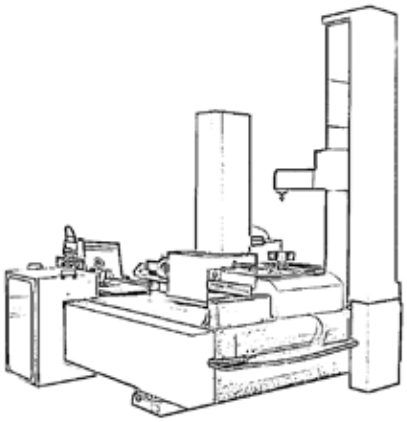
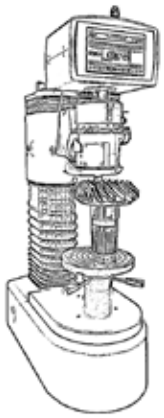
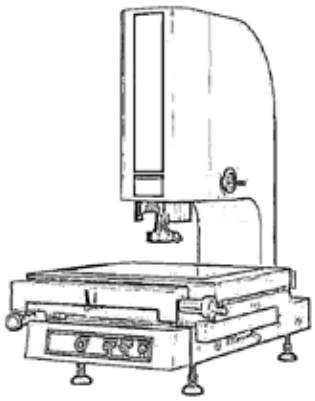
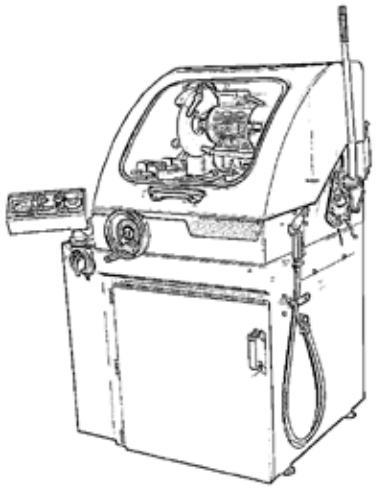
# MEASURING INSTRUMENTS







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# INDEX


**INDEX** ..... 02
**HARDNESS AND MICRO-HARDNESS TESTERS** ..... 04
• Rockwell hardness testers ..... 05
• Vickers hardness testers ..... 15
• Brinell hardness testers ..... 21
**CHD – CASE HARDNESS DEPTH ANALYZERS** ..... 27
• HTD1500 e HTD4000 ..... 28
• HTD30 ..... 30
**PORTABLE HARDNESS TESTERS** ..... 32
• Rockwell portable hardness testers ..... 33
• Brinell portable hardness testers ..... 39
• T-UD2 ..... 43
• T-UD3 ..... 46
*T-UD2/3 set* ..... 49
• Lab UCI wireless hardness tester ..... 50
• CHEETAH - Brinell and Vickers indentation's digital reader ..... 54
• Mechanical portable hardness testers PHT - HBX 0,5 ..... 56
• Portable hardness tester based on the measurement of electrical resistance ..... 57
**METALLOGRAPHIC MACHINES** ..... 59
• Cutting machines ..... 60
*Baincut LSS* ..... 60
*Baincut HSS - Baincut M* ..... 61
*Baincut UM - Baincut L* ..... 62
*Baincut XL - Baincut XXL* ..... 63
• Mounting machines ..... 64
*Bainmount H - Bainmount H auto* ..... 64
*Bainmount Twin H auto* ..... 65
• Grinding/Polishing machines ..... 66
*Bainline Twin Wet - Bainline GP* ..... 66
*Bainpol VT - Bainpol VTD* ..... 67
*Bainpol SA - Bainpol auto* ..... 68
*Bainpol VFD - Bainpol VFF* ..... 69
• Microscopes ..... 70
*Metscope I - Vertimet CP - Macscope Z* ..... 70
**GEAR TESTING MACHINES** ..... 71
• Manual gear measuring machines ..... 72
• Semi-automatic gear measuring machines ..... 73
• CNC gear measuring machines ..... 73
• GMM Gear Measuring Machines ..... 74
*GMM 40 - Small Size* ..... 76
*GMM 70 - Medium Size* ..... 77
*GMM 110 - Big Size* ..... 78
• Gear testing machines ..... 79
• Roughness testers ..... 79
**VIDEO MEASURING SYSTEMS** ..... 80
• VMA Manual video measuring system ..... 81

# INDEX


• VMC CNC video measuring system ..... 82
• VMU CNC video measuring system ..... 83
• Mikrosize software ..... 84
• VMQ-100 Instant video measuring system ..... 91
• VMQ-100 Mikrosize measuring software ..... 94
**RETROFIT** ..... 101
• VBM system for hardness testers ..... 102
• TC Software system for spring testing machines ..... 102
• Gear Soft system for gear testing machines ..... 103
• TC Software system for traction testing machines ..... 104
**NON-DESTRUCTIVE TESTING INSTRUMENTS** ..... 105
• Ultrasonic thickness gauge UT-1M ..... 106
• Ultrasonic thickness gauge UT-2A (A-Scan) ..... 106
• EMAT thickness gauge UT-3M-EMA ..... 107
• Active EMAT transducer ..... 107
• Coating digital thickness gauge TP-2020 ..... 108
• Coating thickness gauge ..... 108
• Ultrasonic flaw detectors ..... 109
• Pulse Holiday Detector ..... 110
• Magnetic flaw detector ..... 110
• Magnetometer ..... 111
• Steel structure analyzer ..... 111
• Adhesion testers ..... 112
• Density and viscosity cups ..... 113
• Coating hardness testers ..... 113
• Bending coating testers ..... 114
• Impact testers ..... 115
• Other coating testing instruments ..... 115
• Roughness testers ..... 116
• Various non-destructive testing instruments ..... 118
**ACCESSORIES AND SERVICES** ..... 119
• Technical service ..... 120
• Repair service ..... 121
• Technical consulting ..... 122
• Secondhand sale ..... 122
• Inspection ..... 122
• Certification ..... 122
• Calibration service ..... 123
**CONTACTS** ..... 124

# HARDNESS AND MICRO-HARDNESS TESTERS

Rockwell, Brinell, Vickers

# NR3D HARDNESS TESTER


## Description:

The NR3-D hardness tester is an excellent choice for measuring hardness based on the Rockwell principle, with standardized preload and load. Available in both standard Rockwell and superficial versions, the NR3-D stands out for its versatility, allowing the testing of a wide range of materials, from the hardest metals to light alloys and even plastic. Its versatility is backed by a wide selection of loads and indenters, ensuring accuracy even for small and medium-sized items.
The NR3-D stands out for its consistent high quality, making it a reliable and affordable instrument for all hardness testing needs.

## Features:

• Rockwell and Superficial Rockwell: Easy interchangeability between standard and superficial versions using the same stand.
• Measures in Brinell points too: Provides readings on standard HB 30 scales, HB 10, and HB 5 for light alloys and aluminum.
• High durability: The spring-loaded system makes the NR3-D ideal for challenging environments with extreme temperatures, dust, humidity, and vibrations.
• Robust and easy to use: Perfect for schools and laboratories, thanks to its sturdy structure and ease of use.
• Low investment: An affordable price that ensures a quick return on investment.

## Advantages:

• Optimal for composite materials and spheres: The absence of the locking pin and presser allows for precise measurements even on small-sized parts.
• Brinell indenters available: Allows for accurate measurements using Brinell loads and indenters.
• Removable measuring head: Facilitates faster revisions and calibrations.

## NR3D technical features

| MODEL | MODEL DR | MODEL DSR |
|---|---|---|
| Loads | 60 kgf - 62,5 kgf - 100 kgf - 125 kgf - 150 kgf - 187.5 kgf (588 N - 613 N - 981 N - 1226 N - 1471 N - 1839 N) | 10 kgf - 15 kgf - 15.6 kgf - 30 kgf - 31.2 kgf - 45 kgf (98 N - 147 N - 153 N - 294 N - 306 N - 441 N) |
| Norms and certifications | ASTM E 18 EN ISO 6506 | |
| Min. measurable diameter | 4 mm | |
| Output interfaces | RS 232 | |
| Reading | Digital on display | |
| Weight | 58 kg | |
| Preload | 10 kgf (98.1 N) | 3 kgf (29.4 N) |
| Working principle | Rockwell | Superficial Rockwell |
| Standard scales | HRC, HRD, HRE, HRF, HRG, HRH, HRK, Brinell HB30 | HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HR15W, HR30W, HR45W, HR15X |
| Load application method | Manual | |
| Load time | Operator choice | |
| Working area dimensions | 3 x 3 mm | |

# AT130 HARDNESS TESTERS

## Description:

The AT130 bench hardness tester, based on the Rockwell principle in compliance with DIN and ASTM standards, ensures precision by eliminating the influence of material deflections. Measurement is taken directly on the sample surface, optimizing preparation.
The world-famous AT130 hardness tester, sold globally since the 1970s, is also available in a semi-automatic version. It provides precision and speed in all conditions, delivering results in just 4 seconds. Designed by Cisam-Ernst, it is a reliable and accurate instrument, ensuring high durability even in the most challenging conditions.

## Advantages:

- Precision and speed: Tests completed in just 2 seconds using the Rockwell principle.
- Spring load system: Reliable measurements, insensitive to deflections.
- International compliance: Complies with UNI, ISO, DIN, and ASTM standards.
- Optimized productivity: One lever movement equals one test.
- Robustness: Ideal for critical environments with dust and vibrations.

## AT130 technical features

| MODEL | MODEL R | MODEL SR |
|---|---|---|
| Loads | Rockwell 60kgf (N588.40) - 100kgf (N980.70) - 150kgf (N1471) - Brinell 62,5kgf (N612.90) - 125kgf (N1226) - 187.5kgf (N1839) | Rockwell 15 kgf (N 147) - 30 kgf (N 294) - 45 kgf (N 441) - Brinell 62.5 kgf (N 612.90) |
| Power supply | 115VAC - 230VAC | |
| Norms and certifications | ASTM E-18, ISO 6508, ISO 6506 - ISO 6507 | |
| Min. measurable diameter | 6 mm Rockwell | 4 mm Superficial Rockwell |
| Selectable functions | Scales, tolerances, calibration | |
| Output interfaces | RS232 | |
| Reading | On display 7 segments | |
| Load application method | Semi-automatic | |
| Weight | AT130DNX: 95 kg - AT130DTX: 125 kg - AT130DCAR: 165 kg - AT130DMUR: 115 kg | |
| Preload | 10 kgf (98.1 N) | 3 kgf |
| Working principle | Rockwell | Superficial Rockwell |
| Standard scales | Rockwell: HRA, HRB, HRC, HRD, HRF, HRG<br>Brinell: HB10, HB30, other scales on request | Rockwell: HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, other scales on request |
| Load time | Selectable | |
| Working area dimensions | STAND TX: Max. measurable height: 240mm (400mm w/o elevating screw) / depth: 225mm<br>STAND NX: Max. measurable height: 210mm / depth: 240mm | |
| Overall dimensions | AT130DNX: 30x60x73 cm, AT130DTX: 30x60x95 cm,<br>AT130DCAR: 95x33x133 cm, AT130DMUR: 30x70x110 cm | |
| Warranty | 12 months | |

# AT250 HARDNESS TESTERS

## Description:

In the realm of materials engineering, Rockwell hardness testers are essential instruments for measuring material hardness. AT250 D model embodies the evolution of this tradition, offering a cutting-edge solution that combines the precision and speed of traditional Rockwell hardness testers with electronic innovation for test data processing.
The AT250 D line of hardness testers represents the evolution of the well-known AT130 model, a device sold in thousands of units worldwide since the 1970s. It brought significant innovation to the industry due to its ability to quickly measure the hardness of large components with a system insensitive to indentation and bending.

## Advantages:

• A 2-second test speed enhances quality control efficiency, enabling companies to handle a higher test volume without compromising accuracy.

• The spring-loaded system ensures highly reliable measurements that comply with international standards, preventing errors and ensuring product compliance with industry requirements.

• The tester's versatility and precision allow it to evaluate a wide range of materials, ensuring compliance with UNI, ISO, DIN, and ASTM standards.

• The device's durability and adaptability enable it to be used in various environments, ensuring process continuity even under challenging conditions.

• The availability of interfaces allows for easy integration of the hardness tester with digital systems, improving data management and information sharing within the company, offering a competitive advantage.

## AT250 technical features

| MODEL | MODEL DR | MODEL DSR |
|---|---|---|
| Loads | 60 kgf - 62.5 kgf - 100 kgf - 125 kgf - 150 kgf - 187.5 kgf (588 N - 613 N - 981 N - 1226 N - 1471 N - 1839 N) | 10 kgf - 15 kgf - 15.625 kgf - 30 kgf - 31.25 kgf - 45 kgf (98 N - 147 N - 153 N - 294 N - 306 N - 441 N) |
| Power supply | Autosetting 100VAC - 240VAC | |
| Norms and certifications | Rockwell - ASTM E-18 - ISO 6508 | |
| Min. measurable diameter | 4 mm (indenter 048 + group 022) | |
| Selectable functions | Scale selection, load time, minimum thickness, mm/inch, round correction, calibration, calibration language, date/time, tolerances, type of indenter, file, measurement archive, printouts, statistics, icons, conversions, sequence, password | |
| Output interfaces | USB Printer - USB export on USB drive<br>OPTIONAL: RS232 - RS485 - Profibus - Ethernet MODBUS-TCP Bluetooth | |
| Reading | On colour touch-screen display 800x480 px | |
| Load application method | Manual | |
| Weight | AT250NX: 95 kg, AT250TX: 125 kg, AT250CAR: 165 kg, AT250MUR: 115 kg | |
| Preload | 10 kgf (98.1 N) | 3 kgf |
| Working principle | Rockwell | Superficial Rockwell |
| Standard scales | Rockwell: HRA, HRB, HRC, HRD, HRF, HRG<br>Brinell: HB10, HB30, other scales on request | Rockwell: HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, other scales on request |
| Languages | Italian, English, German, other languages on request | |
| Working area dimensions | STAND TX: Max. measurable height: 240mm (400mm w/o elevating srew)/depth: 225mm<br>STAND NX: Max. measurable height: 210mm/depth: 240mm | |
| Overall dimensions | AT250NX: 30x60x73 cm, AT250TX: 30x60x95 cm, AT250CAR: 95x33x133 cm, AT250MUR: 30x70x110 cm | |
| Memory | 400 files with 2500 storable values for every file | |

# AT350 AUTOMATIC HARDNESS TESTERS

## Description:

The AT350 hardness tester represents the cutting edge in hardness measurement based on the Rockwell principle. Automated and reliable, this instrument operates in accordance with EN, DIN, ISO, and ASTM standards, providing accurate results across a wide range of materials. Ideal for testing large parts and for Jominy testing, the AT350 simplifies processes with its motorized stand, adapting easily to different testing conditions.
Its ability to automatically apply preload during measurements reduces the required time and minimizes errors, allowing automatic batch control without the need for an operator. With Cisam-Ernst's patented spring load system, the AT350 ensures precision and reliability even in the harshest environments, withstanding extreme temperatures, dust, humidity, and vibrations. Thanks to Cisam-Ernst's commitment to precision and reliability, the AT350 is designed to withstand intensive use and the test of time, offering robust instruments that can maintain optimal performance over the long term.

## Advantages:

• Rockwell principle – Rapidity of test.
• Automatic functioning – Insertion into production line.
• The spring loading system ensures tests insensitive to material deflection or bending during the test – Reliable and faster measurements.
• The spring load system ensures test speed 5 times higher than common systems with load cells – Rapid cost amortization.
• The spring loading system ensures precise and reliable testing in accordance with international standards – Compliance with international standards.
• Interconnection Industry 4.0 – Possibility to benefit from hyper-depreciation by law.

