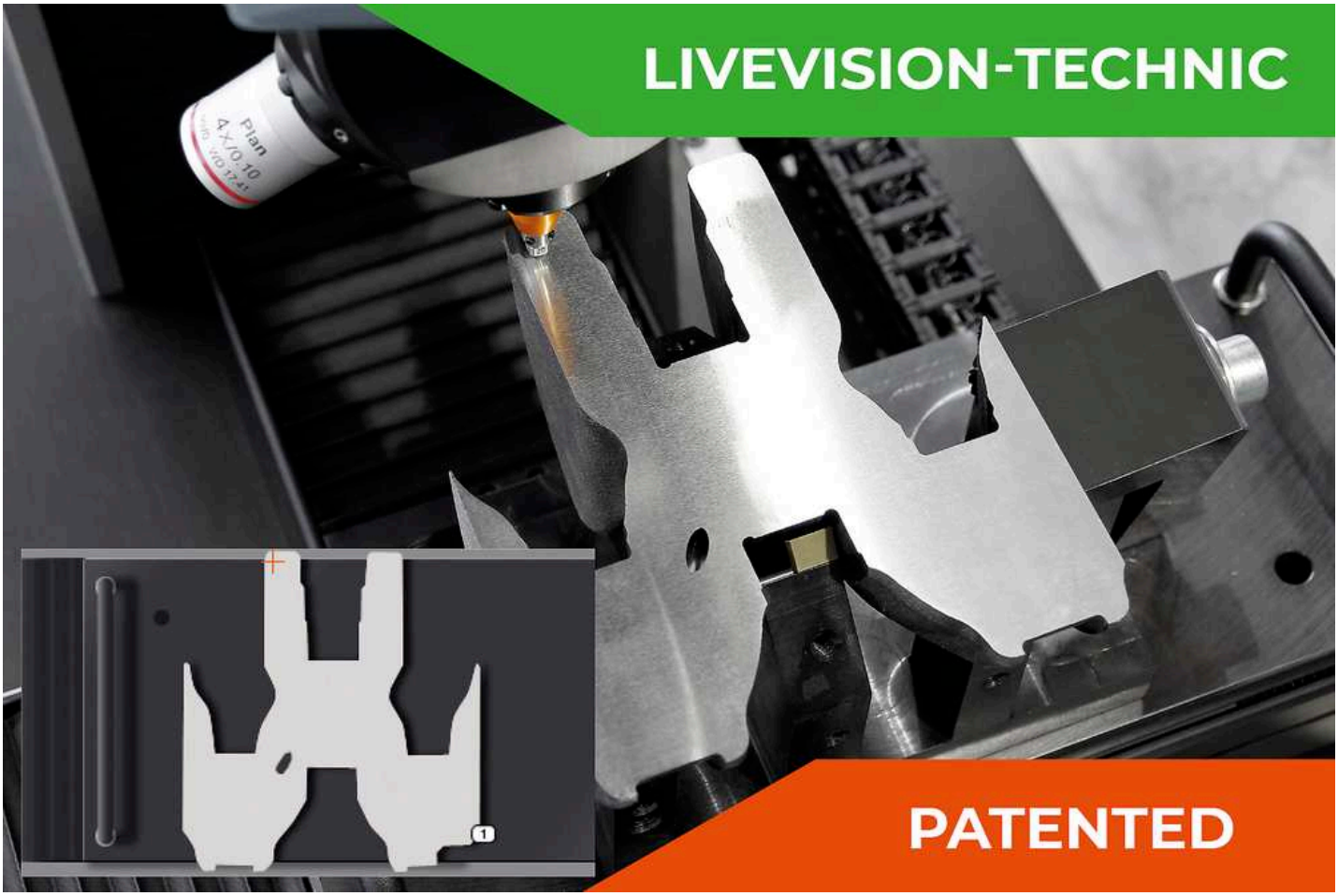
SAMPLE IMAGE CAMERA

It’s no coincidence that most QATM customers choose the ‘A+’ version with a built-in sample image camera. In a few seconds the image of the sample is shot with the additional camera (field of view 52 x 39 mm). The image provides excellent navigational support within the software, particularly in combination with DOUBLE-VIEW TECHNOLOGY, and aids enhanced documentation in the automatically compiled test report.



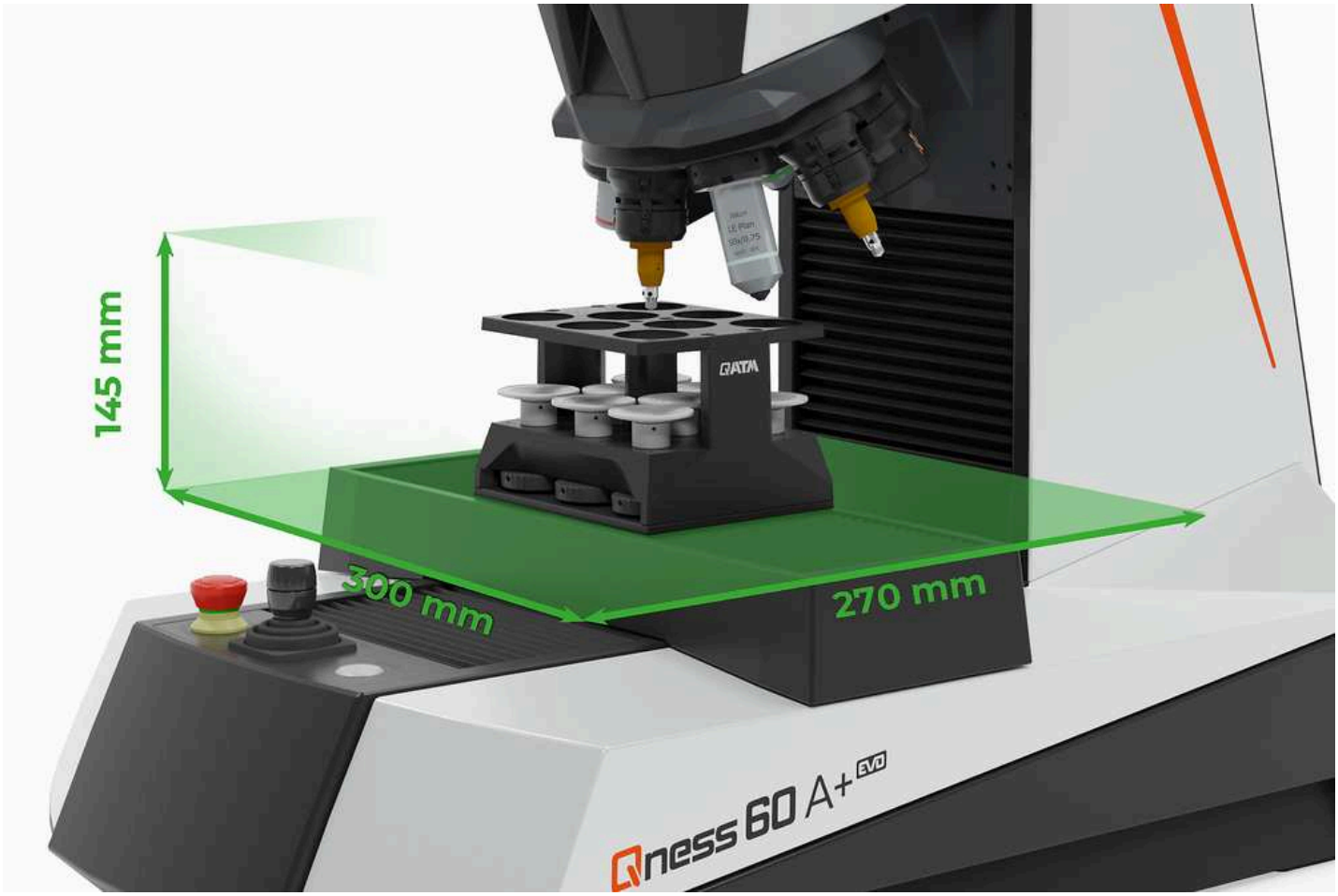
HIGH-RESOLUTION SAMPLE IMAGE (HRI)

If high-quality images of larger areas are required (e.g. for weld seam measurements), the area can be scanned using the HRI function. The Qpix Control 2 software automatically combines the individual images into one large overall image.



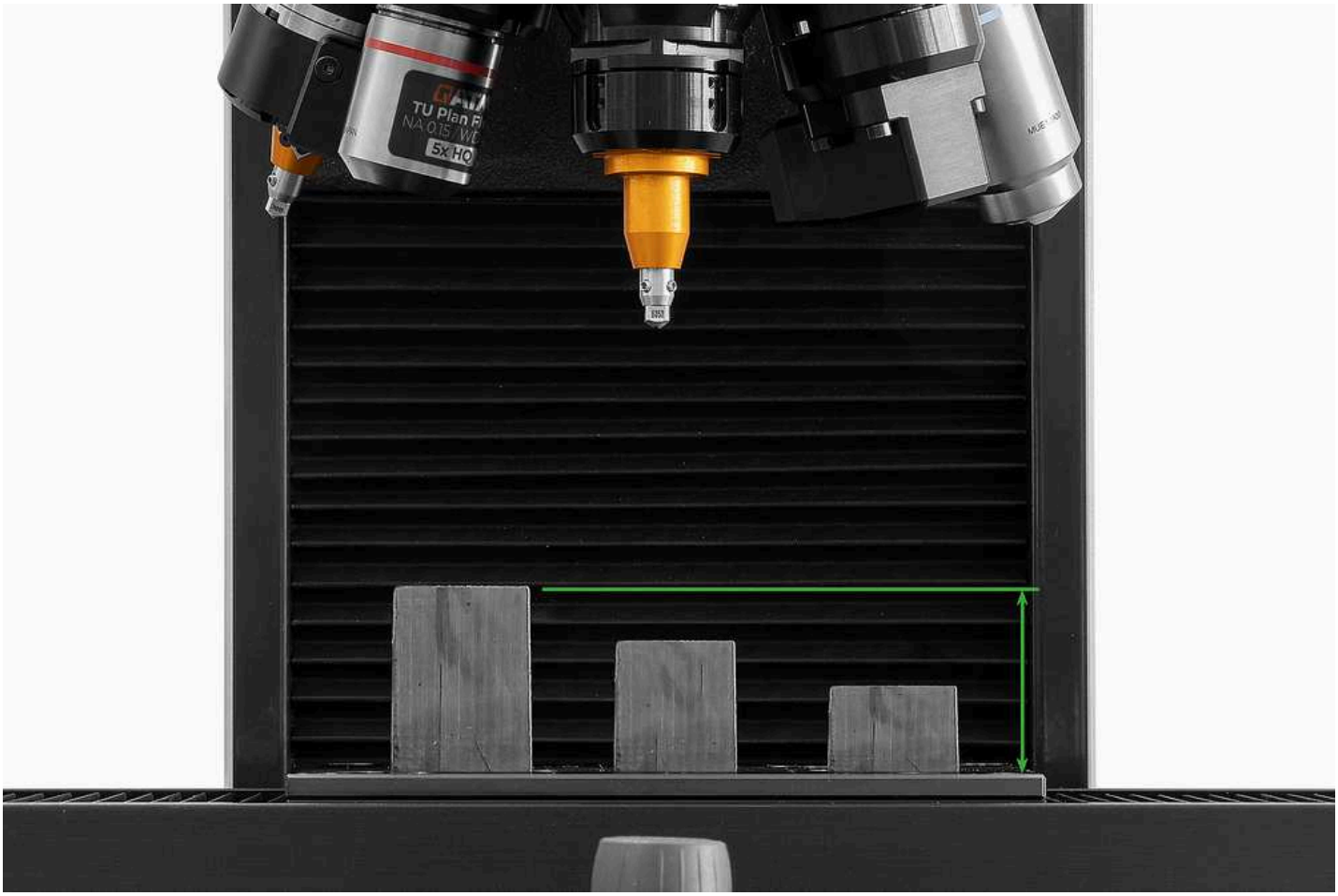
CUSTOMER-SPECIFIC SAMPLE HOLDER

Identical samples can be set up in the software in scale as a 3D model.



EXACT POSITIONING AND A LARGE TEST SPACE

All 3 axes are equipped with the direct, optical path measuring system as standard. The axes and turret can be positioned to an accuracy of 1.5 µm, so even thin layers, or special testing or analytical coordinates, can be repeatedly and accurately approached.

