

DuraVision 350 CM

Your bespoke hardness testing system

emcotest.com

Zwick / Roell
EMCO-TEST

Our highlights for you!

Modern laser technology

Precision focusing with laser light for simple specimen positioning.

Status

The machine status is displayed on a signal tower.

Brinell SmartLight evo

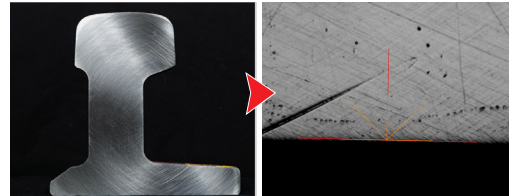
For impeccable evaluation of Brinell indentations.

Cross slide

Automatic X and Y linear slides with 2000 x 350 mm travel distance and optical linear encoder for optimum positioning precision of at least 0.1 mm over the whole travel distance of the cross slide.

Overview camera

With the help of a macro lens featuring a 10x zoom, the overview camera generates a large live image of the specimen, thereby simplifying the setting of multiple test points and complicated progression rows – an unbeatable tool in combination with the evaluation lenses!



Overview camera

Evaluation camera

Slender nose cone with star turret

The nose cone of the DuraVision G5 can be configured either with a 2x star turret (standard) or with a 7x star turret (optional). The slender nose cone also makes it easy to test complex components.

Test software

Ease of use with extensive automation and comprehensive data exchange.



CE protection

Maximum protection with highest levels of user-friendliness – together with the radar-monitored protection zone, the DuraVision G5 meets international CE requirements. The radar system means that no safety door needs to be opened in future in order to access the machine's testing area. User-friendliness is therefore increased without compromising safety.

Example of customer requirements

Test requirements

The customer would like to purchase an automated hardness testing system for the following test methods:

- HBW 10/3000 (DIN EN ISO 6506 and with calibration certificate to ISO 17025)
- HBW 5/750 (DIN EN ISO 6506 and with calibration certificate to ISO 17025)
- HBW 5/250 (DIN EN ISO 6506 and with calibration certificate to ISO 17025)
- HBW 2.5/187.5 (DIN EN ISO 6506 and with calibration certificate to ISO 17025)
- HV30 (DIN EN ISO 6507 and with calibration certificate to ISO 17025)
- HV10 (DIN EN ISO 6507 and with calibration certificate to ISO 17025)
- HRC (DIN EN ISO 6508 and with calibration certificate to ISO 17025)

The hardness testing machine must offer the following options:

- Single measurement
- Serial measurement
 - Programming option for serial measurement with different test spacings in one row (100 mm spacing, then 10 mm spacing and finally 5 mm spacing with "zig-zag" pattern)
 - 10 mm test spacing in "zig-zag" pattern
 - Hardness series in accordance with EN 13674-1 and EN 16273

Software requirements

- Network integration
- Test documentation:
 - Serial measurement – specification of number of test points
 - Hardness values
 - X/Y coordinates of test point positions

Specimens

- Specimens with a maximum length of 1.7 m and a weight of 200 kg
- Test in accordance with the standard
- The devices for fixing the test specimens are provided by the customer
- In principle, the measurements can be carried out clamped and unclamped
- For depth hardness series, matrix positioning can be offered as an option

Design of X and Y axis

- X-axis travel distance 2000 mm (± 1000 mm), Y-axis 350 mm (± 150 mm), (longitudinal & transverse)
- Dimensions of motorised cross table 2500 mm x 450 mm
- For easy fixing of the specimens, the support table is designed as a grooved table, so that the specimens can be fixed by means of quick-clamping levers
- Positioning accuracy 1/10 mm
- Position detection with optical linear encoder

Alignment of test specimens:

- A line laser is mounted on the right-hand side of the nose cone housing, which allows specimens to be aligned in the X-direction.
- The line laser can be switched on and off.

Design of Z axis:

- Z-axis travel distance 330 mm

Machine variant

- DuraVision 350 G5 with turret, overview camera, external safety technology, hardware interface and supplied PC incl. 2 monitors with PC rack for industrial application.