## AT350 technical features

| MODEL | MODEL DR | MODEL DSR |
|---|---|---|
| Loads | 60 kgf - 62.5 kgf - 100 kgf - 125 kgf - 150 kgf - 187.5 kgf (588 N - 613 N - 981 N - 1226 N - 1471 N - 1839 N) | 10 kgf - 15 kgf - 15.625 kgf - 30 kgf - 31.25 kgf - 45 kgf (98 N - 147 N - 153 N - 294 N - 306 N - 441 N) |
| Power supply | Selectable 115 VAC or 230 VAC | |
| Norms and certifications | ASTM E-18 ISO-EN 6508 | |
| Min. measurable diameter | 4 mm (indenter 048 + shroud 60° group 022) | |
| Selectable functions | Scale choice, load time, minimum thickness, mm/inch, calibration round correction, ùlanguage, date/time, tolerances, indenter, file, prints, statistics, icons, conversions, sequence, measure archive, password, start measure | |
| Output interfaces | USB Printer - USB export to USB drive<br>OPTIONAL: RS232 - RS485 - Profibus - Ethernet Bluetooth | |
| Reading | On colour touchscreen display 800x480px, 150x90 mm | |
| Load application method | Automatic | |
| Weight | 200 kg | |
| Preload | 10 kgf (98.1 N) | 3 kgf |
| Working principle | Rockwell | Superficial Rockwell |
| Standard scales | Rockwell: HRA, HRB, HRC, HRD, HRF, HRG<br>Brinell: HB10, HB30, other scales on request | Rockwell: HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, other scales on request |
| Load time | Selectable form keyboard | |
| Languages | Italian, English, German, other languages on request | |
| Working area dimensions | 255 mm (414 mm w/o elevating screw) / depth: 210 mm (on request increased columns: +300 mm or +500 mm for heights up to 920 mm) | |
| Overall dimensions | 730x1080x850 mm | |
| Memory | 400 files with 2500 results each | |





# TWIN X AUTOMATIC HARDNESS TESTERS


## Description:

The TWIN-X is a fully automated Rockwell hardness tester, designed for seamless performance in Rockwell and Super Rockwell hardness testing. Capable of handling large workpieces up to 420 mm in height in its standard configuration, this advanced hardness tester is a game-changer for efficiency and productivity.
Equipped with an innovative spring system that surpasses traditional load cell systems, TWIN-X reduces each test cycle by up to 10 seconds. This translates to remarkable productivity gains, saving 12 minutes per hour, or nearly two hours every working day.
Designed to meet diverse hardness testing needs, TWIN-X boasts an impressive indenter stroke of up to 45 mm, enabling testing on varying thicknesses without any manual adjustments. Its clamping shield facilitates accurate testing of overhanging pieces without external support.
With a fully automated vertical-axis movement and load application system, TWIN-X streamlines the entire hardness testing process. Its built-in safety device retracts the indenter to protect against misaligned pieces or foreign objects.
Specially engineered for non-standard applications, TWIN-X offers high flexibility for custom configurations. The screw unit can be removed to accommodate larger parts like molds and castings, and a specialized version with a +500 mm stand is available for testing pieces up to 950 mm in height. Additionally, the detachable measuring head integrates seamlessly into production line control systems, enhancing versatility and efficiency.
Key benefits of TWIN-X include enhanced productivity, versatile application, and custom configurability for specialized tasks.

## Advantages:

- Rockwell and Super-Rockwell – Test speed: cycle time faster than 1,5 seconds.
- Automatic functioning – Insertion in the production line.
- The spring loading system ensures insensitive tests to material failure, bending or deflection during the test – Reliable and faster measurements.
- The spring load system ensures test speed 5 times higher than systems with load cells – Fast amortisation of costs.
- The spring loading system ensures precise and reliable testing in accordance with international standards

## Twin X technical features

| | |
|---|---|
| Loads | Rockwell: 60 kgf - 100 kgf - 150 kgf (N 588 - 980 - 1471)<br>Superficial Rockwell: 15 kgf - 30 kgf - 45 kgf (N 147 - 294 - 441)<br>Brinell: 15.625 kgf - 31.25 kgf - 62.5 kgf - 125 kgf - 187.5 kgf (N 153.2-306.5-612.9-1226-1839) |
| Power supply | Single-phase, 230 VAC, 50/60 Hz, (115 VAC on request) |
| Norms and certifications | ASTM E-18 ISO-EN 6508 |
| Output interfaces | USB for printer connection, USB for direct export to USB stick, Modbus-TCP, RS232, Profibus |
| Reading | Direct on touch-screen monitor |
| Languages | Italian, English, German, other languages on request |
| Load application method | Automatic by means of stepper motor (indenter stroke 45mm) |
| Weight | Gross: ca. 270 kg (hardness tester + bench) - Hardness tester: 160 kg |
| Preload | 3 kgf (24.9 N) - 10 kgf (98 N) |
| Working principle | Rockwell and Super-Rockwell |
| Standard scales | Rockwell: HRA - HRB - HRC - HRD - HRF - HRG<br>Super Rockwell: HR15N - HR30N - HR45N - HR15T - HR30T - HR45T<br>Brinell: HB/30 - HB/10 - HB/5 - HB/2,5 - kgf/mm2 - N/mm2 - other scales on request |
| Load time | Selectable on touch-screen from 1sec to 45sec |
| Overall dimensions | 90x70x115 cm |
| Configurable settings | 400 storable files (for each file a product with the corresponding test parameters can be stored: code, customer name, hardness scale, tolerance values, etc.)<br>Setting 5 tolerance ranges in series controls |

# MANUAL VICKERS HARDNESS TESTER THV-1MPE

## Description:

• The hardness tester has a simple design: built-in light source and camera, branded computer, hardness tester's specific control and measurement software.
• Built-in 5 million HD CCD camera, the light path is short, the image is clearer.
• Built-in high brightness, long life LCD light source.
• Built-in hardness tester special control and measurement software: hardness tester's control, pressure mark, automatic turret, brightness adjustment, automatic hardness measurement.

• The screw adopts unique optical cross-guide guide to ensure guidance accuracy. When the sample is lifted, the indentation can be better focused and the image position remains unchanged.
• Calibration using micrometer or hardness block calibration, can be automatically calibrated, so that the hardness value more accurate in line with the requirements.
• Hardness value statistics and hardness exceed alarm.
• Hardness according to the national standard and ASTM conversion into other hardness.
• The test report can be customized by the user, and all test data, including the indentation image, will be saved forever for easy historical inquiry.

## Standard supply:

• PC (software and instruction manual included)
• Built-in camera
• Weight shaft
• Weights - 6 pcs
• Micro-hardness blocks (1 pc high, 1 pc medium)
• X-Y test stand
• Nylon cardan foot - 4 pcs
• Spirit level
• Screwdriver - 2 pcs
• Dust cover
• Power cord
• Spare fuse (2A) - 2 pcs
• Product certificate and warranty card

## Technical features

| | |
|---|---|
| Model | THV-1MPE |
| Turret | Automatic |
| Test force | 10 gf (0.098 N), 25 gf (0.245 N), 50 gf (0.49 N), 100 gf (0.98 N), 200 gf (1.96 N), 300 gf (2.94 N), 500 gf (4.9 N), 1 kgf (9.8 N) |
| Test force switching | Manual |
| Standards | GB/T4340.2, ASTM E92 |
| Measurement resolution | 0.01 µm |
| Conversion ruler | Lowe's, Brinell |
| Hardness test range | 8 - 2900 HV |
| Method of test force application | Automatic (loading, retaining, unloading) |
| Test objectives | 10X, 40X |
| Test force retention time | 1 - 99 sec |
| Maximum allowable specimen height | 160 mm |
| Distance from indenter to machine wall | 170 mm |
| X-Y test bench | Size: 100x100 mm - Maximum movement: 25x25 mm |
| Computer | 21.5" monitor - 8 GB RAM + 256 GB hard disk, WIN10 Operating System, WIFI |
| Camera | 5 megapixel |
| Power supply | AC 220 V + 5%, 50-60 Hz, 600 W |
| Weight | About 50 kg |
| Size | 540 x 260 x 650 mm |

# SEMI-AUTOMATIC VICKERS HARDNESS TESTER iHV-1/iHV-10/iHV-50

## VICKERS TEST – KNOOP TEST

### Description:

• Auto focus.
• 6-station precision turret.
• Z-axis automatic control and anti-collision protection.
• Modern minimalist style.
• Ultra high precision X Y workbench.
• Multiple language options.
• Workbench panoramic camera (optional): Equipped with a panoramic camera that does not require image stitching to generate sample panoramic images, with a built-in 12 million pixel high-definition industrial camera.
• Automatic measurement of hardness value: No need for manual positioning, the new algorithm for automatic and precise measurement can detect indentations on uneven or scratched surfaces.

### Advantages:

• Independently developed software to achieve fast and accurate focusing on new algorithm and industry standards.
• HV – HK pressure head, multi objective configuration 10X, 40X (2.5X, 5X, 20X, 50X optional).
• Supporting high-speed automatic focusing with optical cross rail lifting mechanism and automatic collision prevention device.
• All built-in light sources, cameras, focusing and force changing devices.
• Workbench repeatability positioning accuracy: 1 micron stroke can reach a maximum of 200 mm.
• Multiple languages available in Chinese and English for selection and customization.
• Automatic switching of force values and brightness adjustment for each experiment. Automatic switching of force values for different materials, different surface conditions.

## Technical features

| Model | IHV-1AZ | IHV-10AZ | IHV-50AZ |
|---|---|---|---|
| Force range | 10 gf - 1 Kgf | 0,3 - 10 Kgf | 0,5 - 50 Kgf |
| Automatic switching of force values | Yes | | |
| Vickers measurement | Yes | | |
| Knoop measurement | Yes | | |
| Brinell measurement (optional) | Yes | | |
| Automatic turret | Yes | | |
| Number of turret workers | 3(6) | | |
| Objective lens | 10X, 40X (2,5X, 5X, 20X, 50X) | | |
| Panoramic camera | Optional | | |
| Automatic brightness adjustment | Yes | | |
| Laser crosshairs positioning | Optional | | |
| Automatic measurement of hardness value | Yes | | |
| Sample edge positioning | Optional | | |
| Sample shape matching module | Optional | | |
| Welding module | Optional | | |
| Measurement of fracture toughness | Yes | | |
| Report output | Yes | | |

# AUTOMATIC VICKERS HARDNESS TESTER iHV-1/iHV-10/iHV-50

## VICKERS TEST – KNOOP TEST

### Description:

• Auto focus.
• 6-station precision turret.
• Z-axis automatic control and anti-collision protection.
• Workbench panoramic camera (optional).
• Automatic measurement of hardness value.
• The light source, camera, focusing, and power conversion devices are all built-in.
• Ultra high precision X/Y workbench: Workbench repeatability positioning accuracy: 1 micron, maximum travel up to 200 mm.
• Multiple language options: Multiple languages available for selection and customization.

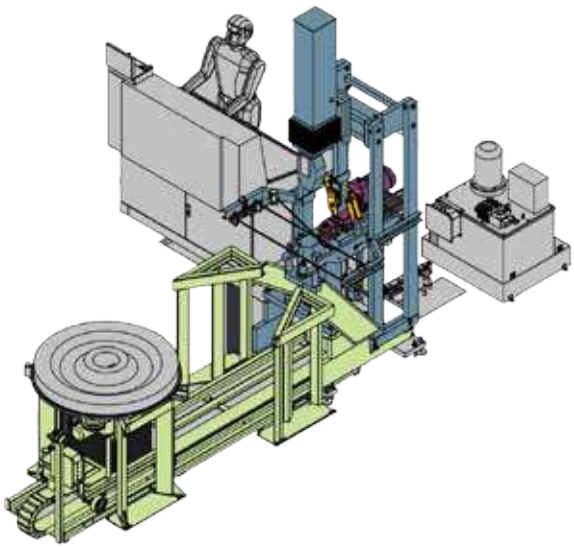
### Advantages:

• Our self-developed software achieves fast and accurate focusing, with new focusing algorithms that refresh industry standards.
• HV – HK pressure head, multi objective configuration 10X, 40X (2.5X, 5X, 20X, 50X optional).
• High speed automatic focusing using optical cross rail lifting mechanism and automatic anti-collision device.
• Automatically switch between different experimental force values, adjust brightness and contrast based on different materials and surface conditions.
• Equipped with a panoramic camera that does not require image stitching to generate sample panoramic images. Built in 12 megapixel high-definition industrial camera.
• No need for manual positioning, the new algorithm for automatic precise measurement can detect indentation on surfaces that are not smooth or have scratches.

## Technical features

| Model | IHV-1AZXY | IHV-10AZXY | IHV-50AZXY |
|---|---|---|---|
| Force range | 10 gf - 1 Kgf | 0,3 - 10 Kgf | 0,5 - 50 Kgf |
| Automatic switching of force values | Yes | | |
| Vickers measurement | Yes | | |
| Knoop measurement | Yes | | |
| Brinell measurement (optional) | Yes | | |
| Automatic turret | Yes | | |
| Number of turret workers | 3(6) | | |
| Objective lens | 10X, 40X (2,5X, 5X, 20X, 50X) | | |
| Panoramic camera | Optional | | |
| Automatic brightness adjustment | Yes | | |
| Laser crosshairs positioning | Optional | | |
| Automatic measurement of hardness value | Yes | | |
| Sample edge positioning | Optional | | |
| Sample shape matching module | Optional | | |
| Welding module | Optional | | |
| Measurement of fracture toughness | Yes | | |
| Report output | Yes | | |

# Bre-Aut SOR for the testing of finished train wheels



## Requests:

Fully automatic Brinell hardness testing of finished train wheels with the following specifications:

• Surface preparation and measurement of finished trainwheels – need to measure wheels of different diameters (from 700 mm to 1300 mm).
• Speed up the entire testing process.
• Need to install into an existing production line consisting of machinery from other vendors.
• Need to comply with specific regulations that require two measurements at a distance of 25 mm from the first test if it is outside the range of hardness required.
• Need to mark non-conforming wheels.

## Adopted solution:

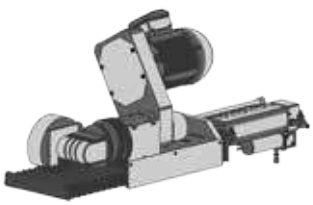
• Line equipped with lamellar wheel unit for surface preparation of finished wheels.
• Mounting of the entire hardness tester on a PLC-controlled motor-driven slide.
• Creation of a transfer system that allows two wheels to be transported simultaneously from the loading point and the measuring point under the hardness tester to the unloading point.
• Implementation of specific communication protocols for the exchange of signals and information with the PLC line controller.
• Optimisation of the transfer system controls to allow the wheel to be moved for additional measurement positions. If the first test falls within the specified range, the wheel is transferred to the unloading position and at the same time a new wheel is brought from the loading position to the surface preparation and measurement position to be measured. If the first test is outside the set range, it will be automatically moved by 25 mm and a second and third test will be carried out. If both these tests give a positive result, the wheel will result compliant.
• If any of the above conditions do not occur, the wheel will be considered non-compliant and consequently marked with the spray paint unit located at the discharge position.

## Achieved results:

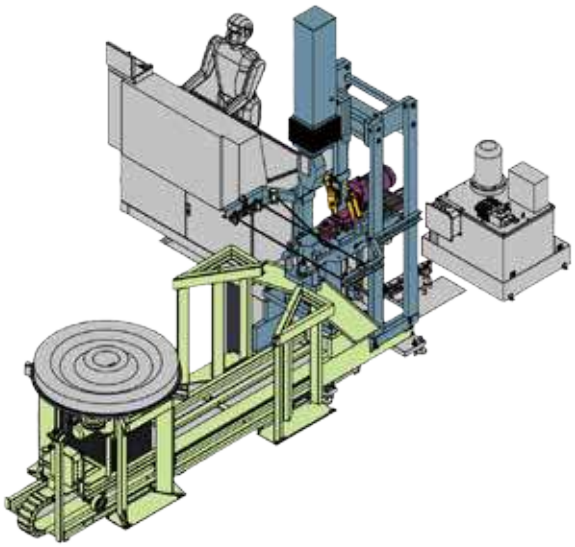
• Preparation of the finished surface limiting its alteration.
• The surface preparation and measurement unit automatically adapts to the wheel size.
• Integration of the automation of hardness measurement with the existing in-line system.
• 60 seconds for a hardness test including surface preparation.
• Automatic wheel movement for additional measurement positions.
• Automatic evaluation of the tests to be performed based on the tolerance parameters entered and automatic evaluation of the conformity or non-conformity of the measurement according to the standards.