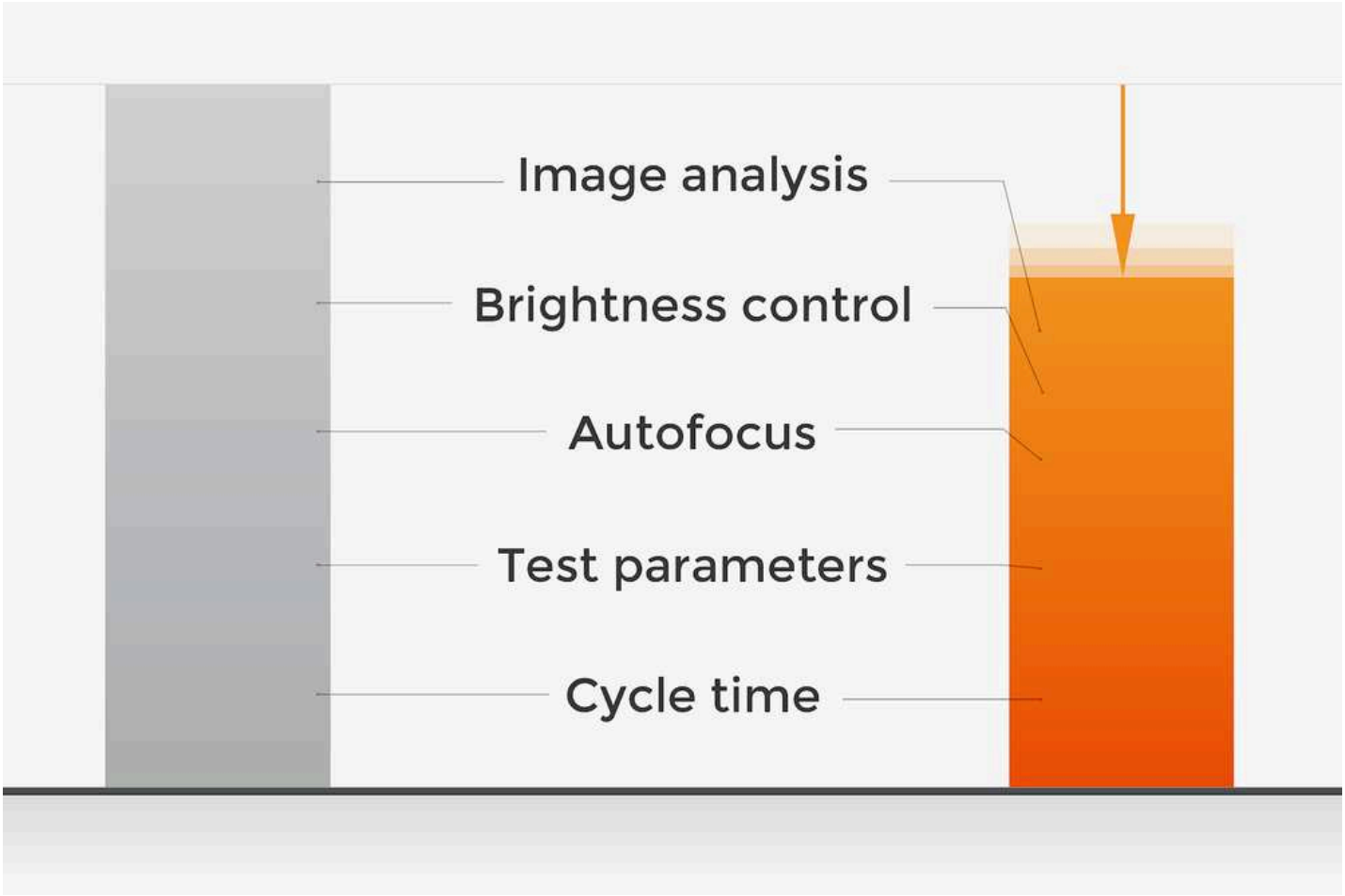


DIFFERENT TEST HEIGHTS

The unique construction of the highly-dynamic tool changer turret allows the positioning of test pieces at various heights within the test area. Innovative CAS technology protects the unit from collisions.

EVEN LARGER WORK ROOM

The optional large slide doubles the test table surface area to 300 x 120 mm. If required, the test height can also be extended from 150 mm to 260 mm.



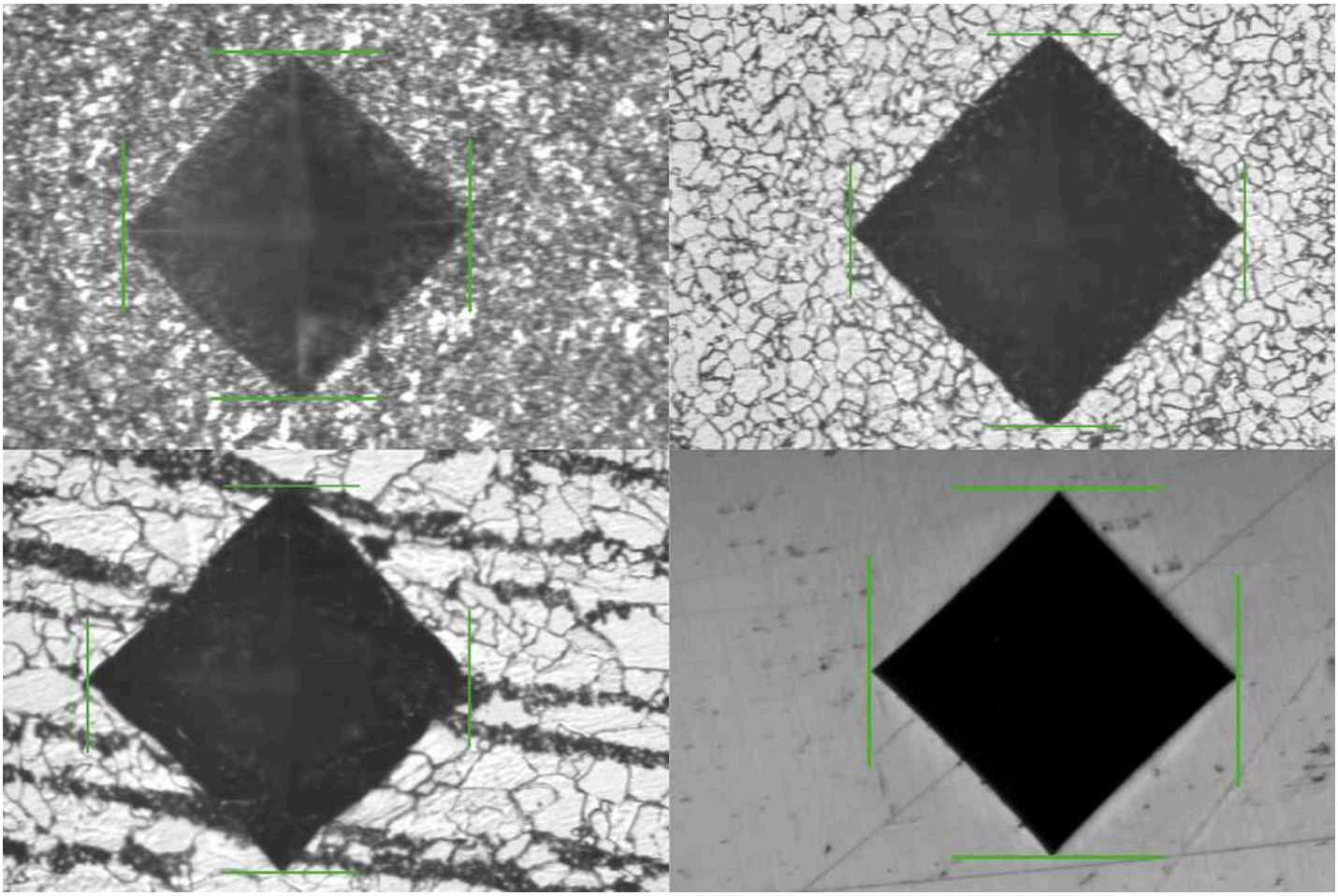
OPTIMIZED PERFORMANCE AND SILENCED DESIGN

Optimized testing parameters and shorter intervals for serial autofocus, brightness regulation and image analysis, facilitate unbeatable cycle times during everyday operation involving hardness testing devices of the new micro hardness tester product line; and it's even faster than the previous model. A further benefit of the new machine concept is the emphasis on reduced noise emissions in operation and motion, making it particularly suitable for laboratory work.

COMPREHENSIVE RANGE OF BASIC FUNCTIONS

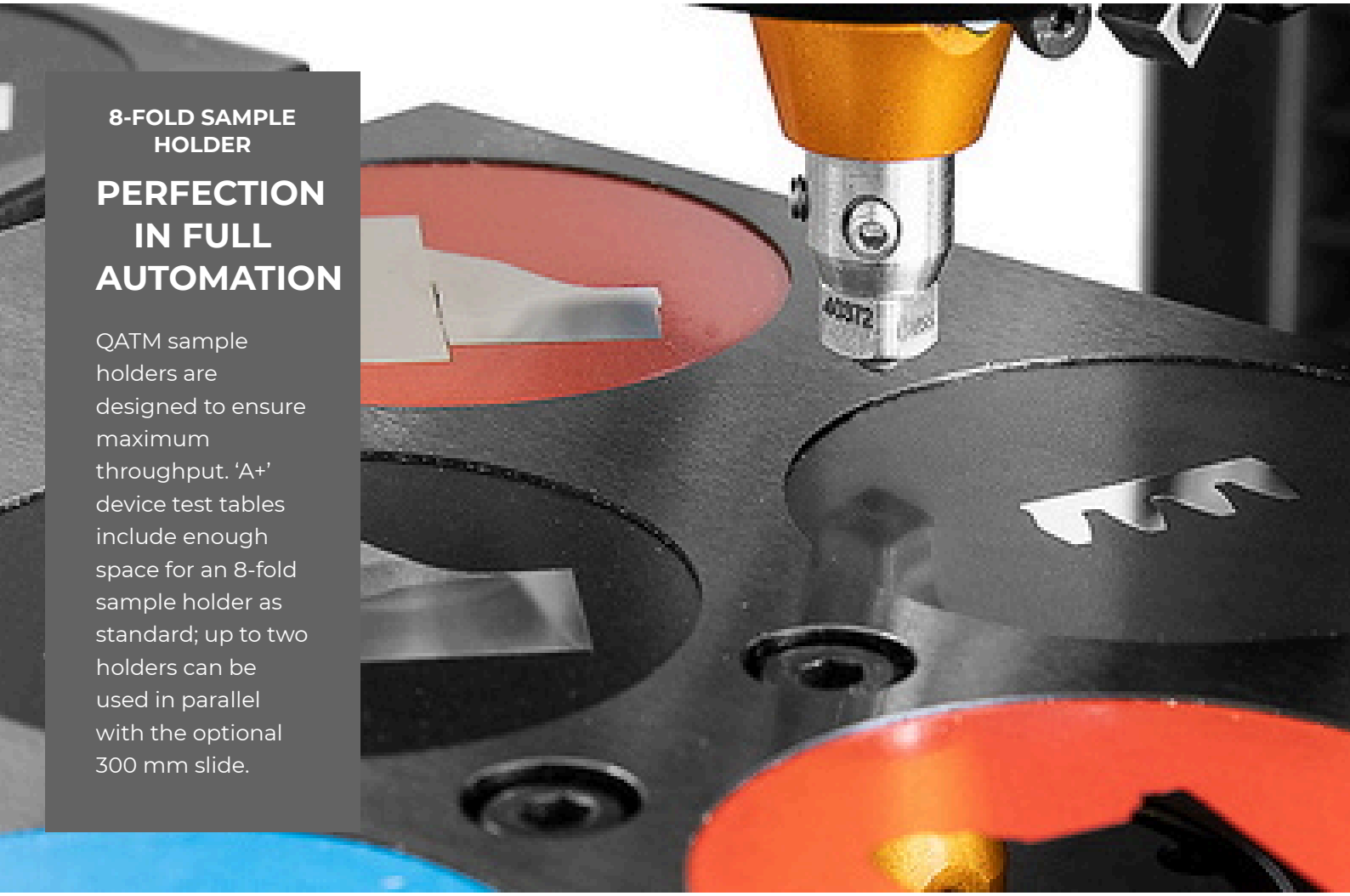
Several labour-saving features are already included in the QATM base model:

- Optimized autofocus system
- Automatic brightness regulation
- Automatic image evaluation for hardness testing with multiple evaluation modes
- Built-in protocol generator



SURFACE INDENTATION RECOGNITION

The adjustable surface indentation recognition function reduces the required eff ort of sample preparation for testing the hardness of non-optimum surfaces. Hence, automatic indentation recognition is also possible on critical surfaces (etching, grinding...).