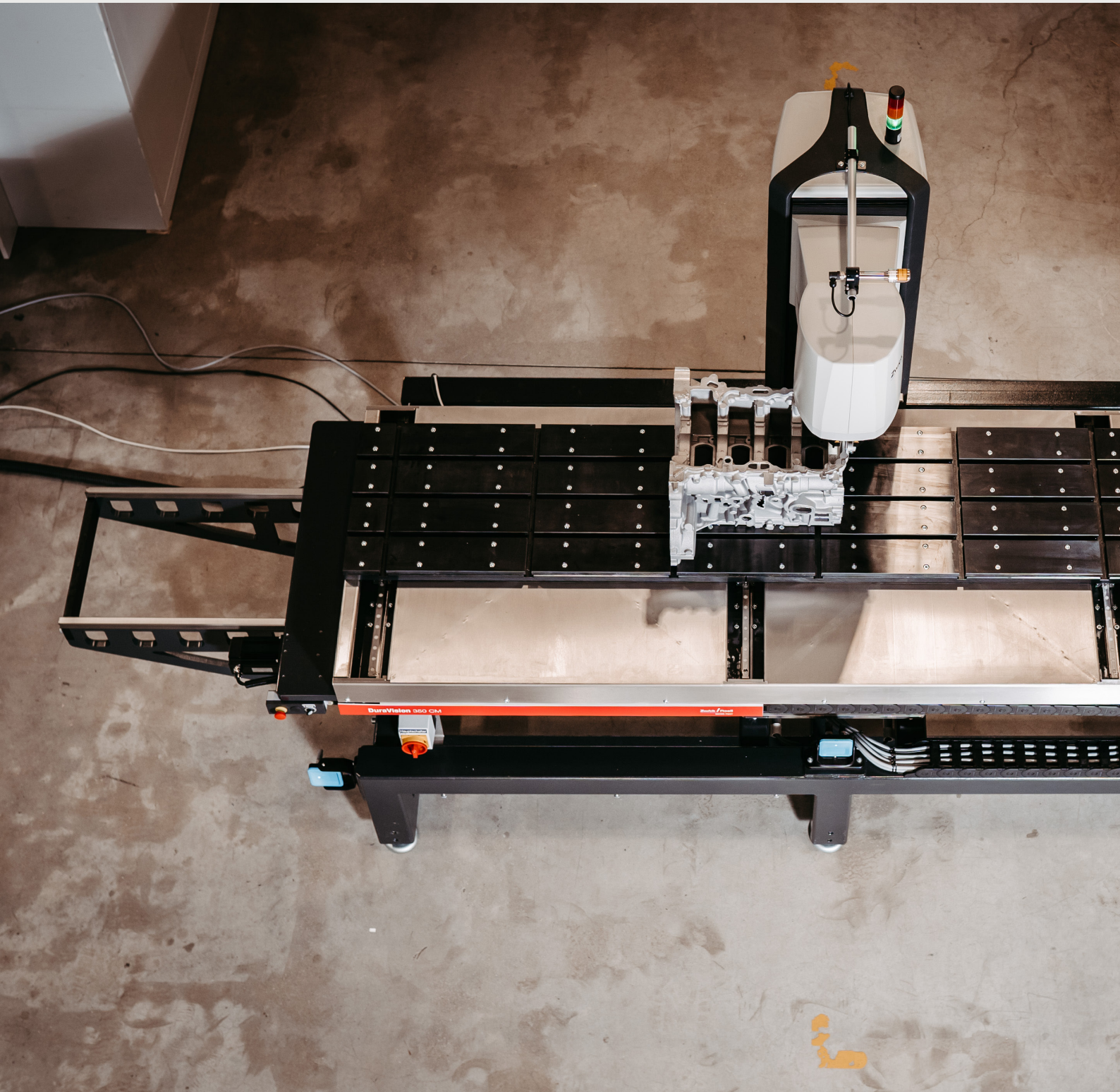
Safety technology

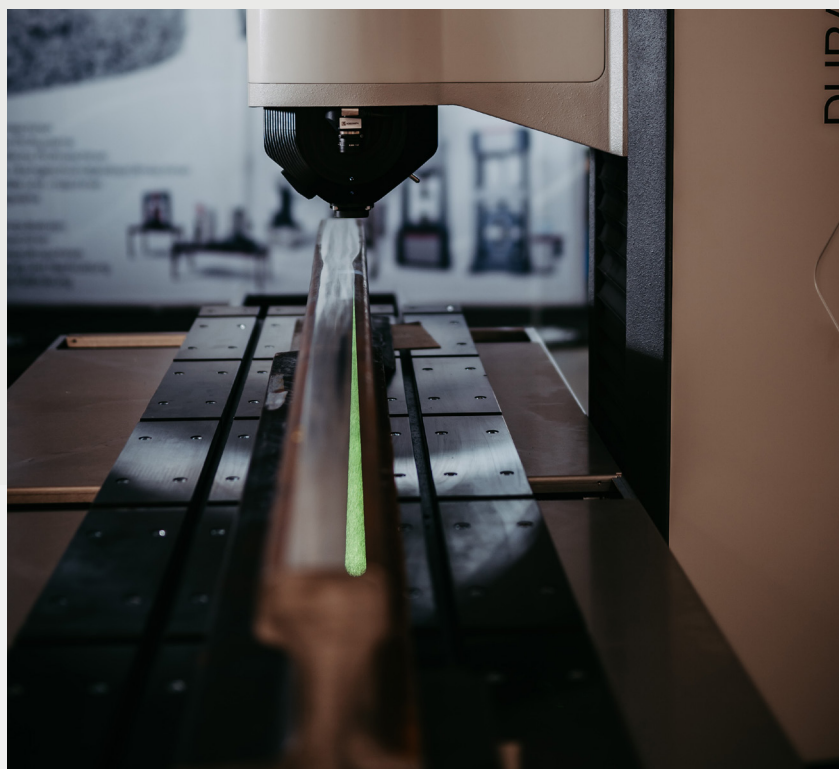
- Reliable protection zone monitoring by means of safety radar system

Machine status signalling

- The machine status should be indicated by a signal tower:
 - Red (safety technology interrupted)
 - Yellow (measuring process running)
 - Green (measuring process completed)

Completed project





Functional highlights

ecos Workflow Pro test software