## Bre-Aut SOR technical features

| | |
|---|---|
| Power supply | 380 V 50 Hz |
| Loads | 3000 kgf (29430 N) |
| Norms and certifications | ISO 6506/1 6506/2 6506/3 - ASTM E 10 |
| Selectable functions | Load time, tolerances, stats, database of measurements and images with search on-board machine,languages |
| Output interfaces | Profibus, Ethernet |
| Reading | Automatic optical impression reading |
| Weight | 9 t |
| Working principle | Brinell |
| Standard scales | HB 10/3000 |
| Load time | Adjustable 1-30 sec |
| Overall dimensions | 7000 x 8000 mm |


# Bre-Aut MAR for the testing of raw train wheels



## Requests:

Automatic Brinell hardness testing of raw train wheels with the following specifications:

• Surface preparation at different depths and measurement of raw train wheels.
• Need to measure wheels of different diameters (from 700 mm to 1300 mm).
• Speed up the entire test process.
• Need to install into an existing production line consisting of machinery from other vendors.
• Need to comply with the specific regulations that impose two measurements at a distance of 25 mm from the first test if it is outside the required range of hardness

## Adopted solution:

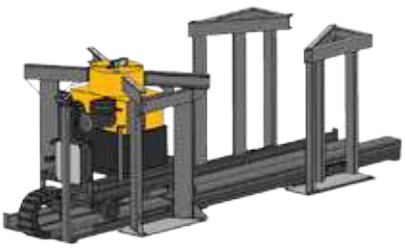
• System equipped with milling unit for surface preparation of raw wheels.
• Creation of a transfer system that allows the rotation and transport of a wheel from the loading/unloading point to the measuring point.
• Implementation of specific communication protocols for the exchange of signals and information with the PLC line controller.
• Optimisation of the transfer system controls to allow the wheel to be moved for additional measurement positions. If the first test falls within the specified range, the wheel is transferred to the unloading position and at the same time a new wheel is brought from the loading position to the surface preparation and measurement position to be measured. If the first test is outside the set range, it will be automatically rotated by 25 mm and a second and third test will be carried out. If both these tests give a positive result, the wheel is compliant.
• If any of the conditions of the above point does not occur the wheel will be considered non-compliant.

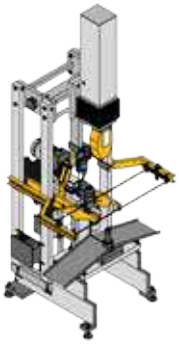
## Achieved results:

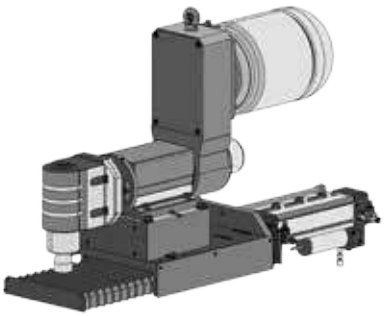
• Preparation of the rough surface by milling.
• The surface preparation and measuring unit automatically adapts to the wheel size.
• Integration of the automation of hardness measurement with the existing in-line system.
• 120 seconds for a hardness test including surface preparation.
• Automatic wheel rotation for additional measurement positions.
• Automatic evaluation of the tests to be performed based on the tolerance parameters entered and automatic evaluation of the conformity or non-conformity of the measurement according to the standards.

## Bre-Aut MAR technical features

| | |
|---|---|
| Power supply | 380V 3ph - other power supplies on request |
| Loads | 3000 kgf (29430 N) |
| Norms and certifications | IISO EN 10003 - ASTM E-10 |
| Reading | Automatic impression reading, e-brio |
| Languages | Italian, English, German, other languages on request |
| Weight | ca. 5 t |
| Working principle | Brinell |
| Standard scales | HB30 / 3000kg |
| Load time | Selectable from 1 to 30 sec |
| Working area dimensions | 5 x 3 m |
| Memory | Industrial PC |







# Bre-Aut MAR with fixed clamps

## Requests:

Replacement of an existing machinery:

- Automatic machine to be placed in production environment.
- Request for fully automatic machine cycle.
- Robust and durable machinery.
- Security system during machine operation.
- Possibility of processing and exporting measurement data.

## Adopted solution:

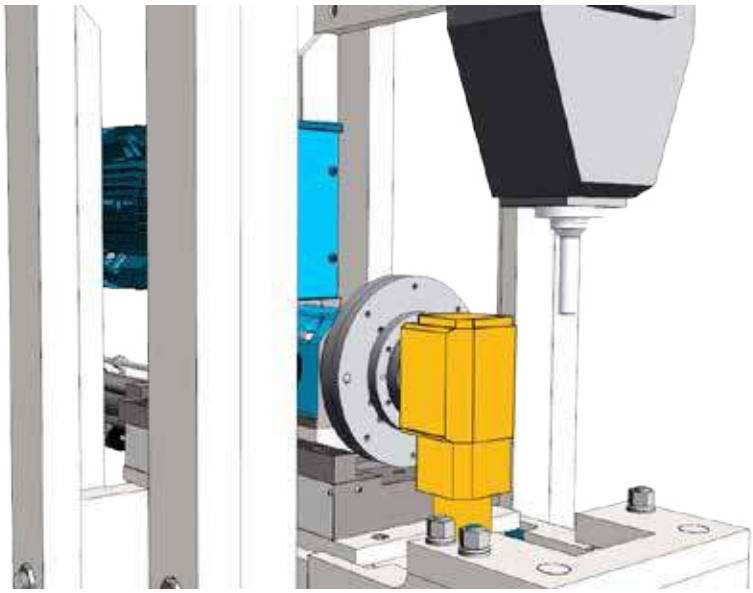
- The provided machinery has a hydraulic principle to withstand production environments.
- PLC (Programmable Logic Controller) with touchscreen monitor for configuration and management of machine movements (input, output and signals), also includes the management of the hydraulic power unit.
- Oversized machine components allow continuous use of the instrument.
- Touchscreen monitor featured with Modbus serial communication protocol.

## Achieved results:

- Machinery resistant to industrial and production environments.
- Automatic measurement including surface preparation.
- Machinery usable 24 hours a day.
- Machine operating remotely and in total safety.
- Data consultation on board machine.

## Bre-Aut MAR technical features

| | |
|---|---|
| Power supply | Three-phase 480 V 60 Hz |
| Loads | 750 / 3000 kgf (7360 / 29430 N) |
| Norms and certifications | ASTM E103 |
| Selectable functions | Load time, tolerances, stats, languages |
| Reading | Automatic impression by depth probe |
| Weight | 1.6 t |
| Working principle | Brinell |
| Standard scales | HB30 |
| Load time | Adjustable from 1 to 30 sec |
| Overall dimensions | 790 x 2930 mm |



# CHD – CASE HARDNESS DEPTH ANALYZERS

# HTD1500 and HTD4000

## Advanced Case Hardness Depth analyzers


HTD1500 and HTD4000 case hardness depth analyzers deliver quick, accurate, and non-destructive thickness verification up to 1.3 mm (HTD1500) and 2.7 mm (HTD4000)
The devices eliminate the cumbersome steps of traditional testing. Using continuous data collection, these analyzers deliver accurate results in under a minute. HTD1500 and HTD4000 redefine heat treatment depth measurement with their speed, precision and adaptability. These instruments represent a leap forward for industries requiring swift, accurate and integrated analysis of heat-treated layers.

### Features:

• Non-destructive testing: Effortlessly measure the thickness of heat-treated layers without damaging the sample, preserving its integrity for further analysis or use.
• Ernst patented principle – Case hardness depth determination from 0.05 mm to 2.7 mm.
• Robust stand: Designed for high-capacity testing, the sturdy stand easily handles large dimension pieces, making it ideal for various industrial applications.
• Low maintenance: Built to thrive in challenging environments, the HTD1500 and HTD4000 require minimal maintenance, ensuring longevity and consistent performance.
• Durable carbide indenter: The carbide indenter performs 2,500 to 3,000 tests, depending on the material type and the applied load, providing long-lasting durability.

### Advantages:

• Time savings: These systems streamline the testing process, drastically reducing analysis time compared to conventional methods.
• Incomparable precision: With continuous data recording, the HTD analyzers deliver reliable and accurate measurements for immediate process verification.
• High load testing: The HTD4000 handles up to 4000 kg of test force, offering a versatile solution for various sample sizes and materials.
• 1 test = 1 minute: Drastic reduction of the test times, increased productivity.
• One measurement: No need for cross-sectioning, polishing and mounting of the test piece.
• Seamless integration: Real-time data collection ensures thorough quality control, supporting immediate process optimization.

## HTD1500 and HTD4000 technical features

| MODEL | HTD1500 | HTD4000 |
|---|---|---|
| Loads | 100 kgf - 1500 kgf (N 981 - N 14715) | 200 kgf - 4000 kgf (N 1961 - N 39227) |
| Power supply | 110-240 VAC 50/60 Hz | |
| Norms and certifications | ASTM E-18 indirect method on certified test block<br>ISO 6508 indirect method on certified test block | |
| Min. measurable diameter | 10 mm | |
| Selectable functions | Load selection, language, calibration, hardness measure,<br>schematic curve, hardness curve, tolerances, sequence, file, scale, histogram | |
| Output interfaces | USB - Ethernet | |
| Reading | Direct reading of case depth on touch-screen display 8.4”<br>Schematic curve with case depth value at the predetermined hardness<br>Stats and overlay of curves | |
| Languages | Italian, English, German, other languages on request | |
| Load application method | Automatic with predetermined load value according<br>to case depth | |
| Weight | ca. 440 kg | |
| Working principle | Evaluation of the load-penetration curve and tested algorythm | |
| Standard scales | Reference scale HV | |
| Load time | Test cycle depending on applied load | |
| Working area dimensions | Stand capacity 335 mm - H 315 mm | |
| Overall dimensions | 720 (ca. 950 included PC) x 1200 x 880 mm | |




# HTD30

## Case Depth measurement for hardened layers

HTD30, designed to deliver lightning-fast results in less than a minute, eliminates the need for time-consuming operations like sectioning, embedding, and polishing, preserving your workpiece's integrity.

HTD30 operates on a groundbreaking principle, patented by Ernst, which involves a single impression made while progressively applying load. This method ensures precise measurement without the interference of bending or subsidence, equivalent to conducting numerous impressions in a single point.

By continuously acquiring values during load application, HTD30 generates a load-hardness curve. Leveraging our proprietary algorithm, this curve provides invaluable insights, revealing the depth of the heat treatment and presenting a schematic of the hardened surface layer.

### Features:

- Measurement range: Case depth determination from 0.02 mm to 0.2 mm.
- Rapid measurement: Obtain accurate results in less than a minute.
- Non-destructive: Safeguard the integrity of your workpiece.
- Precision: Eliminate influences from bending or subsidence.
- Proprietary algorithm: Transform data into actionable insights.
- Efficiency: Equivalent to numerous impressions in a single point.
- One measurement: No need for cross-sectioning, polishing and mounting of the test piece.

## HTD30 technical features

| | |
|---|---|
| Loads | 1 kgf - 30 kgf |
| Power supply | 100/250 VAC, 50/60 Hz |
| Norms and certifications | DIN 50158 ASTM E-18 indirect method on certified test block<br>ISO 6508 indirect method on certified test block |
| Min. measurable diameter | 4 mm |
| Selectable functions | Load selection, language, calibration hardness measure, schematic curve hardness curve, tolerances, sequence, file scale, histogram |
| Output interfaces | USB - Ethernet |
| Reading | Direct reading of case depth on touch-screen display 8”<br>Schematic curve with case depth value at the predetermined hardness<br>Stats and overlay of curves |
| Languages | Italian, English, German, other languages on request |
| Load application method | Automatic with selected load value according to case depth |
| Weight | ca. 32 kg |
| Working principle | Case depth through evaluation of the load-penetration curve and tested algorythm |
| Standard scales | mm/inch cut-off hardness in HV/HRC |
| Load time | Test cycle depending on maximum applied load |
| Overall dimensions | 40 x 50 x 35 cm |

# PORTABLE HARDNESS TESTERS

Rockwell, Brinell, UCI, Leeb, wireless, mechanicals

# COMPUTEST LITE

Computest Lite, a 5kgf load portable Rockwell hardness tester, distinguishes itself from its larger sibling, the E-Computest, through its language-independent operation, onboard display, absence of data management or sharing functionalities, and a comprehensive set of preset scales.
Computest Lite prioritizes simplicity and autonomy, providing users with a hassle-free hardness testing experience without compromising on accuracy or functionality.


## Advantages:

• Language independence: Computest Lite breaks language barriers, offering seamless operation without the need for language selection or customization. This ensures straightforward usability across diverse linguistic backgrounds, eliminating any language-related complexities.
• Onboard display: Equipped with an onboard display, Computest Lite provides instant results without the necessity for external devices or software. This feature streamlines the testing process, offering real-time feedback directly on the device, enhancing efficiency and convenience.
• No data management or sharing: Unlike its larger counterpart, Computest Lite focuses solely on hardness testing, omitting complex data management and sharing functionalities. This streamlined approach simplifies operation, catering to users who prioritize straightforward testing procedures without the need for data handling.
• Set of preset scales: Computest Lite comes preconfigured with a comprehensive set of preset scales, catering to common testing requirements across various industries. This eliminates the need for custom scale configurations, offering immediate usability out of the box.

## Features:

• Portable miniaturised Rockwell hardness tester – On-site measurement of pieces of any size.
• Adjustable in all directions – Savings on handling and cutting costs.
• One diamond indenter for the entire range of metals – Speed and simplicity of the testing process.
• Testing is not affected by any yielding or bending – Reliable results in all test conditions.
• ACCREDIA certification (ILAC MRA-Mutual Recognition Arrangements) – Offers a competitive advantage in markets where certification is required.

## Computest Lite technical features

| | |
|---|---|
| Loads | 5 kgf (49 N) |
| Power supply | 100 - 240 V |
| Norms and certifications | DIN 50157, ASTM E-110, ACCREDIA certificate upon request |
| Min. measurable diameter | 2 mm with stand 12 mm with base for rounds |
| Selectable functions | Scales, tollerances, calibration, test load, stats, language, sequence, files, materials, partial average, clock, auto off timer, add notes, barcode scanner, geo-localization |
| Output interfaces | Wifi, Bluetooth, micro USB, micro SD slot |
| Reading | Tablet display touch-screen 6" |
| Languages | Italian, English, German, other languages on request |
| Load application method | Manual |
| Weight | Mechanical unit 750 g - Electronical unit 360 g |
| Preload | 1.2 kgf (11.8 N) |
| Accuracy | HRC 0,3 HB < 1% |
| Working principle | Rockwell |
| Standard scales | HRC (10-70) - HB5 (21-190) - HB30 (80-700) - HV (35-1080) - DPTH (0-100) |
| Load time | Selectable 1 - 60 sec |

# E-COMPUTEST

Rockwell portable hardness tester, an essential tool for precision metal quality control. Designed for versatility and ease of use, this advanced, miniaturized device is ideal for direct on-site measurements of any-sized parts, supporting a broad range of industrial applications.
For professionals in the metalworking and industrial sectors seeking fast, accurate, and reliable quality control solutions, the Rockwell portable hardness tester is an invaluable resource.


## Advantages:

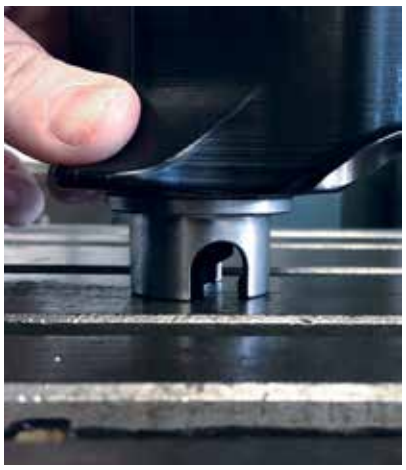
• On-site measurement capability: The Rockwell portable hardness tester eliminates the need for transporting large parts to laboratories. By enabling direct measurements at the job site, it significantly cuts down on handling costs and reduces the waiting period for results, optimizing overall productivity in metal quality control.
• Flexible orientation: This device's ability to adjust to all directions makes it exceptionally user-friendly. It accesses hard-to-reach areas with ease, reducing the necessity to disassemble complex parts, thereby saving time and operational costs.
• Universal diamond penetrator: With a single diamond penetrator suitable for all metals, this hardness tester streamlines the setup process. It accelerates the measurement cycle, maintaining high precision and reducing downtime in industrial settings.
• Consistently reliable results: Engineered to withstand material deflections and deformations, the Rockwell portable hardness tester guarantees accurate and dependable outcomes essential for upholding stringent quality standards in metalworking industries.
• Global certification advantage: Compliant with ACCREDIA (ILAC MRA), the hardness tester not only meets international testing standards but also provides a significant competitive edge in global markets where equipment and result certification are crucial.