8-FOLD SAMPLE HOLDER

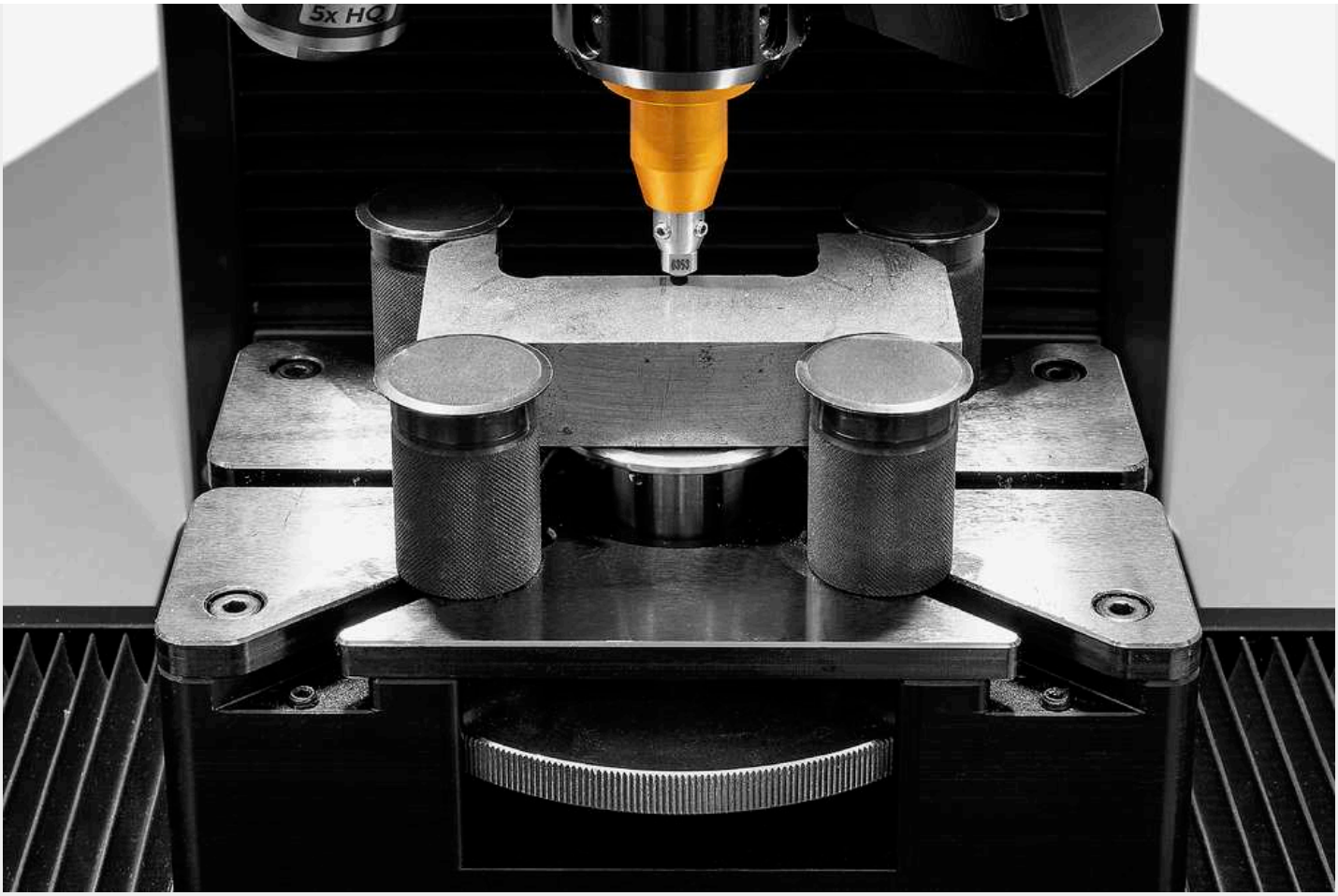
PERFECTION IN FULL AUTOMATION

QATM sample holders are designed to ensure maximum throughput. ‘A+’ device test tables include enough space for an 8-fold sample holder as standard; up to two holders can be used in parallel with the optional 300 mm slide.

SAMPLE HANDLING FOR INDIVIDUAL & SERIES TESTING

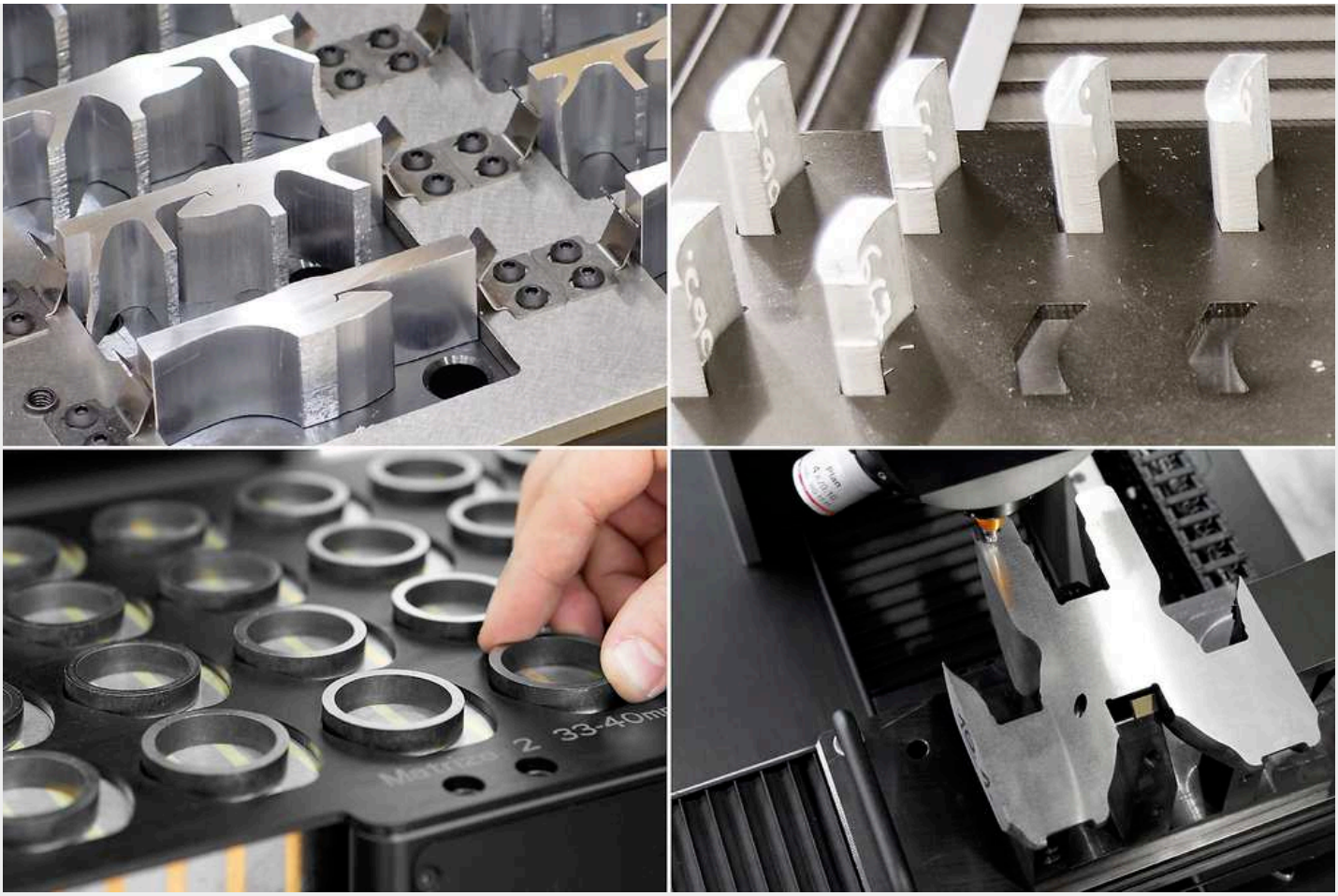
EMBEDDED SAMPLES

The secure clamping of samples thanks to a redesigned holder with a built-in clamping force limiter, simplifies sample centering and positioning. A plate with a ball-joint even clamps specimen that cannot be held flat to prevent tilting or sliding during analysis. Available with 1, 4 or 8 holding positions and adapter rings for a large range of metric and imperial sample diameters.



NON-EMBEDDED SAMPLES

Components of almost all geometrical shapes can be fitted into the universal sample holder. Four clamping bolts can be set variably in various T-slots.

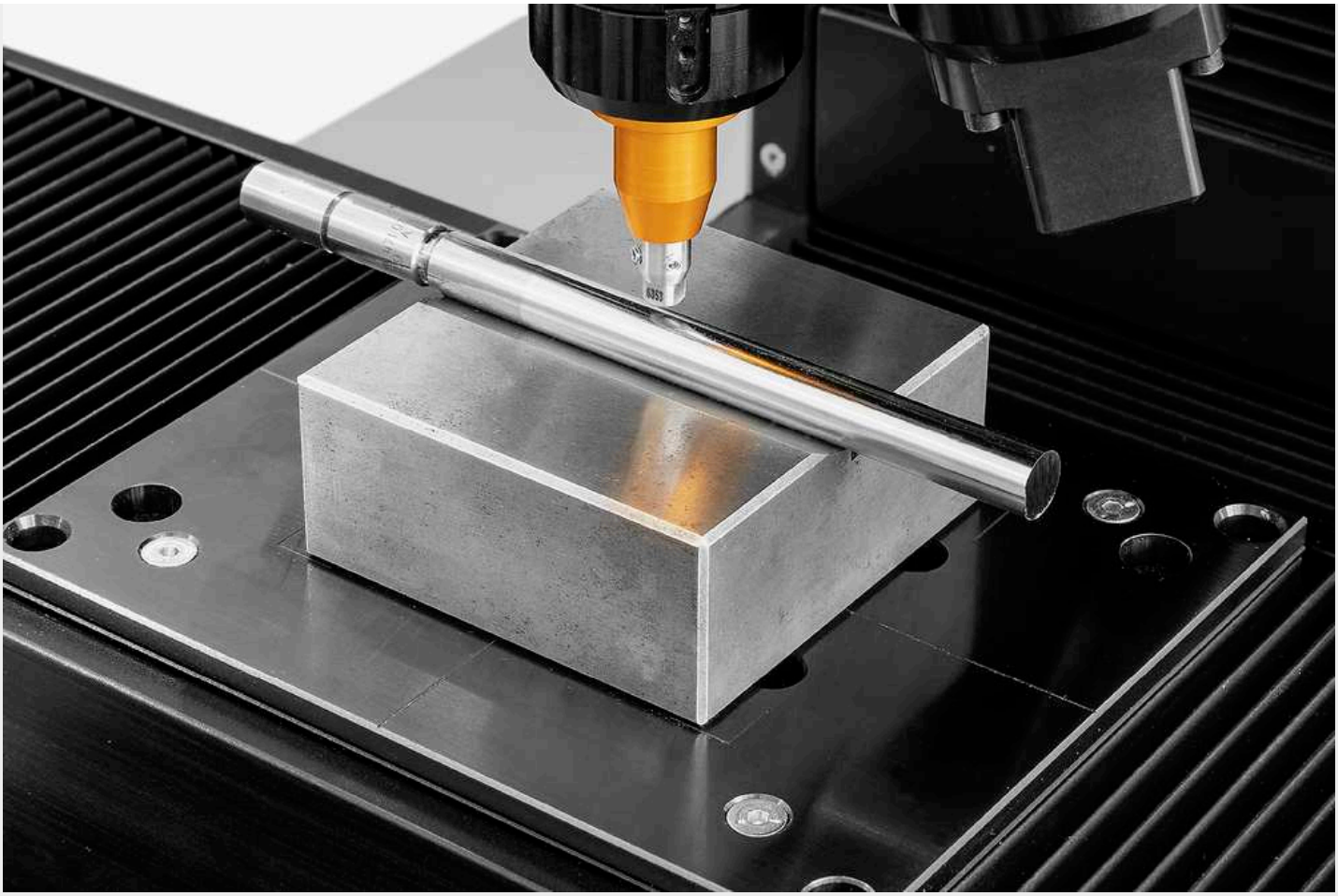


SPECIAL CLAMPING DEVICES

QATM is the right stop for advice on complex requirements and clamping devices! It would be our pleasure to advise, devise, customize and implement a solution for you. Only the right component clamping solution can guarantee reliable results.

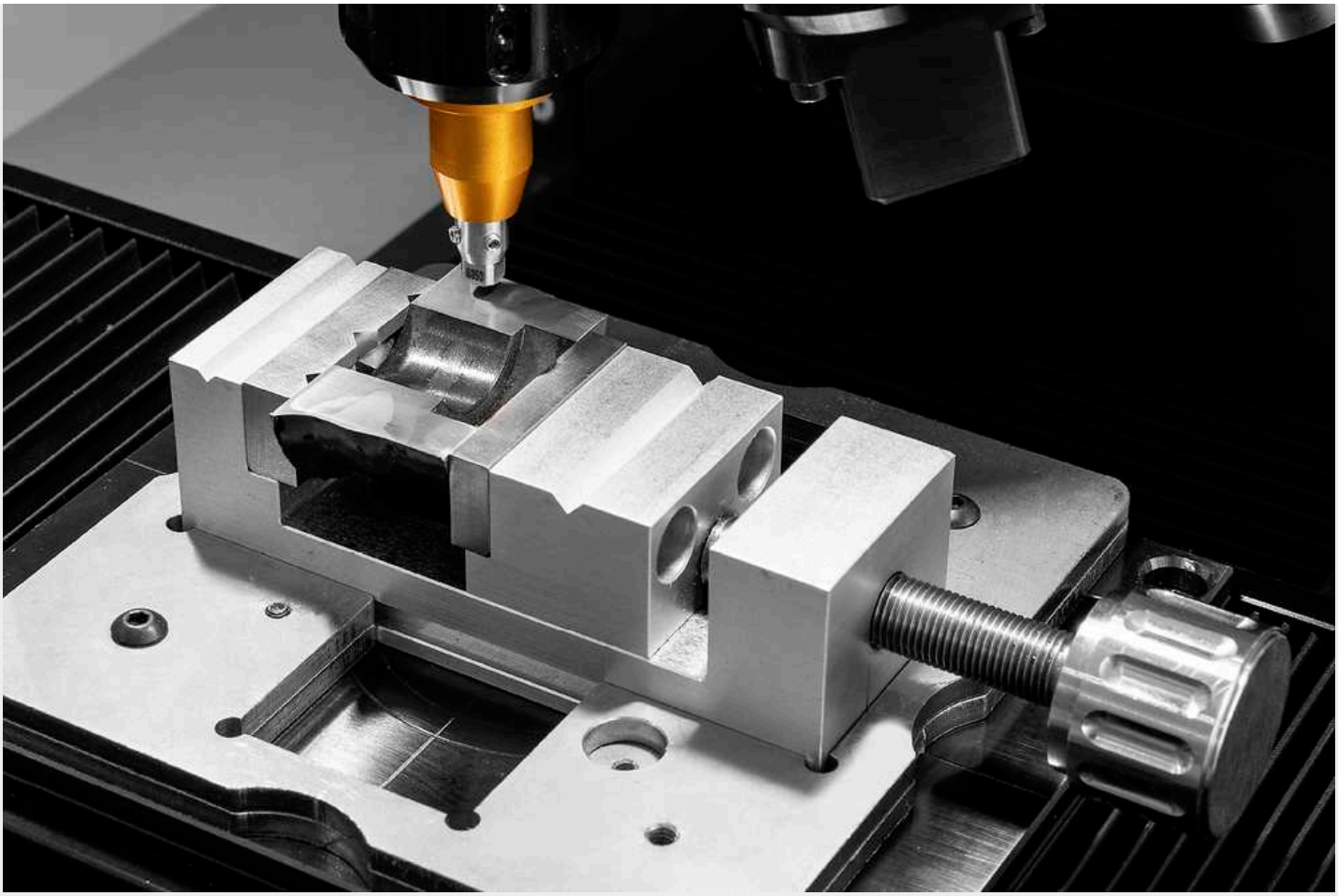
IDENTICAL SAMPLE TESTS

An entire range of relevant data, such as test patterns, test methods and user fields can be activated via pre-defined sample magazines. QATM can provide the most suitable clamping setup, matrices and cassette systems for every requirement.