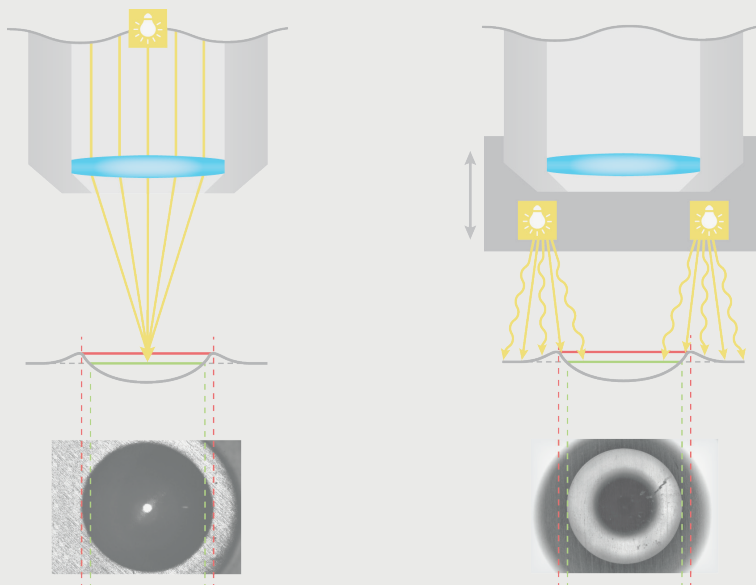
ecos Workflow Pro is our intuitive operating software, the mainstays of which are process logic, transparency, and simplest operation. ecos Workflow Pro is continuously enhanced by our in-house software development team in cooperation with our customers. Regular updates are rolled out based on this customer feedback. Our software is equipped for the challenges of the digital factory (Industry 4.0).