## Standard supply:

• Diamond indenter
• Standard batteries for mechanical part
• 50 mm internal extension base extension
• Base for flat surfaces
• Lanyards
• Wrench for removing the battery cover
• HRC (~60 HRC) and HB30 (~210 HB/30) specimens
• Base with magnetic feet
• Base for rounds
• 3 non-magnetic non-slip feet for flat surfaces
• Wireless Charger
• Rechargeable battery (included in tablet)
• Android tablets
• Battery charger
• Measuring head
• Pin for E-Computest
• Shockproof case
• Pawl for Computest series

## E-Computest technical features

| | |
|---|---|
| Loads | 5 kgf (49 N) |
| Power supply | 100 - 240 V |
| Norms and certifications | DIN 50157, ASTM E-110, ACCREDIA certificate upon request |
| Min. measurable diameter | 2 mm with stand 12 mm with base for rounds |
| Selectable functions | Scales, tollerances, calibration, test load, stats, language, sequence, files, materials, partial average, clock, auto off timer, add notes, barcode scanner, geo-localization |
| Output interfaces | Wifi, Bluetooth, micro USB, micro SD slot |
| Reading | Tablet display touch-screen 6" |
| Languages | Italian, English, German, other languages on request |
| Load application method | Manual |
| Weight | Mechanical unit 750 g - Electronical unit 360 g |
| Preload | 1.2 kgf (11.8 N) |
| Accuracy | HRC 0,3 HB < 1% |
| Working principle | Rockwell |
| Standard scales | HRC (0-70) - HV (35-1080) - HB30 (80-700) - HB/5 (21-190) - DPTH (0-100) |
| Load time | Selectable 1 - 60 sec |



# E-DYNATEST


The E-Dynatest stands out for its high test load of 100 kgf (980 N), making it a powerful tool for precise hardness measurements. This high test load ensures reliable and consistent measurements, as the testing process is unaffected by the surface condition of the material. It is particularly ideal for testing large pieces that are difficult to move, as it can be used directly on-site. Combined with the wireless data transfer between the test head and the tablet, the E-Dynatest allows for quick, precise, and straightforward hardness testing, with results displayed directly on the 6-inch tablet display. The wireless connection ensures that data is captured without delay and can be evaluated in real-time.
The Android app allows test results to be not only stored but also efficiently managed, shared, and printed. The combination of high test load, precision, and user-friendliness makes the E-Dynatest an excellent choice for on-site hardness testing.

## Features:

- Portable miniaturised Rockwell hardness tester – On-site measurement of pieces of any size.
- Adjustable in all directions – Savings on handling and cutting costs.
- High test load (100 kgf) – Two tools in one: measurements are comparable to a bench-top hardness tester.
- Measurement via a single manual pressure – Speed and simplicity of the measurement processes.
- ACCREDIA certification (ILAC MRA-Mutual Recognition Arrangements) – Offers a competitive advantage in markets where certification is required.

## E-Dynatest technical features

| | |
|---|---|
| Loads | 100 kgf (980 N) |
| Power supply | 100 - 240 V |
| Norms and certifications | DIN 50157, ASTM E-110, ACCREDIA certificate upon request |
| Min. measurable diameter | 25 mm standard - 12 mm with special penetrator shroud |
| Selectable functions | Scales, tollerances, calibration, test load, stats, language, sequence, files, materials, partial average, clock, auto off timer, add notes, barcode scanner, geo-localization |
| Output interfaces | Wifi, Bluetooth, micro USB, micro SD slot |
| Reading | Tablet display touch-screen 6" |
| Languages | Italian, English, German, other languages on request |
| Load application method | Manual |
| Weight | Mechanical unit 2050 g - Electronic unit 360 g |
| Preload | 3.45 kgf (33.8 N) |
| Accuracy | HRC 0.3 HB < 1% |
| Working principle | Rockwell |
| Standard scales | HRC (10-70) - 1HB30 (160-700) - 2HB30 (100-500) |

# E-Brio-W

E-Brio-W Brinell Optical Scope is a cutting-edge solution meticulously crafted to redefine efficiency and precision in Brinell testing. Developed with a keen eye on market needs and technological advancements, this innovative device embodies the essence of quality and user-centric design.

## Features:

• Seamless wireless integration: The E-Brio-W seamlessly integrates wireless technology from Ernst's portable devices into an optical Brinell scope. With wireless functionality, users can experience safe and straightforward usage in any environment, ensuring unparalleled convenience.

• Precision simplified: Precision meets simplicity with the E-Brio-W. Engineered to offer unparalleled accuracy without compromising on usability, this device ensures that users can achieve precise measurements effortlessly.

• Adaptable performance: The E-Brio-W epitomizes adaptability, serving as an "essential" product that can be effortlessly enhanced with additional features as needed. This flexibility allows users to tailor their testing experience to meet evolving requirements without hassle. It operates seamlessly as a stand-alone unit, providing immediate measurements with its onboard display. Furthermore, users can enhance its capabilities at any time by purchasing the E-Brio-W Software, compatible with PC or tablet running Windows 10 or 11. This software unlocks a plethora of additional features, including data management, manual adjustment of the Brinell indentation, statistics, and report generation, providing users with comprehensive control over their testing processes.

## Advantages:

• Exceptional precision – Advanced algorithm for edge detection ensures reliable and precise readings on any material and surface.

• Enhanced efficiency – Reduced Brinell indentation reading time to increase productivity.

• Unmatched flexibility – Stand-alone unit with integrated display or enhancement with additional software for data management, manual adjustment of Brinell indentations, and report generation.

• Wireless connectivity – Integrated wireless technology for a cordless experience, providing flexibility and freedom of movement in the work environment.

• Optimal price-performance ratio – High-level performance at a competitive price, ideal for companies seeking efficiency and precision in Brinell hardness testing.

## Technical features E-Brio-W

| | |
|---|---|
| Norms and certifications | ACCREDIA (ILAC MRA) |
| Selectable functions | Brinell impression reading, test histogram, statistics, report, manual adjustment of Brinell indentation |
| Reading | Automatic - Camera resolution 752 x 480 Pixel |
| Weight | 750 gr |
| Accuracy | 0.001 mm |
| Working principle | Automatic Brinell hardness reader |
| Standard scales | HB30: HBW10/3000 - HBW5/750 - HBW2.5/187.5 - HB15: HBW10/1500 - HB10: HBW10/1000 HBW5/250 - HBW2.5/62.5 - HB5: HBW10/500 - HBW5/125 - HBW2.5/31.25 HB2.5: HBW10/250 - HBW5/62.5 - HBW2.5/15.625 - HB1.25: HBW10/125 - HB1: HBW10/100 also includes every scale for Ernst Shear Pins |
| Working area dimensions | Support base: Ø 30 mm |
| Overall dimensions | h 170 mm - Ø 66 mm |
| Resolution | 1 µm optical resolution |
| Supported operating systems | Windows 10 - Windows 11 |
| Connectivity | Wireless |



## STE/A and STE/B

Face the challenges of hardness testing with the STE hardness tester, a reliable solution used globally since the 1980s. At the heart of the STE hardness tester are our innovative shear pins, ensuring precise and consistent results. This system precisely controls the force applied during indentation, ensuring reliable and repeatable measurements. The versatility of the STE hardness tester is undeniable. Thanks to its compact design, it can perform hardness tests on small surfaces and parts of various shapes and sizes, even in challenging positions. Whether you work in a crowded industry or a remote location, the STE hardness tester easily adapts to your needs. A distinctive feature of the STE hardness tester is its user-friendly design and the ability to measure all Brinell hardnesses from 100 to 700 HB with minimal investment.

Even non-expert operators can perform hardness tests with ease and precision thanks to the intuitive design of our instrument.

Our commitment is to provide a complete and reliable solution for hardness testing at an affordable cost. Each STE hardness tester comes with original ERNST patented shear pins and corresponding reading tables, ensuring a seamless testing procedure.

Join the numerous industries that rely on the STE hardness tester for their hardness testing needs. Invest in a proven solution that offers precision and reliability at a low cost, supporting your hardness testing processes with effectiveness and efficiency.

### Features:

• Small and handy – Can be used on small surfaces, in all positions, on parts of any shape and size.
• Simple and versatile hardness tester – All Brinell hardnesses from 100 to 700 HB are available with a limited investment.
• Makes a standard Brinell measurement – It allows the immediate optical reading with ANTARES portable microscope or automatic e-Brio system that, being equipped with Ernst tables, gives back in real time the result in Brinell points.
• Complete and stand-alone system – It is supplied with original ERNST patent calibrated pins and with the corresponding reading tables.

## STE/A and STE/B technical features

| MODEL | STE/A | STE/B |
|---|---|---|
| Loads | 1580 kgf (15500 N) | |
| Min. measurable diameter | 30 mm without preparation | |
| Reading | On ERNST reading table | |
| Load application method | Static | Dynamic |
| Weight | 6.7 kg | 6 kg |
| | (Weight of the clamp 3.6 kg - clamp capacity 150 mm) | |
| Working principle | STE PAT Ernst | |
| Standard scales | HB/30 - N/mm² - kg/mm² on reading table | |
| Load time | Instant | |
| Working area dimensions | Min. 20 x 20 mm | |
| Overall dimensions | 40 x 23 x 8 cm | 30 x 18 x 6 cm |
| Optics | STANDARD: 8x OPTIONAL: e-brio - Antares | |

# COMBINED HARDNESS TESTER T-UD2

The device works with both UCI (*Ultrasonic Contact Impendance*) and dynamic (*Leeb*) probes. User gets the benefits of two methods of measurement.

The **Leeb probe** is used for measuring the hardness of non-ferrous metals, cast iron, coarse-grained materials, massive products etc.

The **UCI probe** is used for measuring the hardness of small items, objects with a thin wall, complex form, and to measure the hardness of surface hardened layers.

Available with Bluetooth


UCI probe Leeb probe

## THE ADVANTAGES OF T-UD2

- Hardness measurement of any mass products with a thickness of 1 mm – inaccessible to the dynamic (Leeb) hardness testers (small parts, thin-walled structures, pipes, tanks, steel sheets, articles of complex shape, hardness control of metal coatings, etc.)
- Small imprint after measuring
- Measuring the hardness of surface hardened layer
- Wide range of hardness
- Only basic function, nothing extra
- Possibility to use in field conditions with high humidity and dust
- Convenience and ease of measurement
- Optimized number of buttons
- Contrast display with bright back-lighting
- Automatic recognition of probe
- Indication of the type of connected probe
- Calibrations stored in memory of probe
- Very easy in operation and calibration
- Internal memory and communication with PC
- New, intuitive menu with tips on the buttons
- Temperature range down to - 40°C
- Water resistant case
- Rubber bumper protected case

## MANY MODES OF MEASUREMENT


Normal mode


Statistics mode


Smart mode


Signal mode

## OPTIONAL BLUETOOTH MODULE

Thanks to the special NOVOTEST app for Android, it is possible to do hardness measurements, calibrate the device, set up a convenient display of values, save the results of hardness measurements, synchronize the archive with your other devices and a PC, transfer measurement results to your colleagues with your smartphone.

Using a Bluetooth connection, your smartphone connects to the hardness tester and you have a completely new device. The intuitive interface, ample opportunities for documenting results, Internet access, touch screen, camera, microphone and GPS receiver of a smartphone turn the hardness tester T-UD2 into something completely unique and previously inaccessible.

## WITH NOVOTEST APP IS POSSIBLE TO:

• Set and calibrate the hardness tester.
• Display measurement results in real time in numerical form with the construction of a graph, histogram or statistics.
• Take a picture of the test object with the putting of hardness marks.
• Create a video of the measured product.
• Recording audio notes about the tested object.
• Automatically save measurement's geolocation on Google maps.
• Display a Google map with markers of places of measurements made on it and the ability to view these measurements.
• Create the final comprehensive report on the measurement.
• Send a finished report to e-mail, messenger (or in any convenient way) directly from the application.
• Create folders and files with any names thanks to the flexible structure of the archive of measurements.
• Synchronize with PC and other smartphones.
• Access a cloud service for storing the archive of measurements.
• Automatically and manually synchronize the cloud measurement archives between devices.
• Use the Google navigation mode, building a route and accompanying to the point at which the measurements were made.
• Store archives of other devices with Bluetooth in one application.

## THREE TYPES OF UCI PROBES

| Load | Advantages or benefits | Typical applications |
|---|---|---|
| 98 N<br>(10 kgf) | Leaves relatively large dent. Suitable for low finished surfaces. | Small forged products, cast materials, heat-treated materials, etc., turbine blades, inside tubes with ø> 90 mm. |
| 50 N<br>(5 kgf) | Considered to be the universal type for most general applications. 50 N of downward hand pressure is required to activate the probe. Surface finish equivalent to 80 grind or better. | Induction or carburized machined parts, e.g.. camshafts, turbines, weld inspection, HAZ. Measurement in grooves, gear tooth flanks and roots, turbine blades, inside tubes with ø> 90 mm. |
| 10 N<br>(1 kgf) | Load is easy to apply; provides control to test on a sharp radius. Only 10 N of downward hand pressure is required to activate the probe. Surface finish equivalent to 150 grind or better. | Ion-nitrided stamping dies and molds, forms, presses, thin-walled parts. Bearings, tooth flanks, turbine blades, inside tubes with ø> 90 mm. |

## TECHNICAL FEATURES

| | |
|---|---|
| UCI probe types | 1 kgf (10 N) - 5 kgf (50 N) - 10 kgf (98 N) |
| Leeb probe types | D, DC, DL, C, D+15, E, G |
| Indenter | Diamond indenter (UCI), hardened ball (Leeb) |
| Measuring direction | Any direction 360° |
| Data storage | Limited only by the memory card |
| Measurement hardness range:<br>- Rockwell, HRC<br>- Brinell, HB<br>- Vickers, HV<br>- Tensile strength, MPa | <br>20 - 70<br>90 - 450<br>230 - 940<br>370 - 1740 |
| Measuring accuracy | HV ± 3%; HRC ± 1.5%; HB ± 3% |
| Hardness scale | HRC, HB, HV, MPa |
| Materials | - UCI probe: pre-calibrated for steel<br>- Leeb probe: pre-calibrated for steel, alloy steel, cast iron, stainless steel, aluminum, bronze, brass, copper<br>- Additional custom materials for calibration |
| Operating temperature range | -20 to +50° C |
| Power supply | 2 AA batteries |
| Instrument dimensions | 120 x 60 x 25 mm |
| Weight of electronic unit with batteries | 0.2 kg (without probes) |
| Battery life | Not less than 20 hours |

# COMBINED HARDNESS TESTER T-UD3

The device works with both UCI (*Ultrasonic Contact Impendance*) and dynamic (*Leeb*) probes. User gets the benefits of two methods of measurement.

The **Leeb probe** is used for measuring the hardness of non-ferrous metals, cast iron, coarse-grained materials, massive products etc.

The **UCI probe** is used for measuring the hardness of small items, objects with a thin wall, complex form, and to measure the hardness of surface hardened layers.

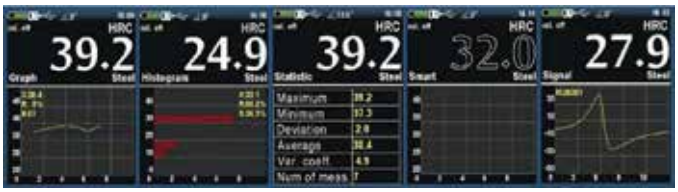
Available with Bluetooth


UCI probe Leeb probe

## THE ADVANTAGES OF T-UD3

- Hardness measurement of any mass products with a thickness of 1 mm – inaccessible to the dynamic (Leeb) hardness testers (small parts, thinwalled structures, pipes, tanks, steel sheets, articles of complex shape, hardness control of metal coatings, etc.)
- Small imprint after measuring
- Measuring hardness of the surface hardened layer
- Wide range of hardness
- Various measurement modes
- Calibration of any scale in any range
- Convenience and ease of measurement
- Large full color graphic display with bright back-lighting
- Automatic recognition of probe
- Indication of the type of connected probe
- Calibrations stored in memory of probe
- Extended temperature range down to - 40°C
- Internal memory and communication with PC
- New, intuitive menu with tips on the buttons
- Optional wireless mini-printer
- Water resistant case
- Rubber bumper protected case

## MANY MODES OF MEASUREMENT




1 2 3 4 5

**1.** GRAPH - the mode of building the graph
**2.** HISTOGRAM - the mode of building the histogram
**3.** STATISTIC - the mode of statistics
**4.** SMART - the mode of filtering incorrect measurements
**5.** SIGNAL - the mode of displaying the signal (only for Leeb probe)

## OPTIONAL BLUETOOTH MODULE

Thanks to the special NOVOTEST app for Android, it is possible to do hardness measurements, calibrate the device, set up a convenient display of values, save the results of hardness measurements, synchronize the archive with your other devices and a PC, transfer measurement results to your colleagues with your smartphone.

Using a Bluetooth connection, your smartphone connects to the hardness tester and you have a completely new device. The intuitive interface, ample opportunities for documenting results, Internet access, touch screen, camera, microphone and GPS receiver of a smartphone turn the hardness tester T-UD3 into something completely unique and previously inaccessible.