PRISMS

QATM prisms also enable round components to be tested with our devices. Benefit: Integration of the 3D model in the software automatically determines the center of the component and the highest point of each piece.



VICES

The clearly-organized, large and robust test room facilitates universality. Additionally, clamping samples straight into conventional vices reduces the effort required to prepare the sample, and expands the range of possible future test applications. QATM vices are also available with extra templates, enabling samples to be repeatedly clamped in precisely the same position.

IOT - INTERNET OF THINGS

THE PLATFORM FOR REMOTE ACCESS TO YOUR DEVICES

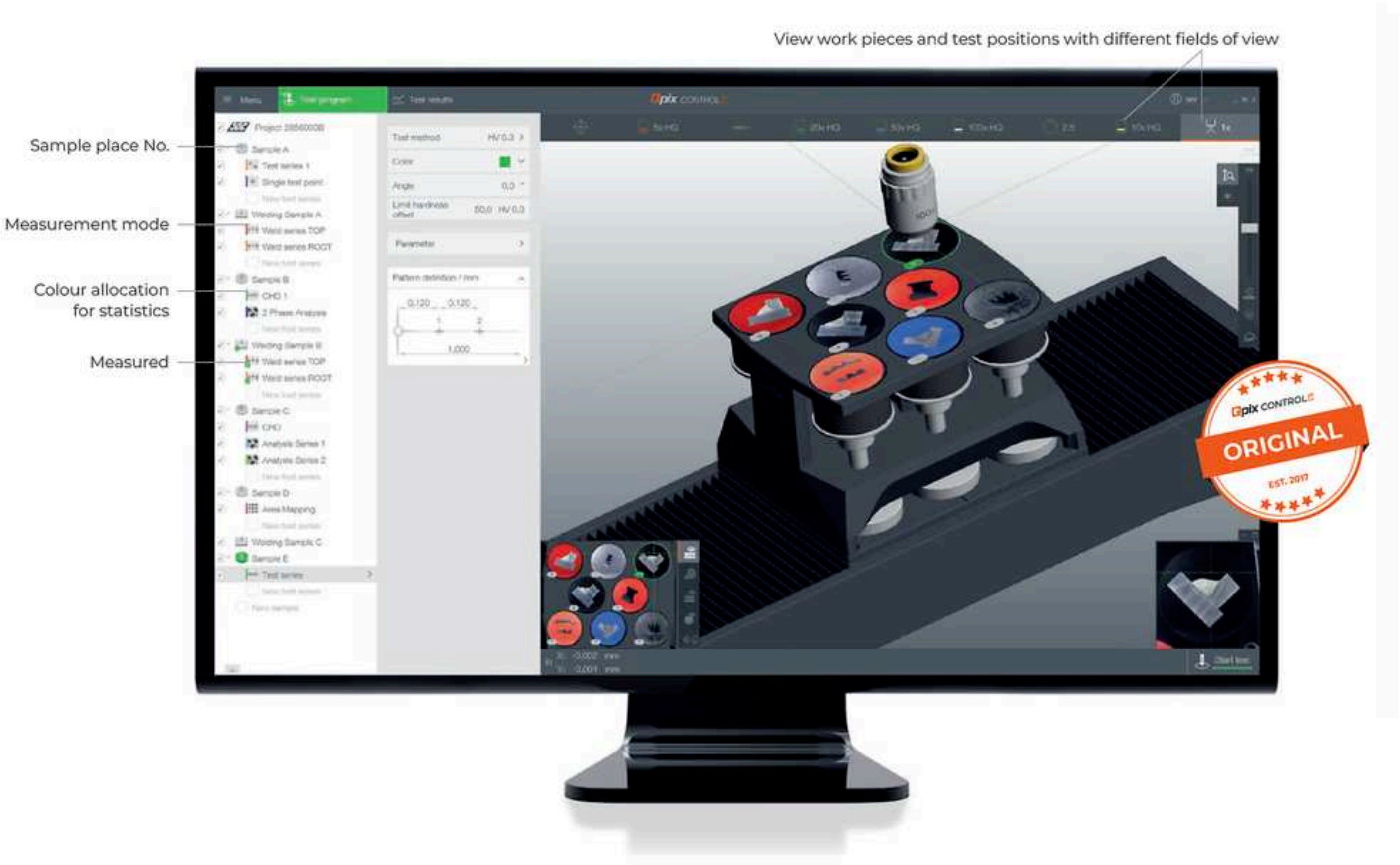
All QATM hardness testers with QpixControl2 and QpixT2 software seamlessly integrate into the Verder Scientific IoT platform, providing enhanced functionality and seamless connectivity.

- **Real-time Monitoring**: Monitor your machinery in real time, from anywhere in the world. This data-driven approach empowers you to make informed decisions with ease.
- **Live Notifications**: Be ahead of the curve with immediate alerts and updates. Real-time notifications ensure you stay informed about your equipment's performance, leading to proactive maintenance.
- **Effortless Backup**: Simplify your data protection. Whether you need to back up a single device or an entire fleet, our platform streamlines the process, minimizing downtime and data loss.
- **Automatic & Free Software Updates**: Bid farewell to manual updates! Verder Scientific IoT ensures your customers' machines are consistently equipped with the latest software, optimizing performance and reliability.

REVOLUTIONARY 3D OPERATING CONCEPT

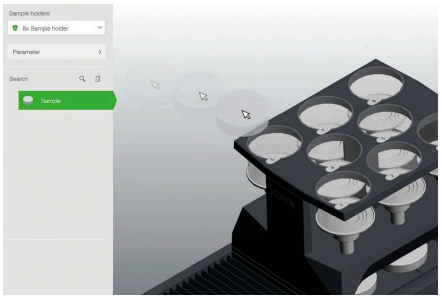
NEXT-GENERATION SOFTWARE FOR YOUR HARDNESS TESTER

Intuitive, clearly organized and professional: Qpix Control2 is a pc-operated, next-generation software for Brinell / Knoop / Vickers / Rockwell hardness testers, developed based on customer feedback and input for maximum user-friendliness. The controlled test head benefits from automatic height adjustment and contactless exploration, complete integration of the sample holder, CAD compatibility with 3D imaging and a whole range of easily understood 3D control elements and views included in the software. It sets new standards in hardness testing.



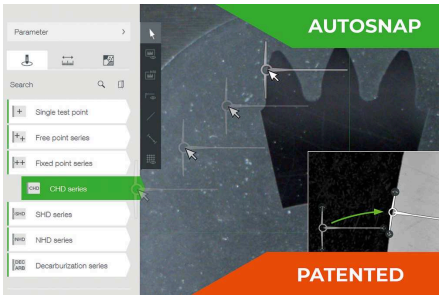
LOAD SAMPLES, LOAD ROW, START

3 STEPS TO THE RESULT



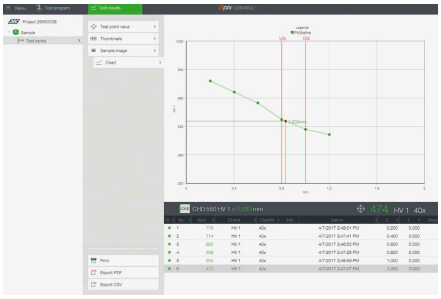
1. LOAD SAMPLES

The machine moves automatically to sample holder height. Image of sample is taken automatically.



2. LOAD ROW

AutoSnap - Speedy Row Set-up: Drag the row of test points to the desired position. The serial Auto-Snap function corrects the starting point of the test row automatically.



3. START TEST SEQUENCE

The test sequence is executed according to the applicable hardness testing standards.

STANDARD FEATURES

Auto Evaluation
Auto Brightness
Auto Focus
Overview camera
Picture in picture
Stiching
Dual System
Project management
User fields
User management
Collision avoidance
3D Software
Sample holder
Single testing
Visual testpoints
Series testing
CHD testing
SHD testing
NHD testing
Decarburisation depth test
Autosnap
Templates
Test point pattern
Auto minimum distance
Grid
Group function
Image capture
Weld seam inspection
Tooth flank inspection
Force/time curve
different sample heights
Caliper
Calibration
Diagrams
Statistics

OPTIONAL FEATURES

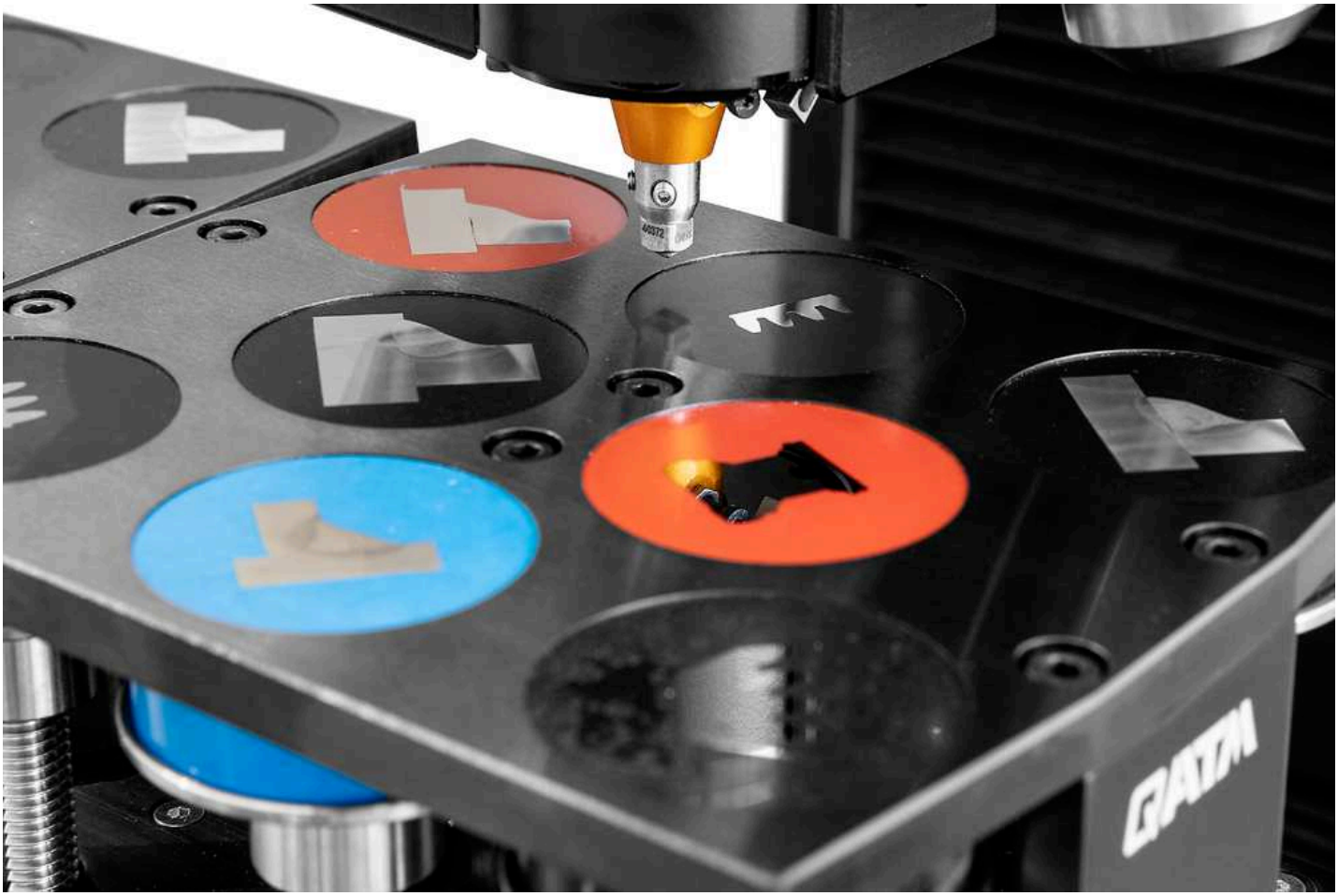
IPC
NFC-Login
Edge detection
Contour scan
2D/3D Mapping
Jominy
K1C
Sintering test
Rings & tubes API
Barcode