The quality of our software, as well as its compatibility with the applicable standards and common test methods, is ensured by our in-house Software Quality Engineering (in accordance with DIN EN ISO 9001:2015).

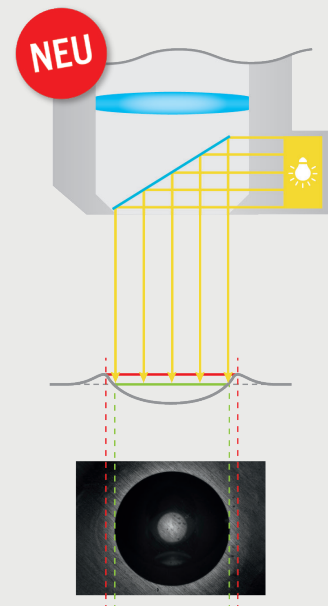
Lens with Brinell SmartLight

The Brinell hardness test has always represented a challenge with soft metals and difficult surfaces. Particularly with soft materials, the edges are not always perfectly recognisable due to considerable deformation (bulging) around the indentation. The new lenses with the innovative Brinell SmartLight now ensure ideal lighting and better detectability of the indent during Brinell tests. The lenses with Brinell SmartLight are available as 2.5x and 5x lenses.

In use for Brinell testing until now



EMCO-TEST innovation



Coaxial lighting

When using coaxial lighting, the light passing through the lens is scattered on the specimen surface. As the light beams are not reflected back to the lens due to the scatter, the test indentation appears dark. Furthermore, shadowing is caused by the oblique incident light in the area of the bulging around the indent. Due to these physical factors, the edges of the indentation are difficult to detect and evaluate.

Circular light

When using circular lighting, diffuse light falls in a ring pattern from the outside onto the indentation. The incident light beams are reflected in the indent back into the lens. This allows better recognition of the edges compared with coaxial lighting.

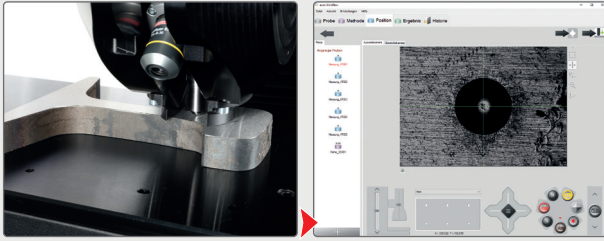
Depending on the hardness range, different height settings of the circular light are necessary in order to achieve optimum illumination of the test indentation. That these adjustments are performed manually by the operator can, however, have a negative influence on the evaluation result.

Brinell SmartLight

The SmartLight technology developed by EMCO-TEST combines a lens with collimated light. With this lighting, parallel light beams are directed by a mirror system onto the test indentation.

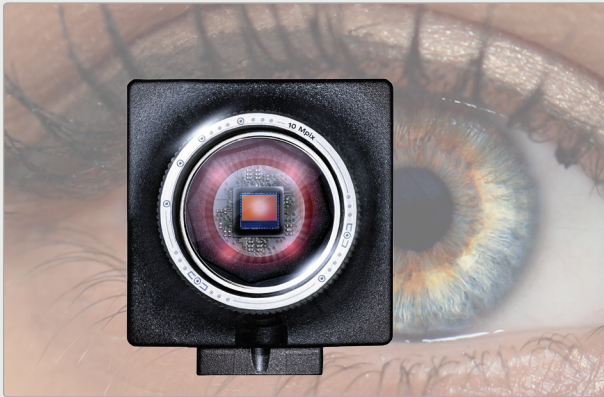
The light therefore strikes the indent perpendicularly from above and prevents any shadowing in the area of the bulge. The contour is clearly recognisable and the indentation can be precisely evaluated.

The SmartLight technology is permanently integrated into the lens and requires no further settings by the operator.