## WITH NOVOTEST APP IS POSSIBLE TO:

• Set and calibrate the hardness tester.
• Display measurement results in real time in numerical form with the construction of a graph, histogram or statistics.
• Take a picture of the test object with the putting of hardness marks.
• Create a video of the measured product.
• Recording audio notes about the tested object.
• Automatically save measurement's geolocation on Google maps.
• Visualizzare una mappa di Google con le indicazioni dei luoghi delle misurazioni fatte e la possibilità di visionarle.
• Display a Google map with markers of places of measurements made on it and the ability to view these measurements.
• Create the final comprehensive report on the measurement.
• Send a finished report to e-mail, messenger (or in any convenient way) directly from the application.
• Create folders and files with any names thanks to the flexible structure of the archive of measurements.
• Synchronize with PC and other smartphones.
• Access a cloud service for storing the archive of measurements.
• Automatically and manually synchronize the cloud measurement archives between devices.
• Use the Google navigation mode, building a route and accompanying to the point at which the measurements were made.
• Store archives of other devices with Bluetooth in one application.

# COMBINED HARDNESS TESTER T-UD3

## THREE TYPES OF UCI PROBES

| Load | Advantages and benefits | Typical applications |
|---|---|---|
| 98 N<br>(10 kgf) | Leaves relatively large dent. Suitable for low finished surfaces. Surface finish equivalent to 30 grind or better. | Small forged products, cast materials, heat-treated materials, etc., turbine blades, inside tubes with ø> 90 mm. |
| 50 N<br>(5 kgf) | Considered to be the universal type for most general applications. 50 N of downward hand pressure is required to activate the probe. Surface finish equivalent to 80 grind or better. | Induction or carburized machined parts, e.g.. camshafts, turbines, weld inspection, HAZ. Measurement in grooves, gear tooth flanks and roots, turbine blades, inside tubes with ø> 90 mm. |
| 10 N<br>(1 kgf) | Load is easy to apply; provides control to test on a sharp radius. Only 10 N of downward hand pressure is required to activate the probe. Surface finish equivalent to 150 grind or better. | Ion-nitrided stamping dies and molds, forms, presses, thin-walled parts bearings, tooth flanks, turbine blades, inside tubes with ø> 90 mm. |

## TECHNICAL FEATURES

| | |
|---|---|
| UCI probe types | 1 kgf (10 N) - 5 kgf (50 N) - 10 kgf (98 N) |
| Leeb probe types | D, DC, DL, C, D+15, E, G |
| Measuring range | HV: 230 ~ 940; HRC: 20 ~ 70; HB: 90 ~ 650<br>Tensile strength, MPa: 370 ~ 1740 |
| Measuring accuracy | HV ± 3%; HRC ± 1.5%; HB ± 3% |
| Indenter | Diamond indenter (UCI), hardened ball (Leeb) |
| Data storage | Limited only by the memory card |
| Communication | Upload data to PC and export as a spreadsheet<br>(USB cable and software included) |
| Hardness scale | HRC, HB, HV, HRB, HS, HL, MPa |
| Materials | - UCI probe: pre-calibrated for steel<br>- Leeb probe: pre-calibrated for steel, alloy steel, cast iron, stainless steel, aluminum, bronze, brass, copper<br>- Additional custom materials for calibration |
| Data display | Load applied/contact (UCI), angle (Leeb), single test result.<br>Max., min., average of tests, number of tests, deviation, var. coeff, histogram, signal and smart mode |
| Indication | Color LCD display (320 x 240) |
| Operating environment | Temperature: -20 to +40° C; Humidity: 30 to 80% RH |
| Power supply | DC 4.5 V (3 AA batteries) |
| Instrument dimensions | 160 x 75 x 30 mm |
| Net weight | Approx. 0.3 kg (without probe) |
| Battery life | Approx. 10 hours |

# COMBINED HARDNESS TESTERS T-UD2/3

## STANDARD SET T-UD2

- Electronic unit
- UCI probe
- Leeb probe
- 2 AA batteries
- Charger
- USB cable
- Operating manual
- Software for PC
- Case

## AVAILABLE OPTIONS T-UD2

- UCI probe
- Leeb probe
- Batteries
- Charger
- USB cable
- Set of hardness measures
- Case


## STANDARD SET T-UD3

- Electronic unit
- UCI probe
- Leeb probe
- 3 AA batteries
- Charger
- USB cable
- Operating manual
- Software for PC
- Case


## AVAILABLE OPTIONS T-UD3

- UCI probe
- Leeb probe
- Rubber bumper protected case
- Wireless printer
- Portable grinding machine
- Set of hardness measures
- Three types of UCI probes (10 - 50 - 98 N)
- Batteries
- Charger
- USB cable
- Case

# WIRELESS HARDNESS TESTER LAB UCI


Wireless portable hardness tester which implements the UCI (*Ultrasonic Contact Impendance*) method.

## FEATURES

• Ultra-portable device for quick hardness testing anywhere – in laboratories or in field conditions, with autonomous continuous operation up to 20 hours.
• UCI hardness test method has almost no boundaries in relation to the test object, so this method is the most versatile of the existing ones.
• Multifunctional application with a user-friendly interface and cloud archive.

**The NOVOTEST Lab application allows users to:**

• Set up and calibrate the device;
• Get illustrations of measurements as graphs, histograms, and statistics;
• Save measurements with text-, audio-, photo- and even videos protocols;
• Transfer the protocol in one click by any convenient messenger or e-mail;
• Synchronize archive with cloud storage.

# WIRELESS HARDNESS TESTER LAB UCI


ULTRAPORTABLE
Wireless connection allows user to get rid of wires, blocks, and it makes the device as portable as possible. It fits in any bag or even just a pocket.

HIGH AUTONOMY
The device charges from any USB 5V port, be it a PC, car, or a power bank. From one full charge, the device can work for more than 20 hours in a row.

SPECIAL NOZZLE
The special nozzle for products helps test radius surfaces and get accurate measurements on the flat products, included in the standard set. The device can also be used without a nozzle for narrow and hard-to-reach places.

CALIBRATION FOR ANY METAL
The device has preset calibrations for steel, aluminum and brass. If necessary, users can calibrate the device for any metal-scale combination if samples are available.

CROSS-PLATFORM ARCHIVE MANAGEMENT INTERFACE
Create comprehensive protocols and synchronize your archive with cloud storage managed in the Google Chrome browser.

# WIRELESS HARDNESS TESTER LAB UCI


## ADVANTAGES OF LAB UCI

- Wireless
- Ultraportable
- Autonomous
- Universal
- Accurate
- Widely applicable
- Multifunctional
- Easy to use

The device connects with your smartphone through the NOVOTEST application!

SCARICALA DA Google Play

## TECHNICAL FEATURES

| | |
|---|---|
| Measuring range | HRC: 20~70, HB: 90~650, HV: 230~940, Tensile strength, MPa: 370~1740, User calibrations for any range (e.g.: HV20-2000) |
| Scales | HRC, HB, HV, HRA, HRB, MPa, and can be calibrated for any other |
| Materials | Steel, aluminum, brass and can be calibrated for any other |
| Weight | 170 g |
| Dimensions | 160 x 26 (36 with nozzle) mm |
| Battery life | 20 hours |
| Power supply / Charging | Built-in battery / USB 5V |
| Operating environment | Temperature: -30°C ~ 60°C – Humidity: 30% ~ 80% R.H. |

# WIRELESS HARDNESS TESTER LAB UCI

## STANDARD SET LAB UCI

- Hardness tester
- Special nozzle
- Software
- USB cable
- Case
- Operating manual

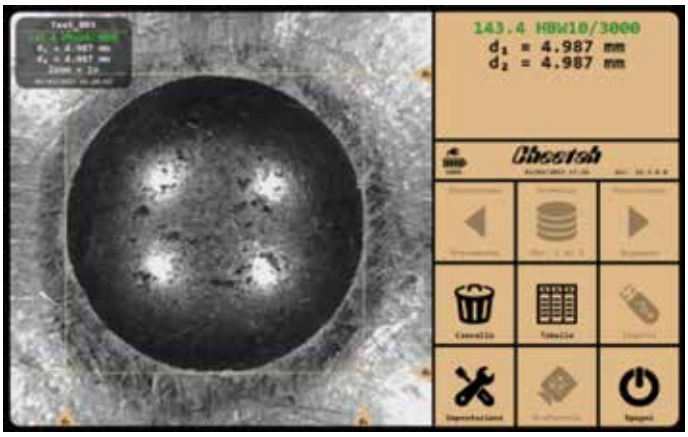
## AVAILABLE OPTIONS LAB UCI

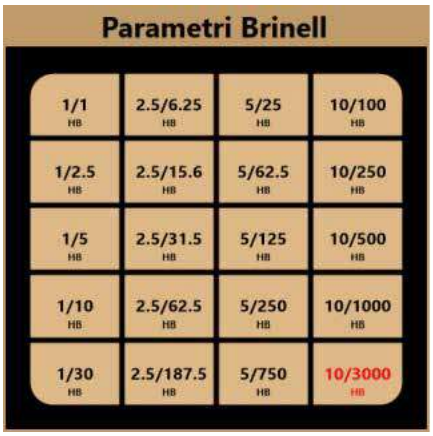
- Hardness test blocks
- UCI probe test stand for thin sheets
- Portable grinding machine

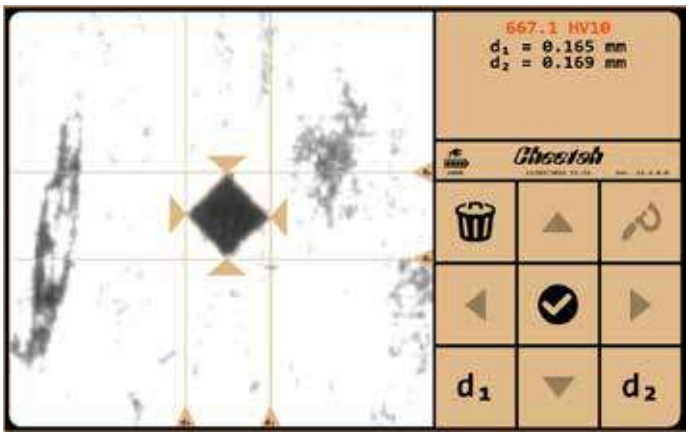
## APPLICATIONS

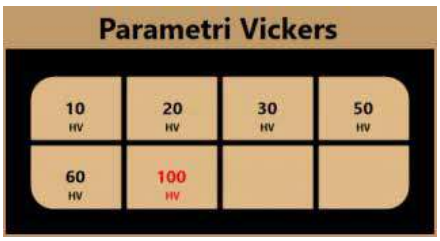
## Brinell and Vickers indentation's digital reader

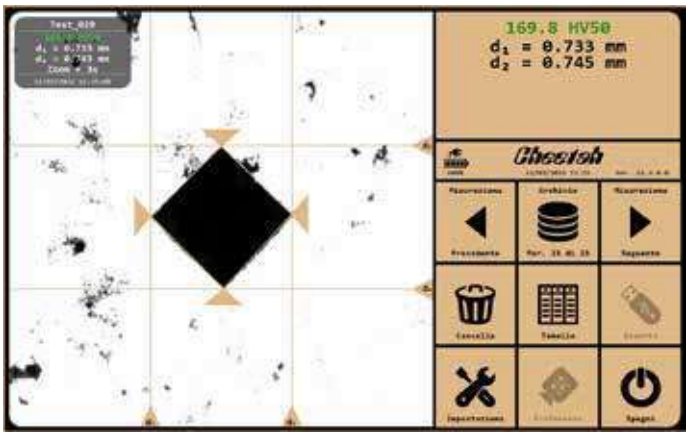
The software allows the user to measure Vickers and Brinell indentation in compliance with ISO and ASTM.

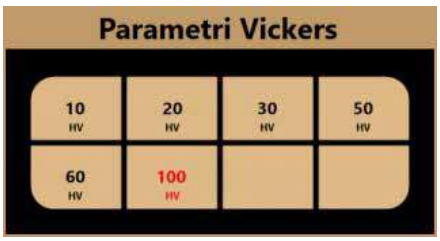


# CHEETAH MEASURING SYSTEM

## INSTRUMENT'S COMPOSITION:

- PC Tablet
- Measuring probe with built-in LED light and USB3 cable
- Measuring software on Windows operating system for automatic and manual reading of Brinell / Vickers indentation
- High-definition camera for optical evaluation of Brinell / Vickers indentation with digital zoom
- Connection cable
- Operating manual

## TECHNICAL FEATURES

Typical parameters of a file are:

- File name, with creation of a tests storage
- Measuring mode Archive/Live
- Digital zoom 1x - 1.5x - 2x - 3x - 5x
- HRC conversion
- Tolerance with insert of min/max limits
- Instrument calibration
- Printing of the report with customisation of company details and own logo
- Indentation images memorisation
- Data export to PDF and EXCEL format
- Images export

- Dimensions: h 140 mm - Ø 50 mm
- Weight: 0.600 kg
- Camera resolution: 1440 x 1080 Pixel
- Brinell diameters range: 0.3 - 6.0 mm
- Vickers diameters range: from diagonals 100 micron

## BRINELL HARDNESS TESTER HBX 0,5

### TECHNICAL FEATURES

**Brinell** hardness tester designed to measure steel and cast iron hardness up to 350 - 400 Brinell; the measurements can be carried out anywhere and in any testing direction.
With this instrument the classic consumables can be saved; it is lightweight, small and portable.
When **HBX 0,5** is pushed down, a pre-loaded spring sets free and releases the load on the underlying workpiece; the force of the spring is guided directly on the indenter. This creates the indentation.
After that, the indentation diameter will be measured thanks to the supplied micrometrical microscope or through digital measuring systems.

## ROCKWELL HARDNESS TESTER PHT

### TECHNICAL FEATURES

The mechanical **Rockwell** hardness tester, even if smaller than a bench one, does not lose in accuracy.
The smallest model weights only 0.7 kg and its use is similar to a classic micrometer. **PHT** directly measures 15 Rockwell scales: A, B, C, D, E, F, G, H, K, L, M, P, R and S (depending on the model).
Its accuracy is compliant with ISO 6508 and ASTM E-18 standards.
The measuring process is fast and easy, it leaves only a small test indentation on the piece's surface.

# PORTABLE WIRELESS HARDNESS TESTER E-HANDY

## Principle based on the measurement of electrical resistance

The E-Handy portable hardness tester is the ideal solution for those seeking precision and reliability in hardness measurements. Based on the patented ESATEST® principle by ERNST, E-Handy uses an innovative testing method that leverages the correlation between penetration depth and residual electrical resistance. This advanced method generates a precise measurement curve as the applied load varies, allowing the hardness tester to accurately determine hardness by comparing the curve with a previously acquired calibration.
Thanks to its cutting-edge technology, E-Handy stands out for its unique ability to measure hardness in extremely small areas, providing reliable and detailed results. Choose e-handy for your hardness measurement needs and discover how this tool can transform your industrial operations.


## Advantages:

• Advanced measurements: Thanks to the ESATEST® principle, E-Handy offers the ability to measure in physically inaccessible points for traditional hardness testers, such as internal cavities, joints, and already assembled components, while preserving the integrity of the parts thanks to the use of very low loads.
• Versatility and precision: Accurately measures even on weld seams and in the Heat Affected Zone (HAZ), providing detailed information about the hardness and surface treatment of materials.
• Advanced connectivity: Allows wireless data sharing up to 100 meters, ensuring a state-of-the-art test results management system.
• Certifications: Compliant with the DIN 50158 standard and certifiable by ACCREDIA (ILAC MRA), the E-Handy hardness tester is designed to operate precisely in all positions.

## Features:

• Principle based on the measurement of electrical resistance – Tests in points inaccessible to traditional hardness testers: gears, couplings, cavities, interiors, weld seams, HAZ (Heat Affected Zone).
• One diamond indenter for the entire range of metals – Simplicity and speed of the testing process.
• Continuous measurement of hardness at various loads and immediate evaluation of the surface heat treatment – A single tool, various detections.
• ACCREDIA certification (ILAC MRA-Mutual Recognition Arrangements) – Offers a competitive advantage in markets where certification is required.

## E-Handy technical features

| | |
|---|---|
| Loads | Real time continuous progressive application with acquisition of load values and electrical resistance from 1kgf to 10kgf (9.81N to 98.1N) |
| Power supply | 100 - 240 V |
| Norms and certifications | DIN 50158, ASTM E-110, ACCREDIA certificate upon request |
| Min. measurable diameter | 5 mm - it is possible to execute tests in small cavities with the use of special penetrators |
| Output interfaces | Tablet with micro USB, micro TF slot, WiFi, Bluetooth, gps |
| Reading | Tablet display touch-screen 5,9" |
| Languages | Italian, English, German, other languages on request |
| Load application method | Manual |
| Weight | Mechanical unit 670 g - Electronic unit 380 g |
| Working principle | ESATEST® Pat ERNST - by means of electrical resistance |
| Standard scales | DRE - HB10 - HB30 - HB5 - HRA - HRB - HRC - HRF - HV - N/mm$^2$ |
| Working area dimensions | 2 x 2 mm |
| Memory | 16 GB |

# METALLOGRAPHIC MACHINES

## *Chennai Metco*

**Sectioning**, the removal of a conveniently sized and representative specimen from a larger piece is the first major operation in the preparation of **metallographic specimen**. Incorrect preparation techniques can cause micro-structural changes that lead to erroneous interpretation.
The selection of the right cutter is the first crucial step of specimen preparation. Abrasive cutting, with copious supply of coolant to ensure that no thermal damage takes place, is the most widely used method of sectioning materials for microscopic examination.
CRASE provides a wide range of cutting machines by Chennai Metco; very large cutters to section bigger and long sized components, such as crankshafts, are also available.