MICROSCOPY & ANALYSIS

Geometric measurement
Phase analysis
Grain size measurement
Layer thickness measurement
Weld seam measurement

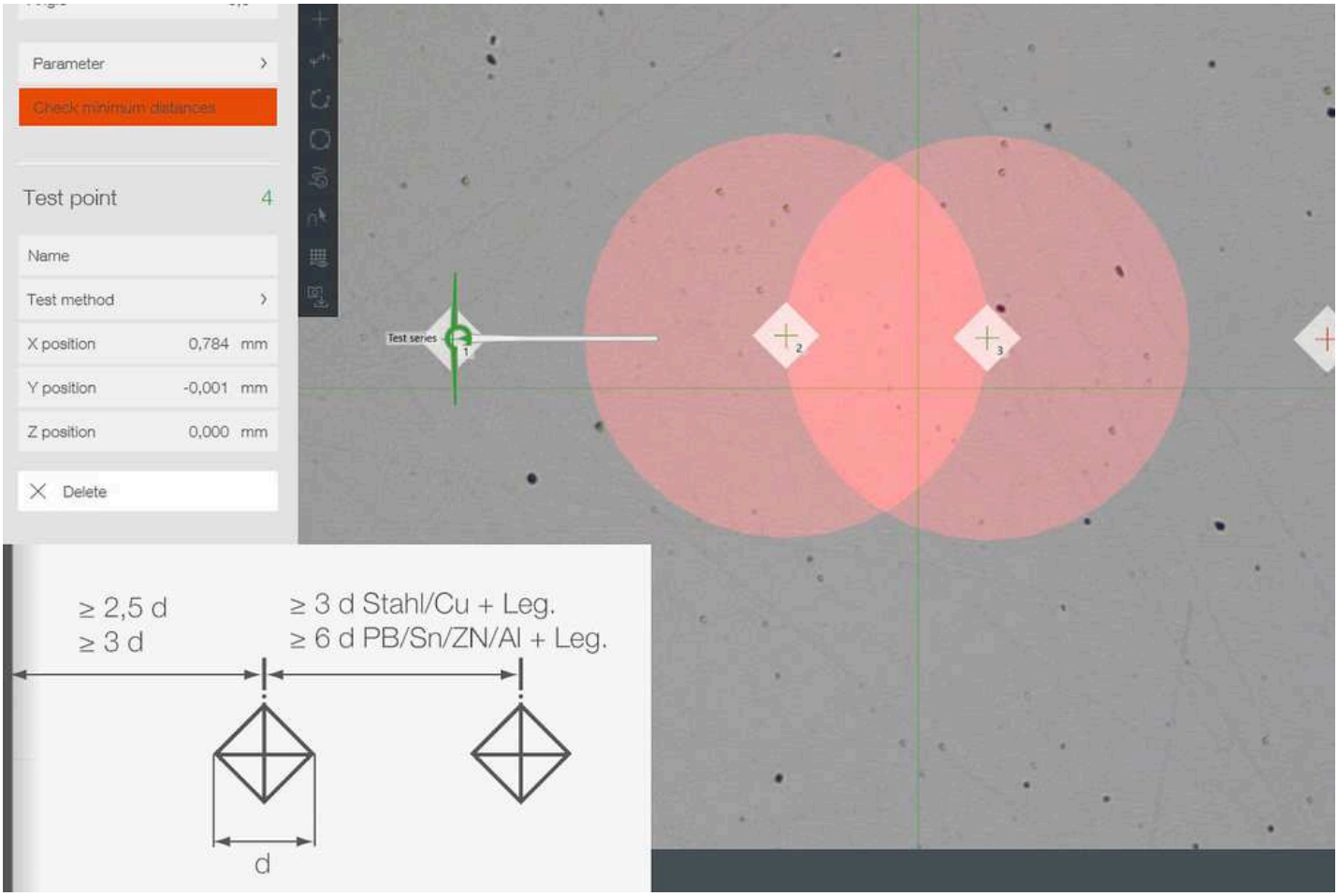
QPIX CONTROL2

INNOVATIVE SOFTWARE FUNCTIONS



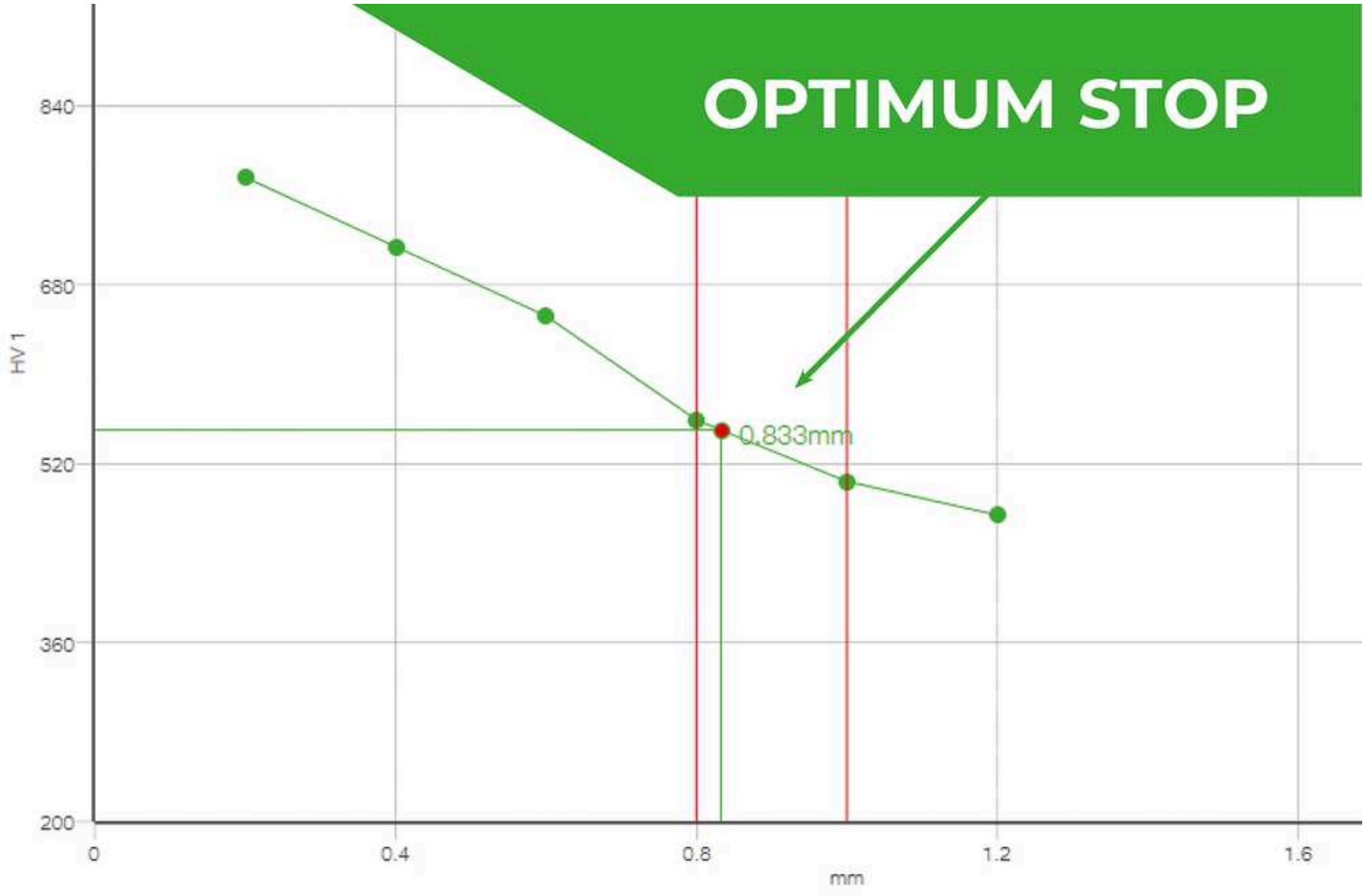
FULLY AUTOMATIC HARDNESS TESTING

Several progessions and samples are created and completed "unmanned" (i.e. 60 progressions on 8 different samples in one test run)



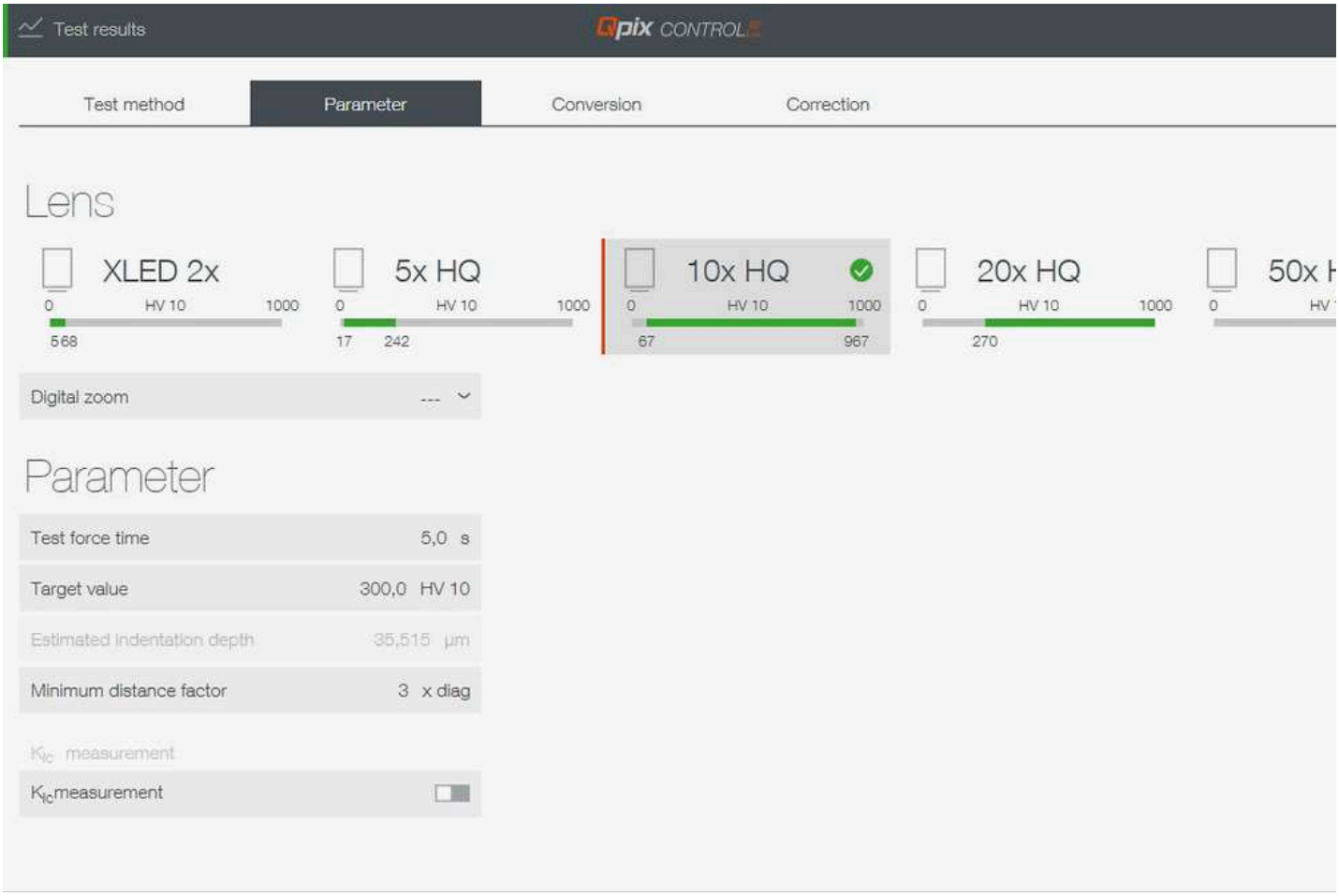
AUTOMATIC MINIMUM DISTANCE

The distances between the test points are generated fully automatically to the minimum standard distance. This makes the test results even more accurate. If the distance is less than required by the standard, the affected test points are highlighted accordingly.



SAVE TIME WITH OPTIMUM STOP

Time-saving test mode ‘Complete all indentations – then evaluate’ and ‘Optimum Stop’ to complete test series as soon as the lower hardness limit has been undercut.