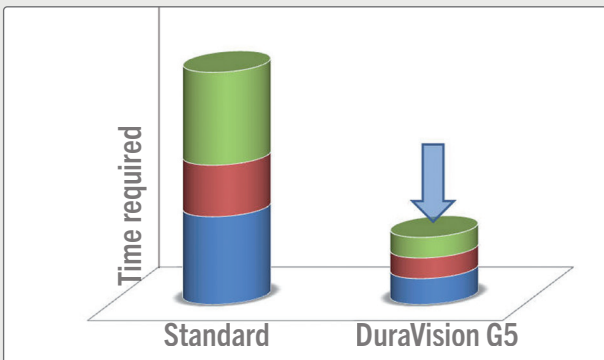
Reliably to the correct test result

Evaluation of the test indents is performed in the DuraVision G5 series with fully automatic brightness control and fast autofocus. The test load is applied using the proven concept of closed-loop control – the force is thereby continuously and precisely monitored by electronic force measuring sensors. Motorised cross slides position the test points with a high degree of repeatability and positioning accuracy, without any operator influence.



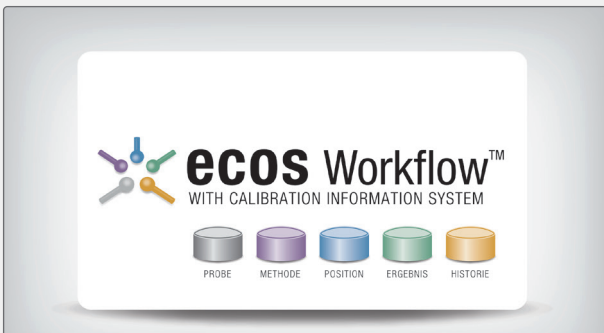
Broad spectrum of applications

The DuraVision G5 Series offers a uniquely broad standard load range from 0.3 kg to 3000 kg, thereby fulfilling the prerequisites for numerous different test methods. Furthermore, intelligent use of the high-resolution 12-megapixel camera allows a 3x zoom without having to accept any loss in image quality due to interpolation. This innovative solution allows a wide range of applications to be covered with a small number of lenses. In order to make full use of this potential, the DuraVision G5 uses only lenses that offer maximum optical resolution. The 7 positions of the star turret also spare you from changing tools.



Time savings thanks to fast test cycles

The DuraVision G5 Automatic helps to save time, both in serial testing and in the case of alternating test requirements. Thanks to the new, patented rapid traverse, the height of the nose cone can be adjusted at up to 25 mm/s. Combined with intuitive operation and use of the template function, this enables quick configuration. The high degree of automation of the DuraVision G5 Automatic reduces the active operating time involved in serial testing many times over. The xChange interface included as standard allows the automatic import and export of test parameters and test results and speeds up the test cycle.