## BAINCUT LSS - Low Speed Saw

The precision section saw is designed for slicing all types of materials with ease.
The slow speed cutter is mostly used for accurate sectioning of very small, hard components for R&D.

### FEATURES

- Cutting capacity up to 20 mm
- Built-in coolant tray
- Down-feed facility with different weights up to 400 g
- Variable speed up to 600 rpm
- Micrometer for cross-feed adjustment up to 25 mm
- AC motor single phase, 220 V / 50Hz or 110 V / 60 Hz
- Diamond blade size: Ø 127 mm
- Touch screen with pre-set programs
- Automatic safety button
- Dimensions: 400 x 300 x 250 mm

## BAINCUT HSS PLUS - High Speed Saw


The precision saw for cutting all types of materials with variable spindle speed. Automated Y movement adds to the convenience.
A must for slicing surface engineered components, hard, sensitive applications. Preferred by research laboratories.

### FEATURES

- Cutting capacity up to 60 mm
- Variable speed 100-5000 rpm
- AC motor 3-phase (750 W), 220 V / 50 Hz or 110 V / 60 Hz
- Y axis automatic movement
- Z axis movement up to 40 mm
- Diamond or abrasive wheel up to Ø 200 mm
- Door safety interlock system
- Re-circulating coolant system
- Dimensions: 845 x 784 x 600 mm

## BAINCUT M - Medium

A popular general purpose cut-off machine with viewing window, internal illumination, re-circulation coolant system, washing jet, safety limit switch. Chop cutting by lowering the wheel with the handle (Z movement)

### FEATURES

- Cutting size up to 60 mm
- Spindle speed 2800 rpm
- Motor 3 HP, 3-phase, 415 V / 50 Hz or 220 V / 60 Hz
- Cutting wheel Ø 250 mm
- Z axis manual movement
- Built-in movable re-circulation coolant tank
- T-slot bed, 110 x 200 mm
- Dimensions: 850 x 750 x 1550 mm

## BAINCUT UM - Upper Medium

A sturdy floor model general purpose cutter. Large space in the cutting zone offers flexibility to use wide variety of fixtures. Cutting action is carried out by lowering the arm (Z movement) through cutting plane (Y axis); additional X axis movement. Suitable for many applications including small gears, medium sized auto components and shafts.


### FEATURES

- Cutting capacity up to 80 mm
- Spindle speed 2800 rpm
- Cutting wheel 300 mm
- Motor 5 HP, 3-phase. 415 V / 50 Hz or 220 V / 60 Hz
- Three axes movement X, Y and Z
- Built-in movable re-circulation coolant tank
- Table size: 260 x 260 mm with 8 mm T-Slot
- Dimensions: 1100 x 1000 x 1650 mm

## BAINCUT L - Large

Large heavy-duty cutting machine for sectioning large samples. Has similar features to UM model, but with higher capacity (Z, Y and X movements).

### FEATURES

- Cutting capacity up to 110 mm (L Plus: 130 mm)
- Spindle speed 1900 rpm
- Cutting wheel 350 mm (L Plus: 400 mm)
- Motor 7.5 HP, 3-phase, 415 V / 50 Hz or 220 V / 60 Hz
- Built-in movable re-circulation coolant tank
- Easy operator panel
- Side opening for longer components
- Table size: 254 X 355 mm with 12mm T-Slot
- Dimensions: 1040 x 1600 x 1800 mm

## BAINCUT XL Auto


Automatic extra large cutting machine with integral sliding door. Standard Y axis automatic movement, optional Z axis automatic movement. Pulse cutting, step cutting, etc., for burn-free cutting. Preset parameters for consistency and ease of use.

### FEATURES

- Cutting capacity up to 150 mm
- Automatic Z movement with Servo System
- Advanced PLC based graphical touch screen
- Variable cutting speed 1000 - 3000 rpm
- Cutting wheel Ø max. 500 mm
- Motor 15 HP, 3-phase, 415 V / 50 Hz or 480 V / 60 Hz
- Coolant tank with 150 L capacity
- Fume digester
- Table 500 x 500 mm with 12 mm T-Slot
- Dimensions: 1700 x 1700 x 1900 mm

## BAINCUT XXL Auto

Automatic bigger sized fully loaded cutting machine. Two side sliding door provides voluminous internal space to section big components and also easy access. Standard automatic movement Y and Z axes. Pulse cutting, step cutting, etc., for burn-free cutting. Variable spindle speed included.


### FEATURES

- Cutting capacity up to 200 mm
- Variable spindle speed 1000 - 3000 rpm
- Motor 30 HP, 3-phase, 415 V / 50 Hz or 480 V / 60 Hz
- Cutting wheel Ø max. 500 mm
- Advanced PLC based graphical touch screen
- Automatic Y and Z movement with Servo System
- Fume digester
- Table 500 X 500 mm with 12 mm T-Slot
- Dimensions: 2100 x 2150 x 2400 mm

# MOUNTING MACHINES

**Mounting** the specimen after sectioning is often necessary for subsequent handling and metallographic polishing.
Mounting has several benefits, especially in hand polishing when specimen flatness and edge retention are important.
Specimen mounting has other benefits such as:
• uniform flatness for either manual or automatic grinding and polishing machine;
• easier handling of specimens that are too small and fragile;
• Chennai Metco **mounting presses** are engineered with best in class techniques with international standards.

## BAINMOUNT H


### FEATURES

• Hydraulic mounting press
• Touch screen LCD parameter indicator
• Mould dimensions Ø 30 - 40 - 50 mm
• Heater 1600 Watt, single phase
• Water cooling re-circulation system (optional)
• Digital temperature indicator and digital timer
• Timer-buzzer for heating and cooling cycles
• Dimensions: 580 x 610 x 550 mm

## BAINMOUNT H AUTO

### FEATURES

• Hydraulic automatic system
• Auto-doser
• Mould dimensions Ø 30 - 40 - 50 mm
• Heater 1600 Watt, single phase
• Automatic water cooling system
• Ideal for transparent, EPO and bakelite moulds preparation
• Timer-buzzer for heating and cooling cycles
• Presets and data storage up to 25 programs
• Dimensions: 430 x 570 x 510 mm

## BAINMOUNT TWIN H AUTO

### FEATURES

- Hydraulic automatic system
- Mould dimensions Ø 30 - 40 - 50 mm
- Heater 1600 Watt, single phase
- Automatic water cooling system
- User friendly advanced LCD touch screen
- Timer-buzzer for heating and cooling cycles
- Ideal for transparent, EPO and bakelite moulds preparation
- Presets and data storage up to 25 programs
- Simultaneous mounting in both cylinders
- Dimensions: 650 x 630 x 510 mm

# GRINDING AND POLISHING MACHINES

**Grinding** involves process of coarse grinding prior to fine grinding to obtain flat surface, followed with steps of fine grindings.
**Polishing**, in one or more final steps, in specimen preparation is to get mirror finished surface. This process is necessary to get the clear view of the microstructure in the specimen.
It is done through a series of SiC sheets, diamond platens, cloths, and suspensions to obtain mirror like and planar surface in the specimen.
Chennai Metco offers a full range of table top, floor model, manual, semi-automatic and fully automatic polishing machines. Fully automatic polishers are ideal for laboratories looking for high quality consistent results for demanding applications.

## BAINLINE TWIN WET

### FEATURES

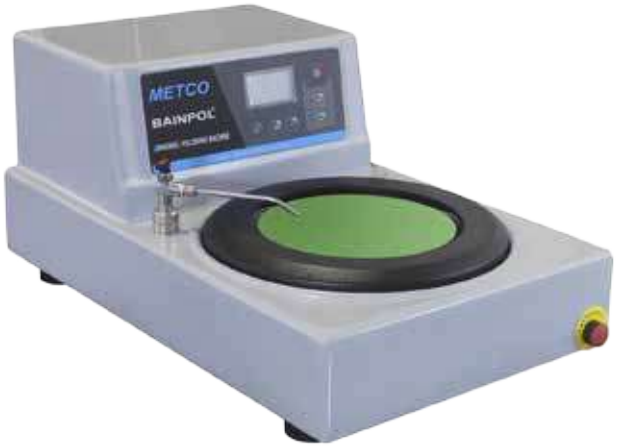
- Endless belt, 100 x 915 mm
- Motor 1 HP, 3-phase
- Simplified belt change mechanism
- Water cooling system
- Speed 1440 rpm
- For flat, coarse grinding prior to fine grinding
- Dimensions: 670 x 680 x 290 mm

## BAINLINE GP

### FEATURES

- Endless belt 100 x 915 mm
- Motor 0.5 HP, single phase
- Simplified belt change mechanism
- For flat, coarse grinding prior to fine grinding
- Dimensions: 560 x 350 x 230 mm

## BAINPOL VT




### FEATURES

- Single disc, standard Ø 200 mm
- Optional discs Ø 250 - 300 mm
- Motor 0.5 HP, single-phase, high torque
- AC drive
- Variable speed 50 - 1000 rpm or 50 - 600 rpm
- Display LCD
- Corrosion resistant
- Flexible water jet with control valve
- Power supply: 220 V / 50 Hz or 110 V / 60 Hz
- Dimensions: 360 x 660 x 310 mm

## BAINPOL VTD

### FEATURES

- Double disc, standard Ø 200 mm
- Optional discs Ø 250 - 300 mm
- Motor 0,5 HP, single-phase, high torque
- AC drive
- Variable speed 50 - 1000 rpm or 50 - 600 rpm
- Display LCD
- Corrosion resistant
- Flexible water jet with control valve
- Power supply: 220 V / 50 Hz or 110 V / 60 Hz
- Dimensions: 710 x 660 x 310 mm

## BAINPOL SEMI-AUTOMATIC

### FEATURES

- AC motor 0.5 HP, single-phase
- LCD touch display
- Variable speed 50 - 600 rpm
- Head speed 100 rpm
- Digital timer
- Auto head to hold 3 samples: 30 - 40 - 50 mm
- Independent powered polish head
- Standard disc Ø 300 mm, optional Ø 250 mm
- Dimensions: 435 x 750 x 520 mm

*Also available with double disc*

## BAINPOL AUTO

*Also available with double disc*
*Dimensions: 950 x 850 x 750 mm*

### FEATURES

- AC motor 1 HP, single-phase, high torque
- LCD touch display, digital timer
- Variable speed 50 - 600 rpm
- Variable pression 1 - 4 bar
- Water cooling system
- Automatic head, up to 6 moulds
- Independent powered polish head, variable speed 30 - 150 rpm
- Standard disc Ø 200 - 250 - 300 mm
- Dimensions: 850 x 500 x 600 mm

## BAINPOL VFD

*Also available the semi-automatic version*

### FEATURES

- Heavy duty floor model with storage compartment
- Double disc, variable speed 50 - 600 rpm
- AC motor 0.5 HP, single-phase
- Standard disc Ø 300 mm
- Optional discs Ø 200 - 250 mm
- Corrosion resistant
- Drainage system
- Dimensions: 870 x 750 x 1020 mm

## BAINPOL VFF

### FEATURES

- Heavy duty floor model with storage compartment
- Four discs, variable speed 50 - 600 rpm
- AC motor 0.5 HP, single-phase
- Standard disc Ø 250 mm
- Optional discs Ø 200 - 300 mm
- Corrosion resistant
- Drainage system
- Dimensions: 1740 x 750 x 1020 mm

# MICROSCOPES

**Optical microscope** remains the most important tool for the study of microstructure.
All examination of microstructure should begin with use of light microscope starting at low magnification followed by progressively higher magnification.
Reflected light microscopes are commonly used for the study of metals and are classified as *upright* and *inverted*. These terms refers to the orientation of the light path to the plane-of-polish of the specimen during observation.

## METSCOPE - I

Trinocular inverted metallurgical microscope with plan optics and incident light illumination. Convenient model for quick micro analysis, with ergonomic design.
Available options to add quality enhancing the optic.
Objectives: 10x - 20x - 50x - 100x
Magnification range: 100x - 1000x (standard)
Illumination: 6 V, 20 Watt
A third port available for camera.

## VERTIMET CP

Trinocular vertical metallurgical microscope with plan optics and incident light illumination. Best suited for situations demanding vertical viewing. Practical no-frill microscope with amazing clarity.
Objectives: 10x - 20x - 50x - 100x
Magnification range: 100x - 1000x (standard)
Illumination: 6 V, 20 Watt
A third port available for camera.

## MACSCOPE - Z (Stereo Zoom)

*Stereo zoom* microscope with camera port. Designed with excellent clarity and ergonomics. Modular design enables configuration to suit your applications.
Standard magnification: 6.2x to 50x
Magnification: 3.1x to 100x with suitable eye pieces and objectives
Fiber optic illuminator (optional)
Illumination: ring illuminator 10w bulb

# GEAR TESTING MACHINES

Gear measuring machines, roughness testers

MDM METROSOFT

# GEAR TESTING MACHINES

**CRASE** has been in gear's market for more than 30 years; today is able to *sell*, *assist* and *retrofit* testing machines for spur and bevel gears' measurement.
We face problems about **gears' control** thanks to our knowledge developed during years of fieldwork and thanks to today's technology, presenting a wide range of offers.

## MANUAL GEAR MEASURING MACHINES

MAAG - KLINGELNBERG - MAHR - FRENCO - HOFLER

Manual machines, with or without base plate, are a worthy technical-economic option to measure gears. Once instruments have been retrofitted, they get efficient and updated. Our technicians are able to update your gear measuring machine of any brand and model, both CNC and manual. Beyond updating the measuring system, we can repair or inspect mechanical and electronical parts of your instrument.

The software is able to measure in compliance with DIN 3960 / 3962 AGMA, JIS, BS, ISO in order to meet any customer's requirement; measurement of the outside of spur gears and pinions.

**Measurement types in basic packet "Gear Soft":**
- Straight profile and helix (0°).
- Sloped profile and helix.
- Profile with release of tip and root.
- Calculation of crowning Cb Ca.
- Measurement of the K-Chart profile for preset ranges of tolerance.

Applicable to completely manual gear measuring machines with production of the involute profile through base plate or mechanical sine-bar. Installation of a measuring probe LVDT and two optical lines interfaced to a PC with dedicated electronics. The instrument can be calibrated and controlled with any standard master gear.

Maag PH-60, Klingelnberg-PFS-60,62,600, Hofler EFR 300, EFR 350, EFR 401, 401 MZ Golder Micron IL600, Karl Mahr 891T, David Brown 18T.

## SEMI-AUTOMATIC GEAR MEASURING MACHINES

**Measurement types in basic packet "Gear Soft":**
- Straight profile and helix (0°).
- Sloped profile and helix.
- Profile with release of tip and root.
- Calculation of crowning Cb Ca.
- Measurement of the K-Chart profile for preset ranges of tolerance.

Applicable to gear measuring machines with motorised movement of the measuring axes for testing helix and involute, the system allows to increase and digitalise manual basic helix and, potentially, of the tailstock.

Maag PH-40,100, SP-60,100, Klingelnberg-PFSU 640,1200,1600, Hofler EFRS 401, EFRS 631, HFR 630.

## CNC GEAR MEASURING MACHINES


Applicable to gear measuring machines with all motorised axes, interfaced to a programmable CNC movement controller. They perform a complete test of the gear with a totally automatic cycle for all the specified teeth. Gear Soft CNC offers the measurement of helix, profile and run-out charts and pitch measurement.

Klingelnberg PNC-33, PNC-40, PNC-60, Hofler EMZ 400,401,402,630,631,632, Hofler ZME 400, Hofler ZP 250,260,350,400, M&M.

Among CNC gear measuring machines we can find many instruments that range from 200 mm to 2000 mm diameter and completely automatic, which allows to measure in a fast and easy way. With only one measuring cycle, the machine provides a test report for the measure of helix, involute and division parameters.

**Measurement types in basic packet "Gear Soft":**
- Straight profile and helix (0°).
- Sloped profile and helix.
- Profile with release of tip and root.
- Calculation of crowning Cb Ca.
- Measurement of the K-Chart profile for preset ranges of tolerance.