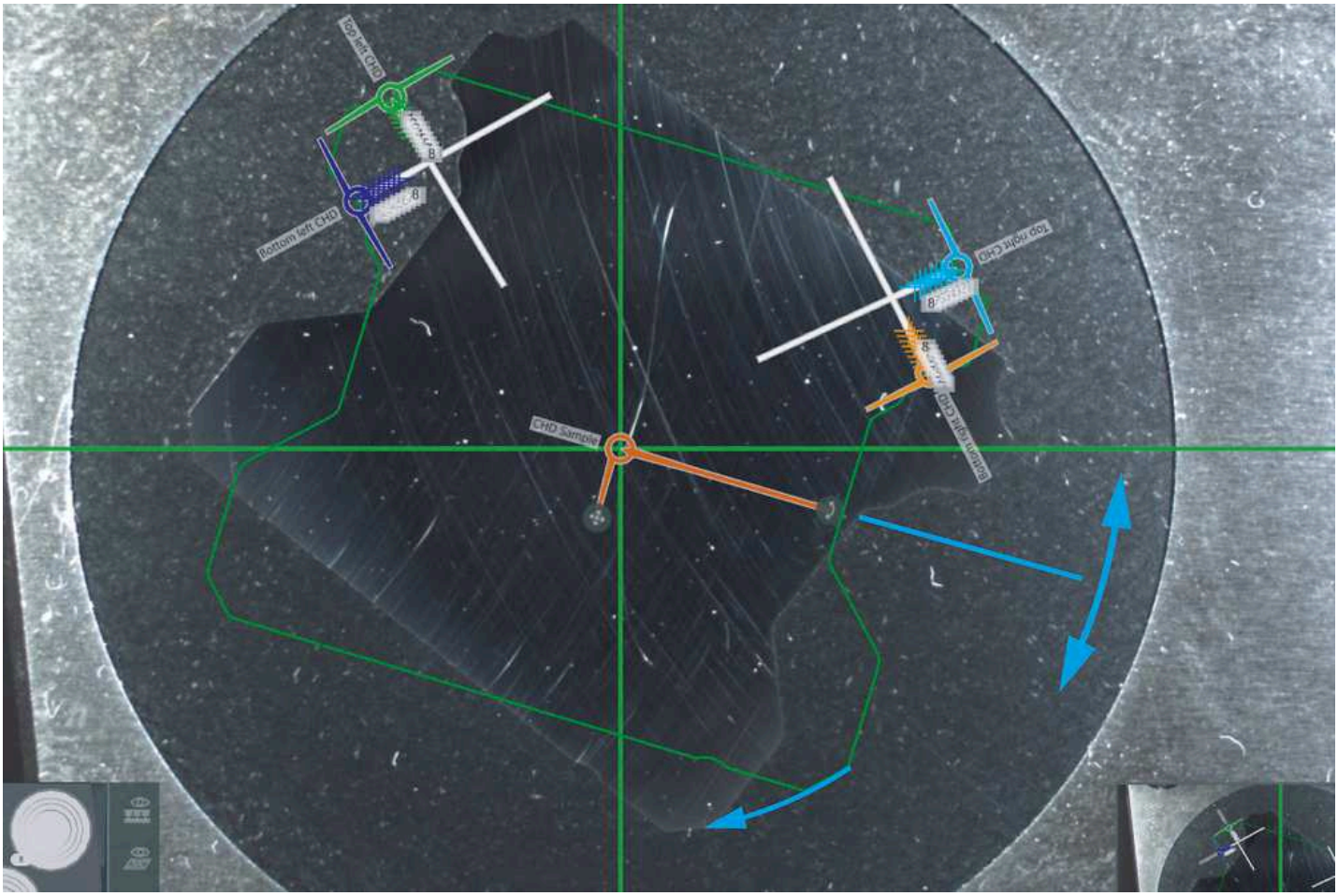


SIMPLIFIED LENS SELECTION

Based on the selected method (e.g. HV10), the suitable hardness range is displayed for each lens, which can be measured. The most suitable lens is also highlighted.

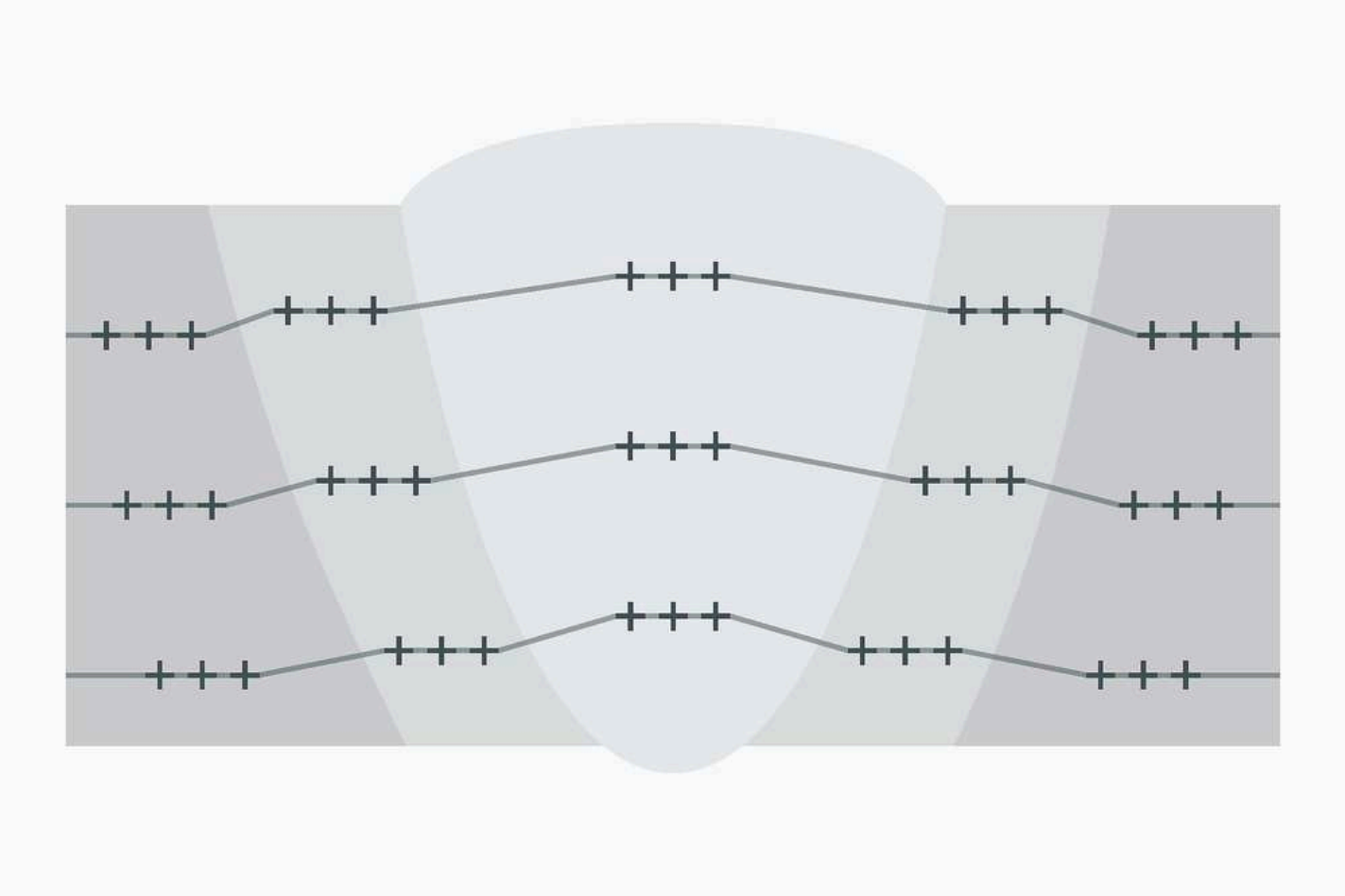
DUAL SYSTEM

With the Qpix Control 2 software, several QATM devices (for example a Qeye 800 and a Qness 60 A+ EVO) can be operated with the same PC system. It is easy to switch back and forth between the two devices in the software.



TEMPLATE FUNCTION

- Ideal for repeated tests / components
- Alignment of ‘test point mappings’ directly on the work piece with reference lines and bench marks
- Test point and analysis patterns without ‘fixed stop’ or sample holder
- The sample image can be used in a clearly-structured test report



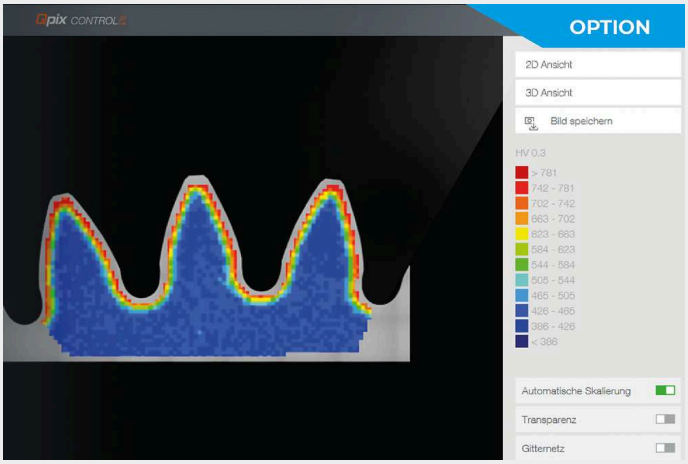
WELD SAMPLE TESTING AND ANALYSIS

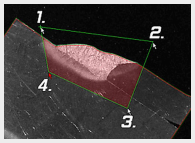
Serial provision of ‘Advanced Welding’ functions facilitates the simple, norm-compliant (e.g. EN ISO 9015 & EN ISO 22826) integration of test mapping for Brinell / Knoop / Vickers hardness testing. Pre-defined patterns can be simply adapted to each respective test piece via interactive functions. If required, Qpix INSPECT modules can also provide a simultaneous material-graphics analysis of the weld seam.

OPTIONAL SOFTWARE MODULE

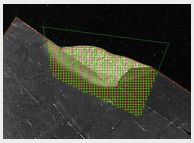
2D/3D HARDNESS CHART

The optional software module ‘2D/3D hardness chart’ is the perfect aid for the detailed determination of hardness distribution over the total cross section, especially for heat-treated materials. This is extremely important in material exploration, and also for weld testing or in damage analysis.