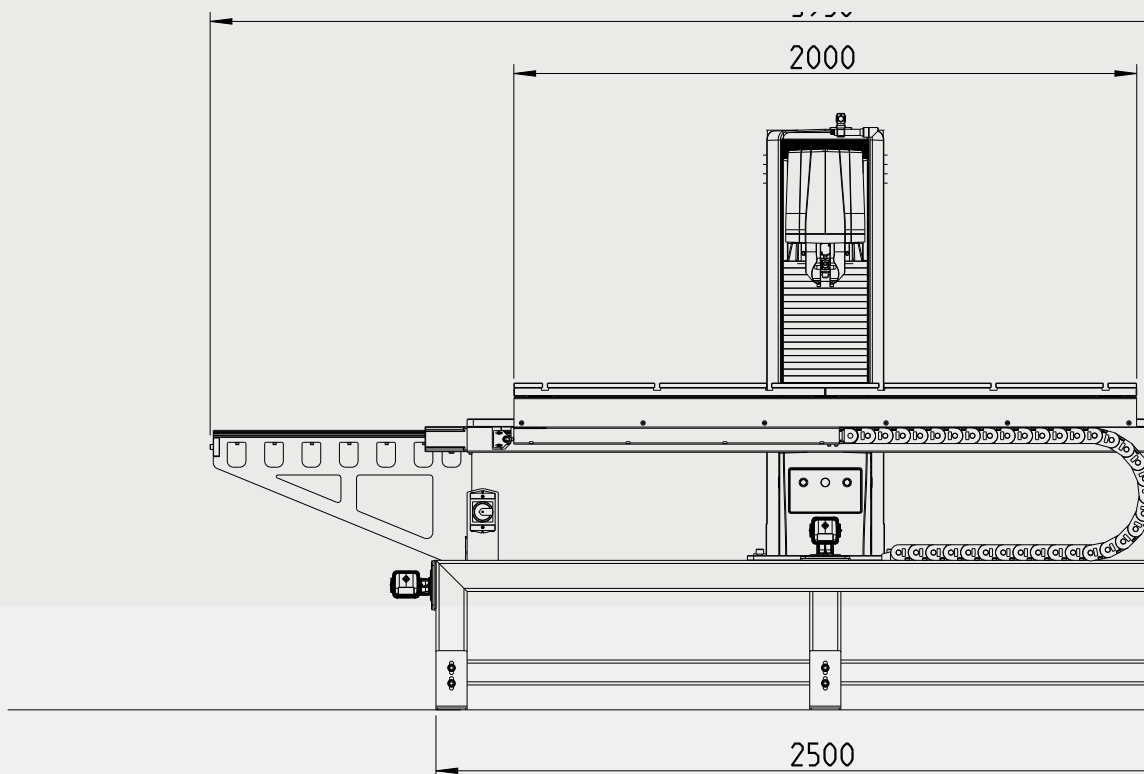


Intuitive software with calibration assistant

The **ecos** Workflow with Calibration Information System (CIS) software package from EMCO-TEST provides an efficient, intelligent solution for all conventional hardness testing tasks. The user is guided step-by-step through the measuring process all the way to data backup. The intuitive user interface shortens the familiarisation time and reduces operating errors. A special feature of **ecos** Workflow CIS is the integrated calibration assistant that monitors all calibrated methods and greatly simplifies the inspection of the hardness tester required by standards. The assistant indicates when periodic and indirect verifications in compliance with ISO and ASTM standards are due, it guides the user through the inspection process and supports documentation compliant with standards.

Technical data

Methods and load range	
Load range 29.42 - 29420 N (3 - 3000 kg) - electronically controlled	•
Brinell (ISO 6506, ASTM E10)	•
Vickers (ISO 6507, ASTM E92)	•
Rockwell, Super Rockwell (ISO 6508, ASTM E18)	•
Equipment	
ecos Workflow CIS Pro operating software	•
Automatic test cycle with brightness control, autofocus and image evaluation	•
3-step zoom	•
Projection laser for positioning the specimens	•
Safety radar system to meet the CE criteria relating to machine safety	•
Machine control via integrated PLC	•
Motorised height adjustment of the test unit with rapid traverse	•
Clamping force setting 1961.4 - 19614 N (200 - 2000 kg) $\pm 10\%$	•
Automatic 7x star turret	•
Workspace lighting (integrated into nose cone, dimmable)	•
Testing clamped/unclamped	•
X-axis travel distance	± 1000 mm
Y-axis travel distance	± 170 mm



Accreditation and certification

Calibration laboratory accredited to ISO/IEC 17025

In order to comply with international standards for reproducibility of measurement results and for comprehensive documentation of the test cycles, our service partner “Latzke” offers accredited calibration in accordance with EN ISO / IEC 17025. Our accredited calibration laboratory ensures that the services offered always represent the state-of-the-art of the standards and technology.

Certification of management and quality system to EN ISO 9001

In order to ensure that only perfect quality is supplied to you, every hardness testing machine is thoroughly and stringently tested before delivery. The ease of service is taken into consideration right from the beginning in the design phase. The results are menu-driven fault detection, integrated self-diagnosis and modular exchange of electronic components that ensure the remedying of faults in a minimum of time. Software updates that take into consideration changes in standards or optimise future processes ensure high investment security for you.

Validated, standardised ecos Workflow test software

A standard process that is embedded in the DIN EN ISO 9001:2015 certification, regulates the software validation and guarantees a valid software version of ecos Workflow.

Benefit from our worldwide sales and service network!



• Austrian head office

Further information at emcotest.com

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