**Measurement types in CNC packet "Gear Soft":**
- Error single pitch.
- Error adjacent pitch.
- Pitch variations.
- Error cumulative pitch.
- Division.
- Concentricity.

## GEAR MEASURING MACHINES GMM

The **GMM gear measuring machines** series, thanks to customizable software packets for different applications, is suitable for performing a wide range of measurements in a completely automatic way. It is a metrological multifunctional system which is able to recognise and carry out the most frequent measuring software processes in the industrial sector.
The structure is made of three linear coordinate axes with pneumostatic support on granite tracks, that totally delete any friction and wear.
The placement of two tailstocks is provided, one of that is integral with the rotary axis (W) and the other one is opposite and height adjustable, mounted on a specific granite column. The control of the tailstock is motorised. This four-axes coordinate system is fitted for the placement of an analog measuring head which, with the use of a tracer, physically touches the sample's surface and tests the theoretical trend, made by a suitable interpolation created by the test, on the basis of the mathematic formulation implemented in software.

GMM gear measuring machines are able to measure:

- straight, helical and parallel gears
- splined gears with inner and outer involute profile
- pitch errors and concentricity
- thickness on k teeth
- crown and worm gears with harmonic analysis of the profile
- shaving cutters
- gleason/hypoid pairs with calculation of machine's parameters
- hobs, reverse engineering and other solutions.

### SOFTWARE GEARSOFT

**GearSoft** is the basic software of GMM series and it is implemented by applications which allow to perform complete measuring cycles in compliance with standards ISO, DIN and AGMA.
The measure includes the detection of the distorsion of involute and helix, with the possibility to insert K charts on maximum four teeth, and the test of pitch error and concentricity and the thickness of the tooth.

GearSoft also allows to:

- print reports for the issue of trial certificates
- export and save files as PDF
- send data aimed to statistic analysis
- share acquired data, using the interconnection system compliant with the new regulatory standards.

## Main features of GMM gear measuring machines

• SUPPORT BASE:

The structure lies on the floor through self-levelling pneumatic supports.

• GRANITE SURFACE:

It serves as sliding surface for the Y axis, as support base for the tailstock, and as a base for the rotary table.

• Y AXIS CARRIAGE:

It carries X and Z axes. It shifts on granite tracks with pneumostatic supports. The transduction system is made of high-resolution protected optical lines. The movement occurs through linear motor on a neutral axis..

• X AXIS CARRIAGE:

With pneumostatic supports on granite tracks.

• Z AXIS CARRIAGE:

With pneumostatic supports on granite tracks with pneumatic stabilizing system.

• ROTARY TABLE:

Pneumostatic support system, with a treated steel backing pad, with clamping grooves and interchangeable lower tailstock. The transduction system is composed by a high-resolution rotary encoder. The movement is performed by an electronic axis by means of a torque motor, with peripherical traction.

• TAILSTOCK:

Realised with a sliding track on a granite column, movement with automatic tailstock's preloading system. Device for thermal lengthening equalization with suitable anti-expansion joint.

• OPERATOR WORKSPACE:

In the lower part there is all the control electronics and in the upper part is placed the PC complete with all the accessories (monitor, keyboard, mouse and printer) to draw up the final test certificates.

## GMM 40 - Small Size

IT MEASURES GEARS WITH OUTER DIAMETER UP TO 400 mm

It is a machine with high-level dynamic features thanks to the use of linear motors with pneumostatic supported tracks, which allow movement without any friction.

The structure includes three linear axes (X, Y, Z), a rotary axis (W) and a tailstock column, everything based on high-accuracy granite tracks. This permits a better long-term stability and a low thermodynamic response, even in case of temperature variation

### Technical features

| | |
|---|---|
| **Movement** | |
| CNC on the four interpolated axes - joystick for manual movement | |
| **Measuring effective strokes** | |
| X axis | 350 mm |
| Y axis | 240 mm |
| Z axis | 390 mm |
| **Diabase levelling table** | |
| Thickness | 130 mm |
| Width | 1160 mm |
| Length | 1070 mm |
| **Total size and weight** | |
| Length * | 2800 mm (*desk included) |
| Width | 1350 mm |
| Height | 2000 mm |
| Weight | 2600 kg |
| **Resolution** | |
| Linear axes | 0.0001 mm |
| Rotary axis | 0.0001 ° |
| **Electricity supply and consumption** | |
| Electric energy | Three-phase + Neutral AC 380 V ± 10% 50 Hz 2 KVA |
| Energy consumption | 1.6 KWh |
| Compressed air | Working pressure: 0.6 Mpa ± 0.05 Mpa; Dried with impurity filtering of 0.01µ; Available flow rate: 120 Nl/min to 0.6 Mpa |
| **Max measurable size and weight of spur gears** | |
| Maximum diameter | 425 mm |
| Maximum height | 350 mm |
| Maximum height between tips | 700 mm (on demand up to 1450 mm) |
| Maximum weight allowed | 200 kg |

## GMM 70 - Medium Size

IT MEASURES GEARS WITH OUTER DIAMETER UP TO 700 mm

Even though GMM 70 maintained the same construction principles, compared to the Small Size model, it has been created to allow to measure heavier and bigger samples with very high accuracy.

The structure lies on the floor with pneumatic autolevelling supports. This ensures that the whole measuring system is isolated from external stresses and that the kinetic energy of moving masses is absorbed. The rotary table is built in order to sustain a load of about 1500 kg thanks to the pneumostatic support on granite track.

### Technical features

| | |
|---|---|
| **Measuring effective strokes** | |
| X axis | 650 mm |
| Y axis | 350 mm |
| Z axis | 590 mm |
| **Diabase levelling table** | |
| Thickness | 300 mm |
| Width | 1395 mm |
| Length | 1370 mm |
| **Total size and weight** | |
| Length * | 3200 mm (*desk included) |
| Width | 1700 mm |
| Height | 2350 mm |
| Weight | 3500 kg |
| **Resolution** | |
| Linear axes | 0.0001 mm |
| Rotary axis | 0.0001 ° |
| **Electricity supply and consumption** | |
| Electric energy | Three-phase + Neutral AC 380 V ± 10% 50 Hz 2 KVA |
| Compressed air | Working pressure: 0.6 Mpa ± 0.05 Mpa; Dried with impurity filtering of 0.01µ; Available flow rate: 120 Nl/min to 0.6 Mpa |
| **Max measurable size and weight of spur gears** | |
| Maximum diameter | 700 mm |
| Maximum height | 550 mm |
| Maximum height between tips | 1000 mm (on demand up to 2000 mm) |
| Maximum weight allowed | 400 kg |

## GMM 110 - Big Size

IT MEASURES GEARS WITH OUTER DIAMETER UP TO 1100 mm

GMM 110 is the larger model of the series and it has been sized and designed in order to be able to measure very big and heavy gears and other parts with high accuracy.

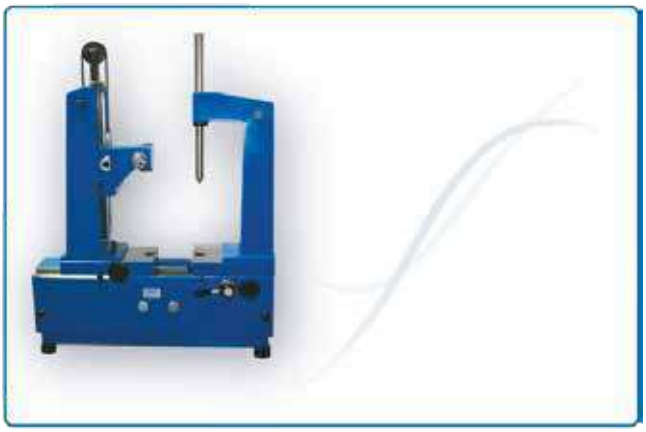
The structure is totally made of granite without any welded part. The sturdy rotary table, with a considerable diameter, lies on pneumostatic support tracks, and it is moved by an electronic axis and a next-generation encoder.

It can bear loads up to 2000 kg, maintaining a resolution of 0.36" of arc (3,600,000 counts per lap), thanks to a special torque motor with a big diameter and without using any type of mechanical reduction (electronic shaft).

### Technical features

| | |
|---|---|
| **Movement** | |
| CNC on the four interpolated axes - joystick for manual movement | |
| **Measuring effective strokes** | |
| X axis | 900 mm |
| Y axis | 600 mm |
| Z axis | 600 mm |
| **Diabase levelling table** | |
| Thickness | 450 mm |
| Width | 1940 mm |
| Length | 1570 mm |
| **Total size and weight** | |
| Length * | 3350 mm (*desk included) |
| Larghezza | 2115 mm |
| Height | 2855 mm |
| Weight | 5000 kg |
| **Resolution** | |
| Lineari axes | 0.0001 mm |
| Rotary axis | 0.0001 ° |
| **Electricity supply and consumption** | |
| Electric energy | Three-phase + Neutral AC 380 V ± 10% 50 Hz 2 KVA |
| Compressed air | Working pressure: 0.6 Mpa ± 0.05 Mpa; Dried with impurity filtering of 0.01µ; Avilable flow rate: 120 Nl/min to 0.6 Mpa |
| **Max measurable size and weight of spur gears** | |
| Maximum diameter | 1100 mm |
| Maximum height | 550 mm |
| Maximum height between tips | 1200 mm (on demand up to 2000 mm) |
| Maximum weight allowed | 2000 kg |

## GEAR TESTING MACHINES



**Gears engagement testing** is a functional control; we can offer both single-flank and double-flank gear testing machines. The double-flank ones are recommended for the test of spur gears; the single-flank instruments, instead, are recommended for the control of spur gears, bevel gears and worm gears

The test is performed with either a measuring master or a torque gear.

The evaluation of results depends on the measuring system installed on the instrument.

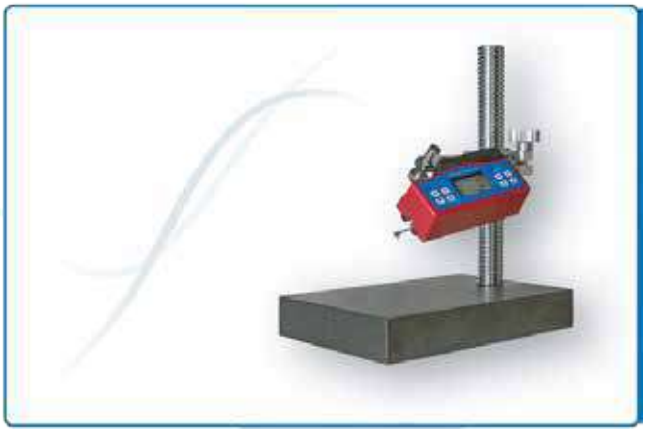
## ROUGHNESS TESTERS

**Roughness** measurement can be very important on some parts; it can make piece's operating features change in a very significant way.

Using the roughness tester models SA6210, SA6230

and SA6260 can make easier to measure these parameters. These instruments are recognised to be effcient in hard-to-reach points' measurement.

They are specially recommended for roughness measurement on gear teeth, along both profile and helix's direction.



# VIDEO MEASURING SYSTEMS

# VMA Manual video measuring machine


## DESCRIPTION

• Powerful measuring software with auto tracing-edge function, multi-output report.
• Sub-pixel segmentation technology improves the ability of image boundary resolution.
• The surface cold light source can be used to measure the complex workpieces.
• With laser pointer, easy to find the specific location of the measured workpiece.
• Stable granite workbench with "00" Grade.
• German made high precision polish rod and bearing.
• High resolution video system.
• Renishaw measuring probe is optional for simple 3D purpose.

## Technical features

| Product name | Manual video measuring system | | | |
|---|---|---|---|---|
| 2.5D model | VMA-2010 | VMA-3020 | VMA-4030 | VMA-5040 |
| 3D model | VMA-2010P | VMA-3020P | VMA-4030P | VMA-5040P |
| X - Y axes travel distance | 200 x 100 mm | 300 x 200 mm | 400 x 300 mm | 500 x 400 mm |
| Z axis travel distance | 200 mm | | | |
| Dimensions | 600 x 500 x 920 mm | 750 x 520 x 980 mm | 1000 x 620 x 990 mm | 1100 x 950 x 1660 mm |
| Net weight | 120 kg | 150 kg | 180 kg | 360 kg |
| X - Y axes accuracy | 2.5+L/100 µm | | | |
| Loading weight of working stage | 25 kg | | | |
| Image sensor | TEO 1/3" colorful CCD camera | | | |
| Objective lens | Manual position zoom lens | | | |
| Video total magnification | Optic zoom lens: 0.7 ~ 4.5x; Objective lens: 20 ~ 148x | | | |
| Resolution | 0.5 µm | | | |
| Working distance (standard) | 92 mm | | | |
| Object view | 8.1 mm ~ 1.3 mm | | | |
| Movement system | X - Y axes: polish rod; Z axis: T-type screw rod | | | |
| Data processor | RS-100 | | | |
| Illumination | Surface: 8-division LED cold light; Contour: adjustable 256-grades LED cold illumination | | | |
| Measuring software | Mikrosize | | | |
| Working environment | Temperature: 20°C ± 2°C; Temperature variation < 2°C/hr; Humidity: 30 - 80% | | | |
| | Vibration < 0.002 g, 15 Hz | | | |
| Power source | AC 100 ~ 220 V, 50/60 Hz, 10 A | | | |

## Packing List

| | | |
|---|---|---|
| Mainframe / Dell PC system | Zoom lens 0.7 - 4.5x | LED light source |
| RS-100 data processor | 1/3" CCD camera | Mikrosize measuring software |
| Linear scale | Calibration block/Capture card | Instruction manual/Anti-dust cover |
| Z axis high precision linear guide rail | 100 mm length block (3D) | Renihshaw probe (3D) |

# VMC CNC Video measuring machine

## DESCRIPTION

• CNC fully auto close loop control, auto measurement; integrative design, convenient for measuring.
• Stable and reliable marble base, ensuring high measure speed, accuracy and precision.
• Precision linear guide and grinding ball screw, AC servo motor ensures accuracy.
• High precision linear scale, resolution is 1 µm, great stability.
• Manual zoom lens and 1/2" color high resolution CCD camera.
• Programmable 5 ring, 8-division LED surface illumination.
• Contour parallel LED illumination, can realize 256 grade brightness adjustment intelligently.
• Optional touch probe, realize 3D measurement.

## Technical features

| Product name | | CNC automatic video measuring system | | |
|---|---|---|---|---|
| 2.5D model | | VMC-3020 | VMC-4030 | VMC-5040 |
| 3D model | | VMC-3020P | VMC-4030P | VMC-5040P |
| X - Y axes travel distance | | 300 x 200 mm | 400 x 300 mm | 500 x 400 mm |
| Z axes travel distance | | 200 mm | | |
| Dimensions | | 750 x 520 x 980 mm | 1000 x 620 x 990 mm | 1300 x 750 x 1000 mm |
| Maximum load capacity | | 25 kg | 25 kg | 25 kg |
| Net weight | | 240 kg | 280 kg | 360 kg |
| X - Y - Z 3-axes linear scale (2.5D) | | Resolution: 0.5 µm | | |
| Accuracy | | E1(x/y) = 2.5+L/100 µm | | |
| Repeatability | | ± 2 µm | | |
| Movement system | | X - Y - Z axes: screw rod | | |
| Movement control | | CNC auto servo movement control | | |
| Video system | | TEO 1/2" color CCD camera | | |
| | | Manual coaxial zoom lens | | |
| | | Optical magnification: 0.7 - 4.5x; Video magnification: 20 - 148x | | |
| | | Working distance (standard): 92 mm | | |
| Object view (standard) | | 11.1 ~ 1.7 mm | | |
| Speed | | X - Y axes: 200 mm/s; Z axis: 50 mm/s | | |
| Illumination | Contour | Adjustable 256-grade LED parallel illumination | | |
| | Surface | Adjustable 256-grades 5-ring and 8-division LED cold illumination | | |
| 3D measurement | | 3D module and UK Renishaw touch probe | | |
| Measuring software | | Mikrosize | | |
| Working environment | | Temperature: 20°C ± 2°C; Temperature variation < 2°C/hr; Humidity: 30 - 80% | | |
| Power source | | AC 100 ~ 220 V, 50/60 Hz, 10 A | | |

## Packing list

| | | |
|---|---|---|
| Measuring software | CCD camera / Video capture card | Manual coaxial zoom lens |
| Mainframe / Dell PC system | Scale transfer / Movement control card | 48-division LED illumination |
| Linear scale / Calibration block | 100 mm length block (3D) | Renishaw probe MCP-K2 (3D) |

# VMU CNC Video measuring machine

## DESCRIPTION

• CNC fully auto close loop control, auto measurement; integrative design, convenient for measuring.
• Stable and reliable marble base and pillar, ensuring high measuring speed, accuracy and precision.
• Precision linear guide and grinding ball screw, AC servo motor ensures accuracy.
• High precision linear scale, resolution is 1 µm, great stability.
• Manual zoom lens and 1/2" color high resolution CCD camera.
• Programmable 5-ring, 8-division LED surface illumination .
• Contour parallel LED illumination, can realize 256 grade brightness adjustment intelligently.
• Optional touch probe for 3D measurement.