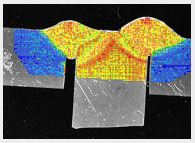




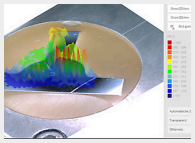
1. Create area



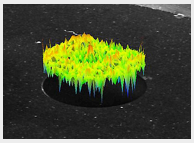
2. Define grid



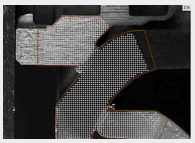
3. Display in 2D



Display in 3D



Homogenous hardness distribution chart on wire cross section



Test point pattern on a non-bedded specimen

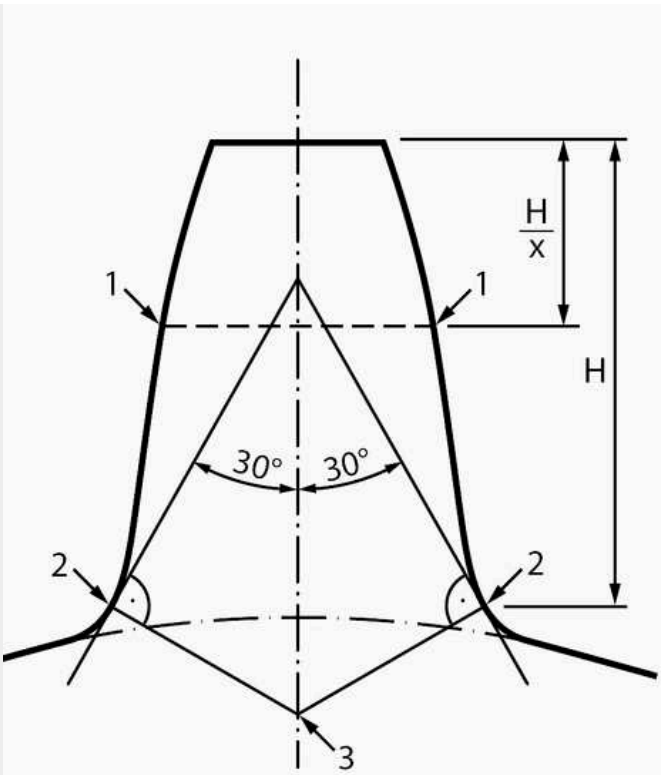
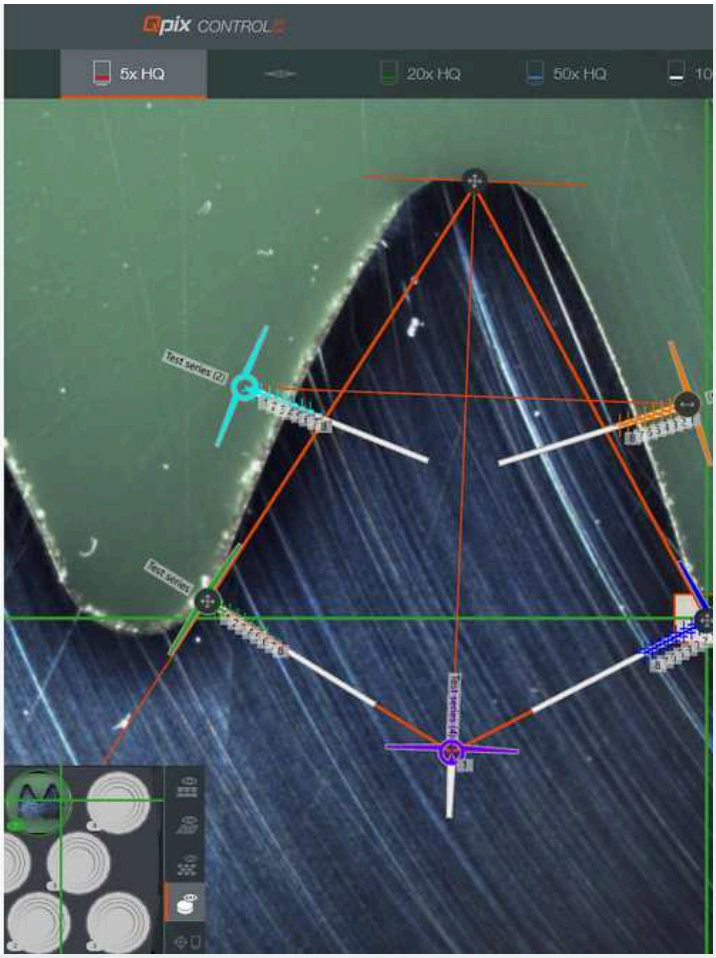
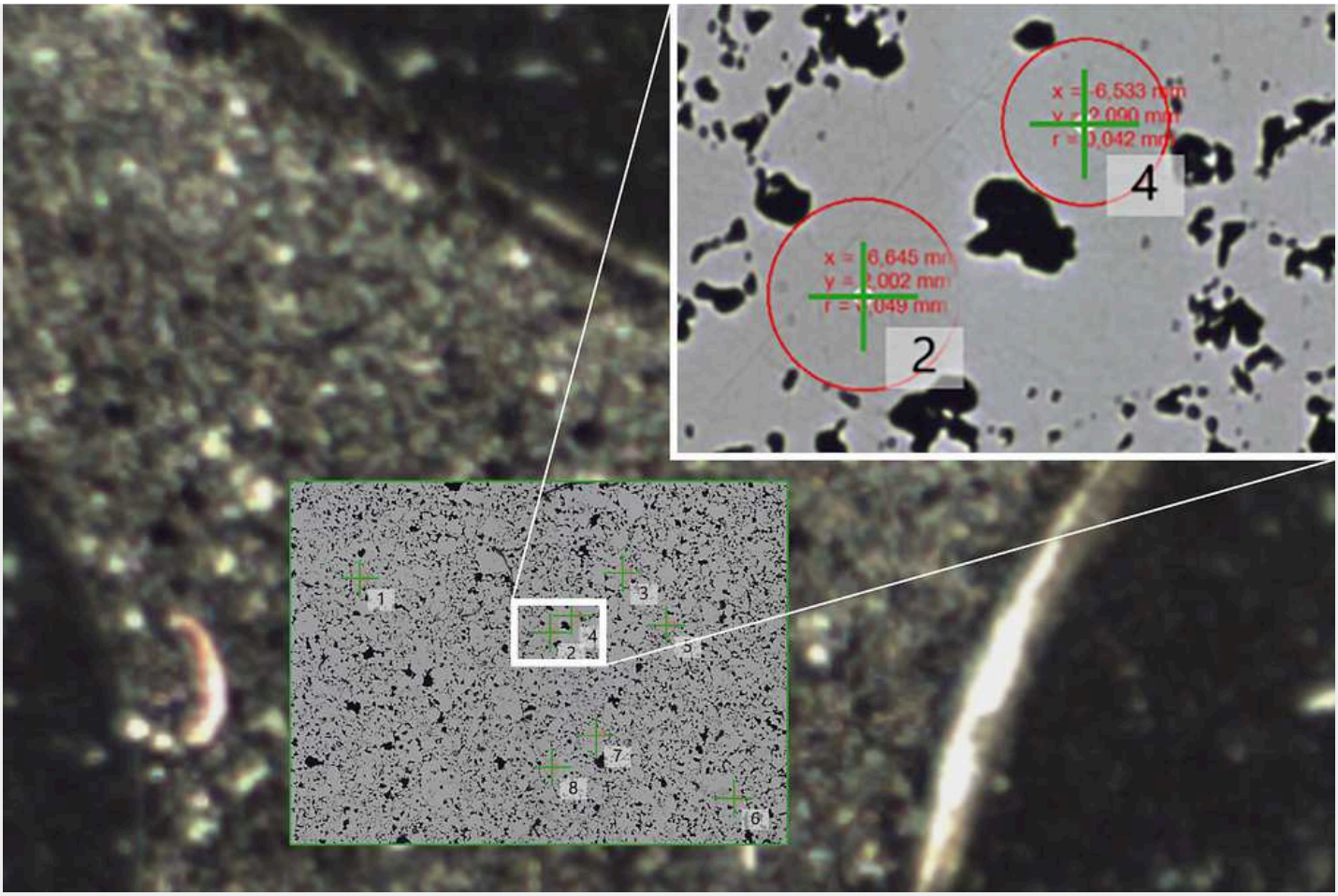


Bild 1 - Schliff
Normalschnitt (90° zur Oberfläche)



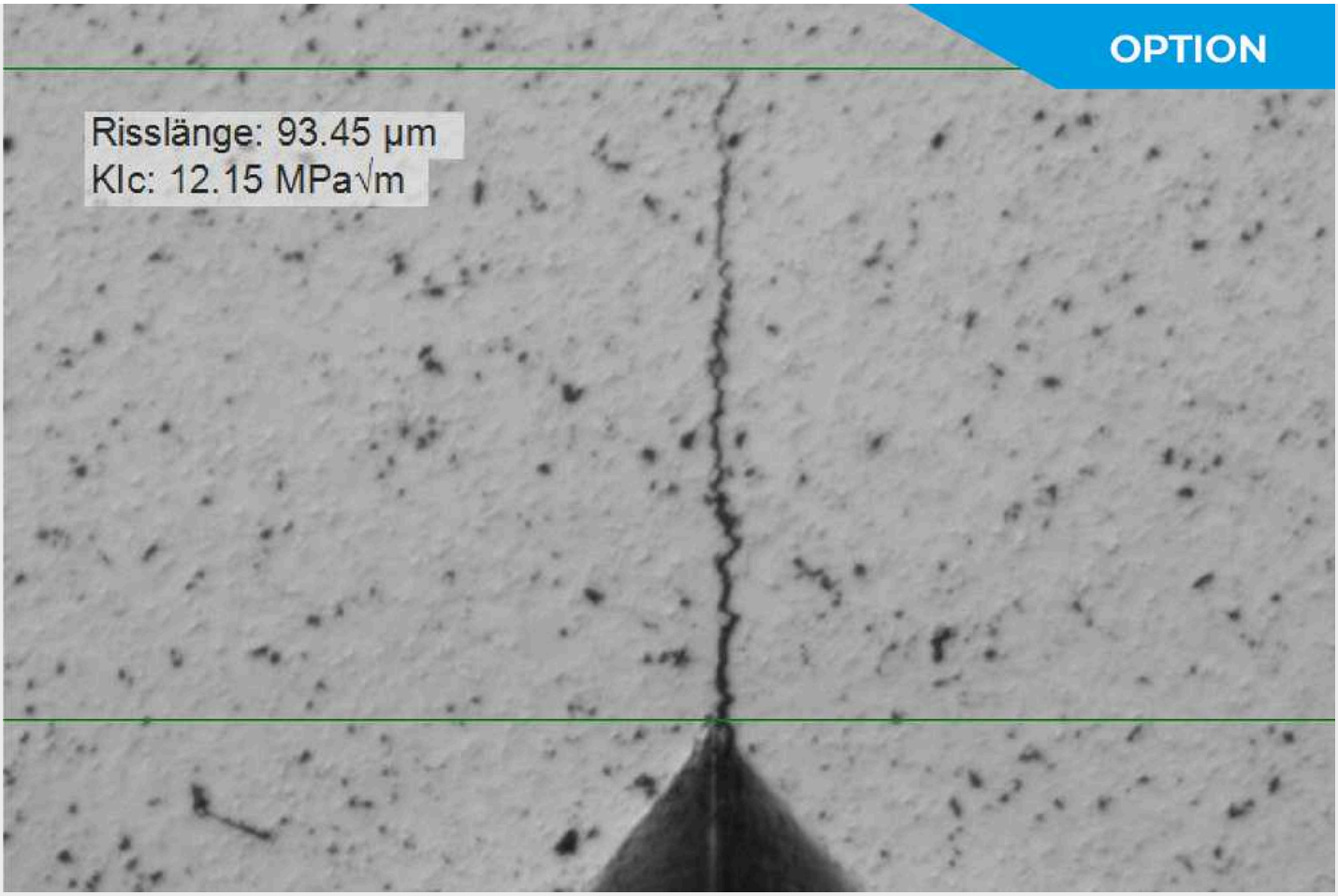
TOOTH FLANK TESTING

The time-consuming creation of test points, especially with tooth flank testing, is minimized by means of pre-defined templates. The A+ version enables the entire normed procedure between HV30 and HV1 to be done by one single device.



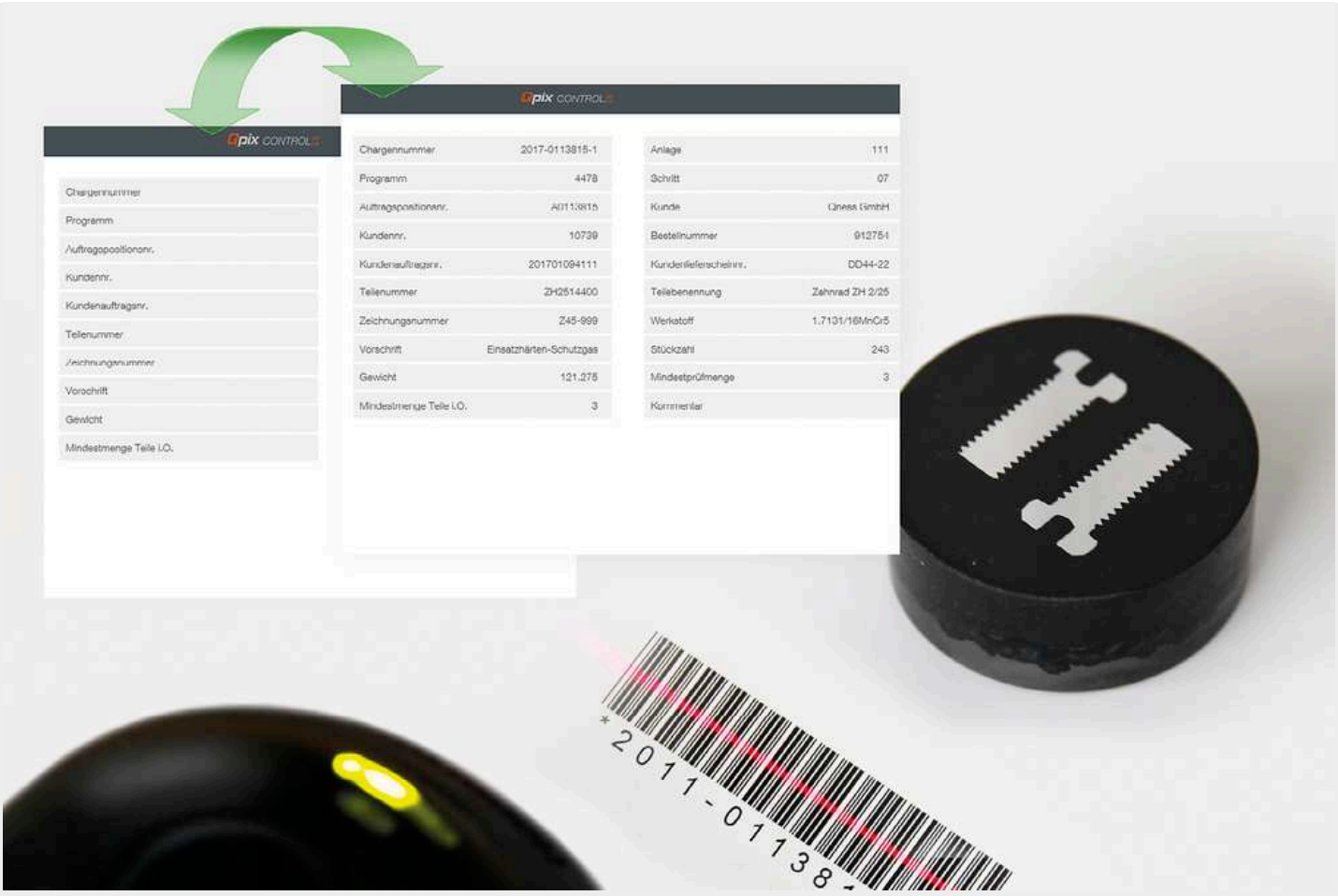
MODULE FOR SINTERED COMPONENTS

With this module, an area on the component can be easily defined and the number of hardness test points defined, especially for sintered samples. The software automatically searches for a position in the selected area where a hardness test indentation can be placed so that it is placed at a suitable location.



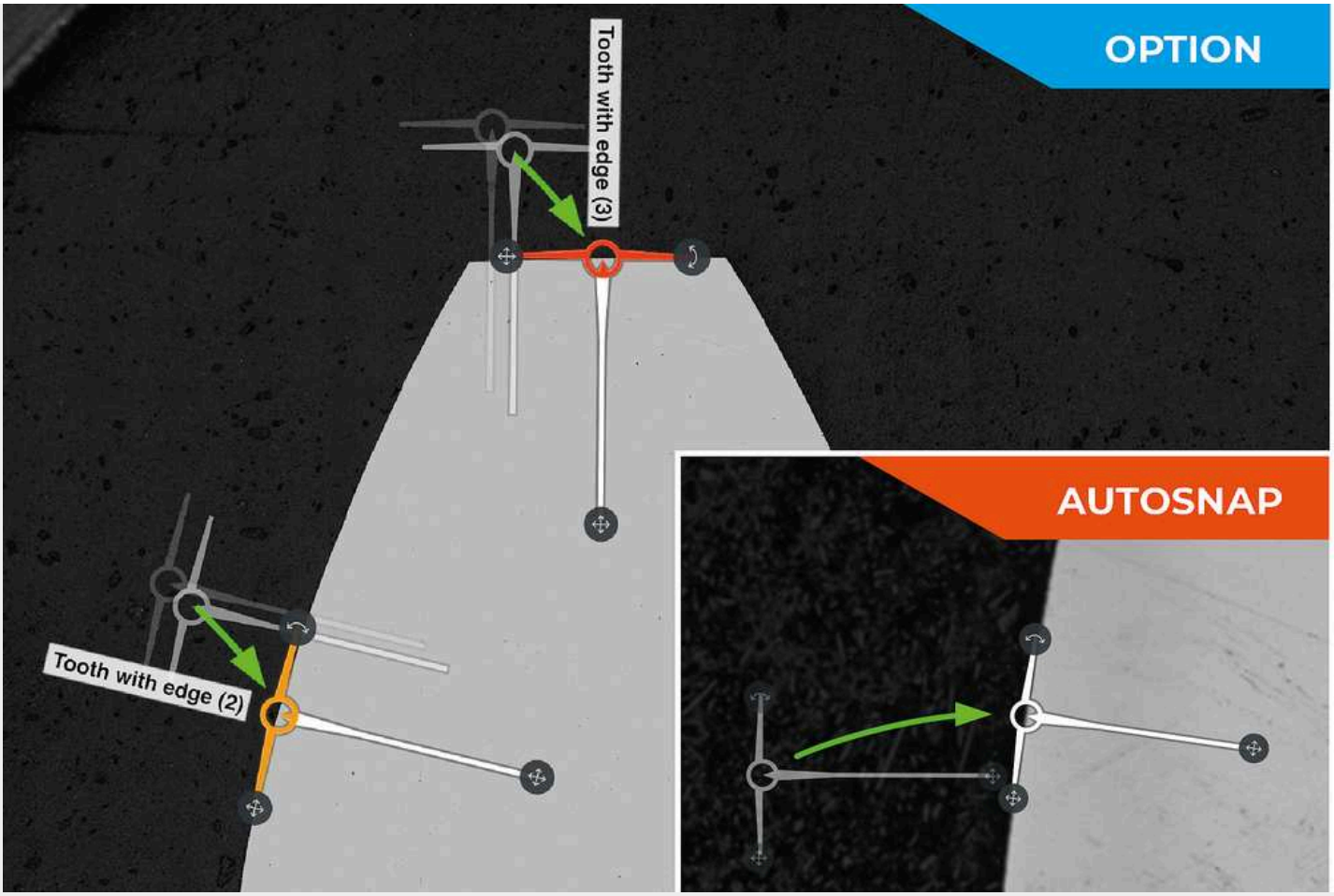
FRACTURE LENGTH MEASUREMENT

The K1C value is established via norm-compliant measurement of the 4 fracture lines. The MPa√m is subsequently calculated automatically.



BARCODE/QR CODE/DMC READER

Qpix software platforms support barcode and QR code readers. Whether simply inserting header files (serial), managing the complete integration of reading devices for the automatic selection of templates, or calling up data from superordinate systems (optional) – barcode/QR code readers simplify work procedures for the tester, while also preventing operating errors.

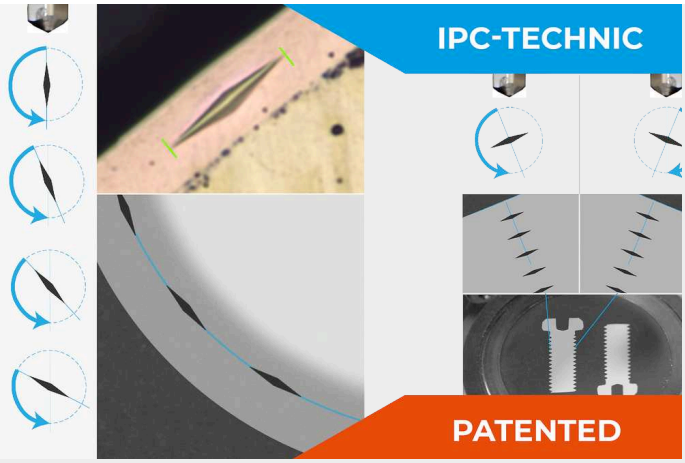


EDGE RECOGNITION

Edge recognition involves automatic adaption of test row starting points to the sample edge when using the according project and templates. The module significantly increases the degree of automation and is an ideal add-on to the serially provided AutoSnap function.

OPTIONAL UPGRADE

IPC TECHNOLOGY / ROTATABLE INDENTER



IPC – ‘Indenter Parallel to Contour’ (optional)

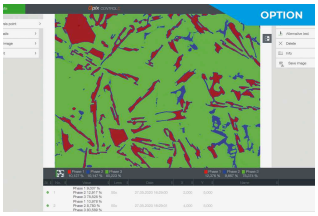
The operator can select the route and points for the Knoop indenter along each contour, either manually, via the software setting, or fully automatically.

The compact indenter unit with a built-in rotation drive facilitates fully automated hardness testing in layers or along the edge of the workpiece.

STRUCTURAL ANALYSIS MADE EASY

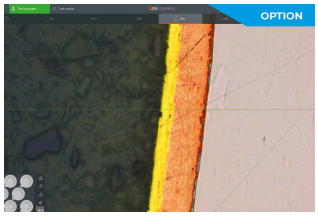
QPIX INSPECT FOR MICROSCOPIC EVALUATIONS

The intuitive and user-friendly Qpix INSPECT software functionality provides a comprehensive toolbox for microscopic evaluations and result documentation. The multifunctional software can be customized for customer-specific measuring tasks and complemented with add-on modules.



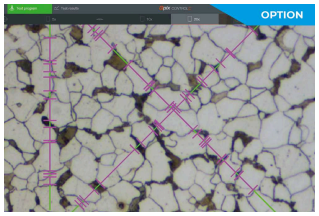
INSPECT PHASE ANALYSIS

- Automatic image object dimensioning
- Evaluation of phase fractions according to ISO 9042 and ASTM E562
- Provides analytics results as percentage proportions of a surface or as nominal surface values as tables or diagrams



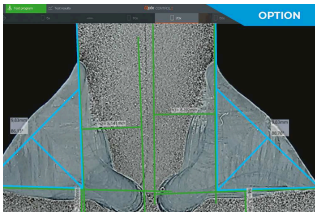
INSPECT LAYER THICKNESS MEASUREMENT

- Determination of layer thickness according to DIN EN ISO 1463
- Semi-automated gauging of horizontal, vertical and radial layers
- Provision of layer thickness as statistical values for lengths as tables or diagrams



INSPECT PARTICLE SIZE DETERMINATION

- Particle size determined according to DIN EN ISO 643 and ASTM E112 via linear or circular section method
- Results of the analysis provided as tables or diagrams
- Documentation of statistical characteristics of particle size and segment lengths cutting through the particles



INSPECT WELD SEAM MEASUREMENT

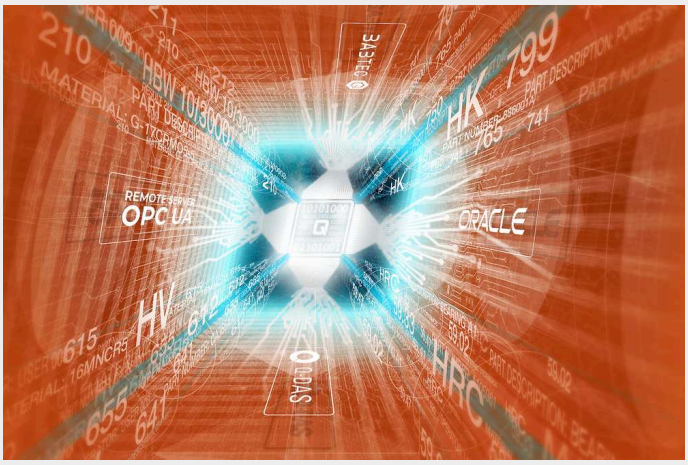
- Standardised measurement and evaluation of weld seams
- Prefabricated templates with all relevant measuring tools suchas throat thickness, weld reinforcement, penetration depth, etc.
- Automatic good/bad evaluation and report generation.

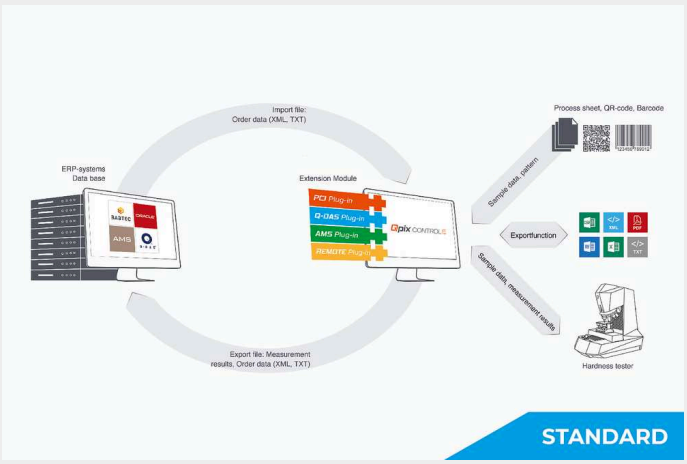
INDUSTRY 4.0

QCONNECT FOR CONNECTED TOMORROWS

Qconnect is the interface in QATM Qpix Control2 software, providing customers with a full portfolio of inter-device connectivity - from serial production, open XML interfaces (bi-directional) and pre-specified plug-in solutions, such as the QDAS Plug-In+, through to customer-specific connectivity solutions implemented completely by QATM. We have a professional solution for every applicational requirement.

Available functionalities & formats:
REPORT, PRINT, PDF, XML IE, CSV, TXT, WORD, EXCEL, AUTO EXPORTER, MAIL, Q-DAS, AMS IE, IOT, LIMS, OPCUA, PCI IE (ERP, BABTEC, ORACLE, SAP)





APPROVED QUALITY

CALIBRATION & MONITORING

CALIBRATION MANAGER

This is a leap forward for calibration result management - The QATM Calibration Manager reminds operators of the necessary tests at freely definable intervals. Test results are added to the ongoing statistical record at the push of a button.

PREMIUM HARDNESS TEST BLOCKS

Premium quality in comprehensive variety. Independent DAkkS (ISO/IEC 17025) calibration according to DIN EN ISO and ASTM including software for periodic norm-compliant tests.

LOGIN VIA NFC

The Qpix Control 2 software supports user login using an external NFC reader. Depending on the NFC tag/card, the customer‘s existing access cards can also be programmed in, for example.

QNESS 60 A+ EVO

QNESS 60 A+ PORTAL VERSION

The Qness 60 EVO is a portal solution that offers unique movement flexibility, opening up new possibilities in micro and low load hardness testing.

Product Advantages

- Test table dimensions/traverse path 500 x 500 x 300 mm
- Front-loading position – ideal for heavy test pieces loaded by cranes
- Accommodates up to 9 x 8-piece holders at once (72 pieces total) and safety housing with a CE light grid
- Unrestricted operational convenience

Test force range	0.25 gf - 62.5 kgf (0.00245 - 612.92 N)
Test method	Vickers, Knoop, Brinell, Rockwell
Test sequence	Fully automated / electronic force application
Z-axis	Dynamic, automated (CAS-Technic)
Z-axis travelling distance	150 mm (5.91“); Option: 260 mm (10.2“)
Throat depth	170 mm (6.69“)
Tool positions	8-fold motorized tool changer max. 3 hardness testing modules, max. 7 lenses
Camera system	5 Mpixel - CMOS color, USB3.0
Optical system	Upright microscope with Koehler lighting
Aperture diaphragm	motorized
Lenses	XLED 2x, 2.5x, 5x, 10x, 20x, 50x, 100x

Lens types	Standard (Achromat) and High Quality (Semi-apochromat) for hardness testing and microscopy XLED for optimised Brinell hardness testing
Field of view (acc. to equipment)	0.074x0.055 mm (100x) to 2.80x2.10 mm (XLED 2)
Sample image camera	5 Mpixel - CMOS color, USB3.0 52 x 39 mm (2.05 x 1.54“)
Test anvil / XY cross slide	Automatic cross slide
Table size	150 x 120 mm (5.91 x 4.72“); Option 300 x 120 mm (11.8 x 4.72“)
Positioning accuracy	+/- 0.2 µm
Traverse path at cross slide	X 150, Y 150 mm (5.91 x 5.91“); Option: X 300 x Y 150 mm (11.8 x 5.91“)
Control elements	Emergency stop, Start button, Joystick X/Y/Z
Software	Qpix Control2
Max. workpiece weight	50 kg (110 lbs)
Weight of basic device	60 kg (132.3 lbs)
Included basic equipment	Indenter Vickers ASTM + DAkkS; Lens HQ 5x, HQ 20x, HQ 50x
Interfaces	1 x USB 3.0
Power connection	100 – 240 V ~1/N/PE, 45-65 Hz

www.qatm.com/qness-60-a-evo

ORDER DATA