## Technical features

| **Product name** | | **Fully automatic video measuring system** | | |
|---|---|---|---|---|
| 2.5D model | | VMU-3020 | VMU-4030 | VMU-5040 |
| 3D model | | VMU-3020P | VMU-4030P | VMU-5040P |
| X - Y axes travel distance | | 300 x 200 mm | 400 x 300 mm | 500 x 400 mm |
| Z axis travel distance | | 200 mm | | |
| Accuracy | | E1(x/y) = 2.5+L/100 µm | | |
| Video system | | TEO 1/2" colorful CCD camera | | |
| | | 6.5x auto coaxial zoom lens | | |
| | | Optical magnification: 0.7 - 4.5x; Video magnification: 20 - 148x | | |
| | | Working distance: 92 mm | | |
| Object view (standard) | | 11.1 ~ 1.7 mm | | |
| Linear scale resolution | | 0.5 µm | | |
| Movement system | | X - Y - Z axes screw rod | | |
| Movement control | | CNC auto servo movement control | | |
| Speed | | X - Y axes: 200 mm/s; Z axis: 50 mm/s | | |
| Illumination | Contour | Adjustable 256-grade LED parallel illumination | | |
| | Surface | Adjustable 256-grades 5-ring and 8-division LED cold illumination | | |
| 3D measurement | | 3D module and UK Renishaw MCP-K2 touch probe | | |
| Measuring software | | Mikrosize | | |
| Maximum load capacity | | 25 kg | 25 kg | 25 kg |
| Dimensions | | 750 x 520 x 980 mm | 1000 x 620 x 990 mm | 1300 x 750 x 1000 mm |
| Net weight | | 240 kg | 280 kg | 360 kg |
| Working environment | | Temperature: 20°C ± 2°C; Temperature variation < 2°C/hr; Humidity: 30 - 80% | | |
| Power source | | AC 100 ~ 220 V, 50/60 Hz, 10 A | | |

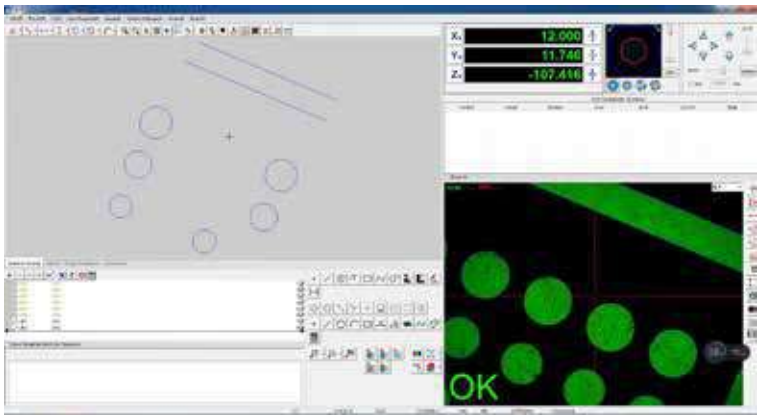
## Packing list

| | | |
|---|---|---|
| Measuring software | CCD camera / Video capture card | 6.5x auto coaxial zoom lens |
| Mainframe / Dell PC system | Scale transfer / Movement control card | 8-division LED illumination |
| Linear scale / Calibration block | 100 mm length block (3D) | Renishaw probe (3D) |

Thanks to the Mikrosize 3D software with simple interface, intuitive operation, easy operation and powerful functions, users can complete the measuring task quickly and efficiently.

## Simple and friendly interface

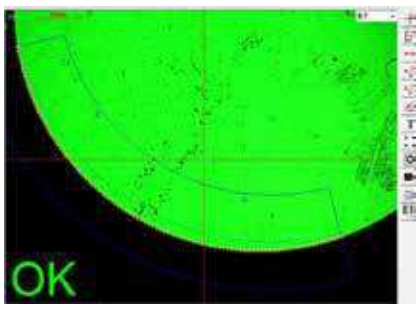
• The common functions are in the main interface, which is easy to get familiar with.
• Users can complete almost all measurement task by simply clicking and dragging the mouse.

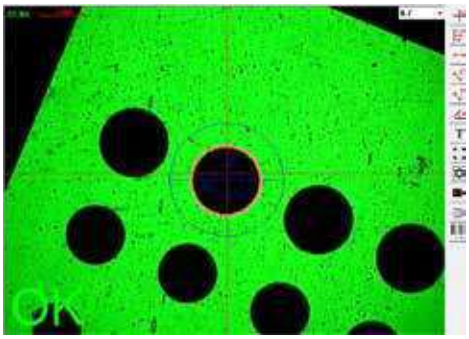


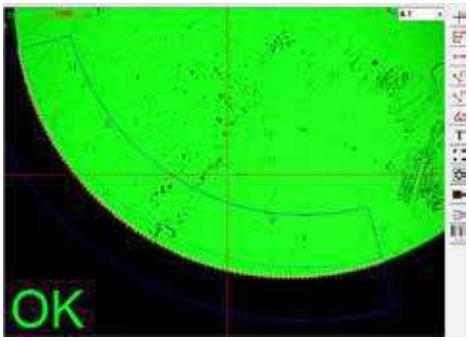

## POWERFUL GEOMETRIC MEASUREMENT FUNCTION

## Complete geometric measurement function

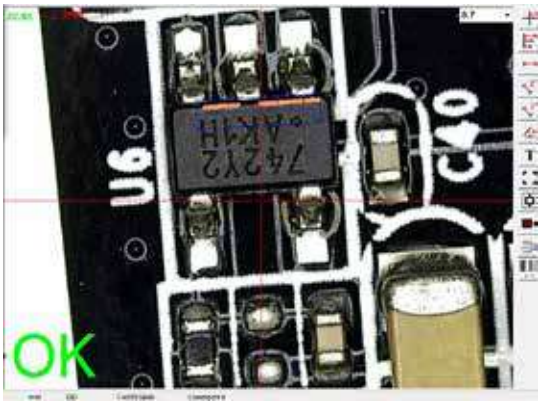
• Measurement of points, lines, arcs, circles, rectangles, ellipses, bond length (waist features), open curves, closed curves, planes, cylinders, cones, balls and other geometric elements.
• When a probe or laser displacement sensor is added to the z-axis, 3D graphic elements such as cylinder, cone, sphere and surface of 3D space can be measured. According to the actual characteristics of elements, each element can be measured by a variety of different methods.
• The coordinate value, length, area, volume and other data of the element can be obtained directly after edge searching.

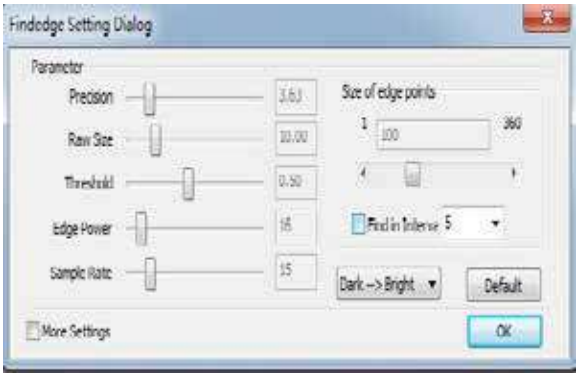


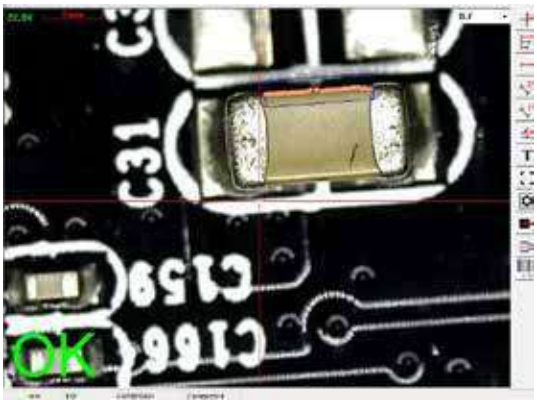



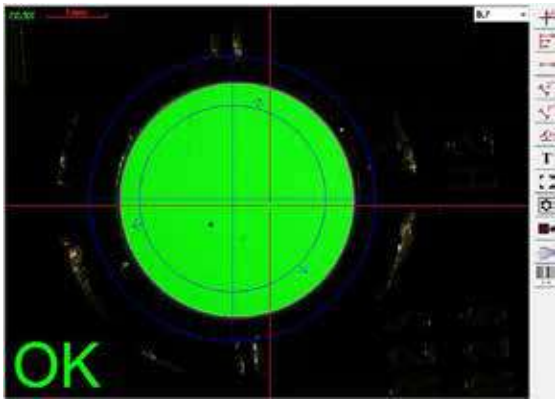




• It can grasp the weak edge, set the edge searching direction arbitrarily, avoid the edge selection error, set the edge searching parameters flexibly, and remove the influence of the rough edge.



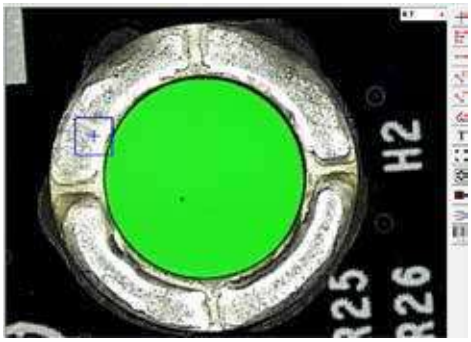



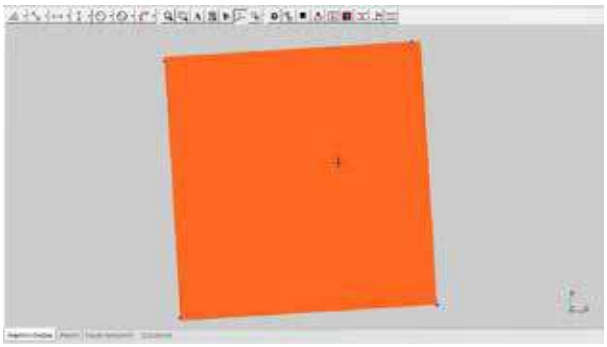



## AUTO FOCUS FUNCTION AND FOCUS MEASUREMENT FUNCTION

• The software can automatically determine whether the focus is the clearest or not. This function can also be used to measure height and flatness.

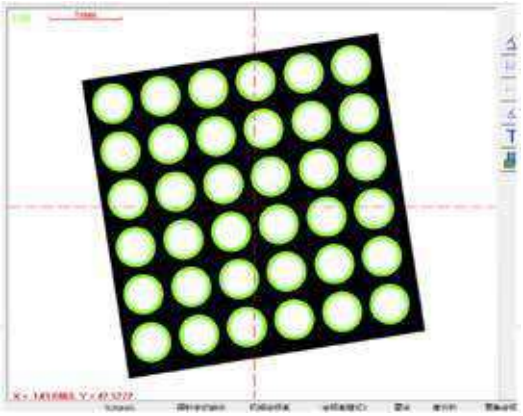


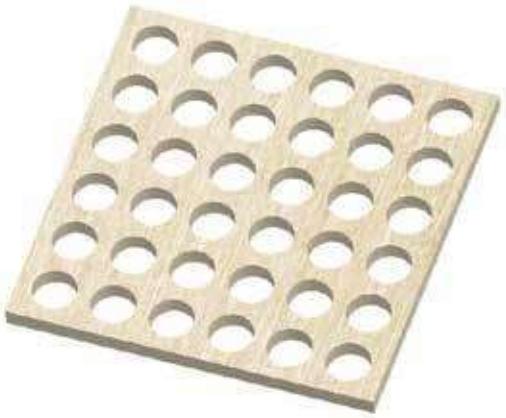



## FAST RESPONSE TO MEASUREMENT OF COMPLEX SHAPE WORKPIECE AND MASS WORKPIECE (SPECIAL FUNCTION OF AUTOMATIC MACHINE)

### Translational array measurement of elements

• For equidistant elements series, only one element needs to be measured manually, and then all elements can be measured automatically through the translation array function, which is very convenient to measure array features.

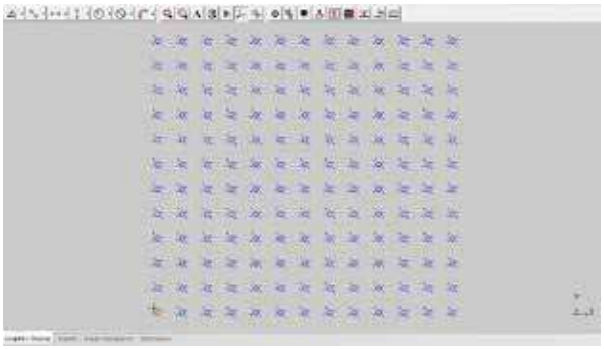




## Workpiece array and macro array measurement
### (special function of automatic machine)

• When a large number of workpieces are measured, only one workpiece can be measured manually, and all workpieces can be measured automatically through the workpiece array and macro array function.

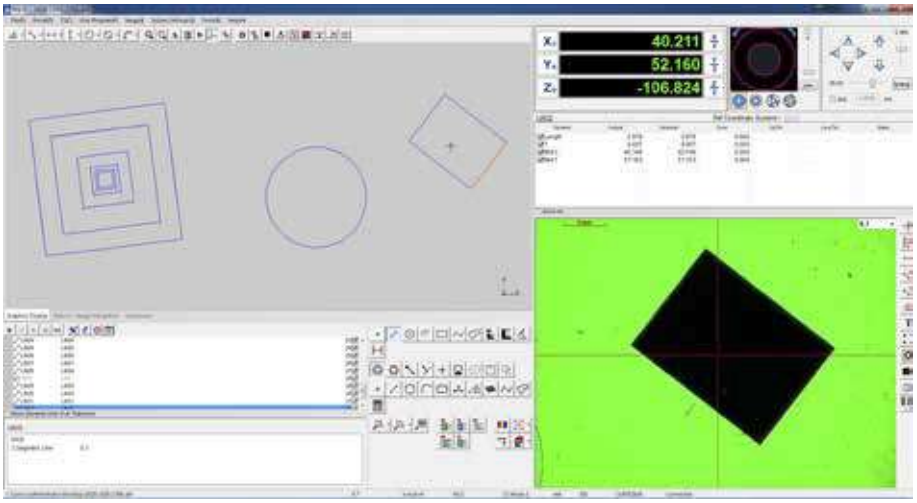
• Both a single fixture and multiple fixtures can deal with it at the same time. It can save time and improve measurement efficiency.



## Import CAD drawing measurement function

• The dimension drawing can be done directly by CAD software, and the automatic measurement can be realized after importing the software; there is no need to collect points for edge searching.

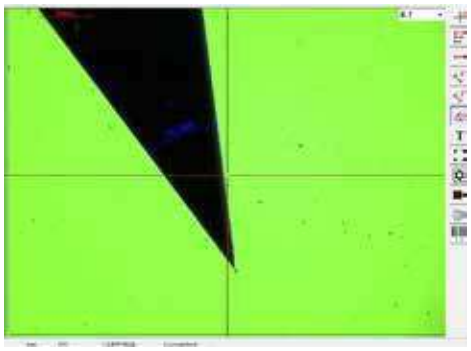
• It is very convenient for coordinate measurement and contour contrast measurement of complex or irregular shapes.

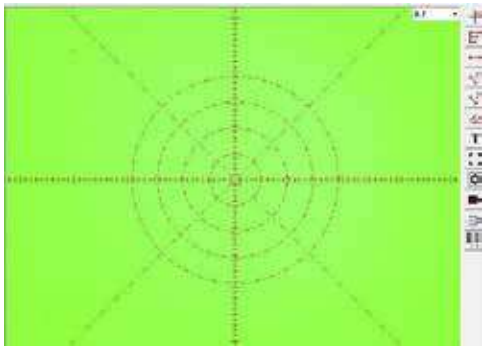


## Comparative measurement function

• The scale line, angle line and standard circle can be preset for comparative measurement of workpiece.

• The dimension line or angle line can also be drawn directly on the image outline, observe the length, angle, step height and diameter of the workpiece dynamically.





## FLEXIBLE USER PROGRAM

• The software automatically compiles the user program according to the sequence of user measurement steps, and control the program running and stop.

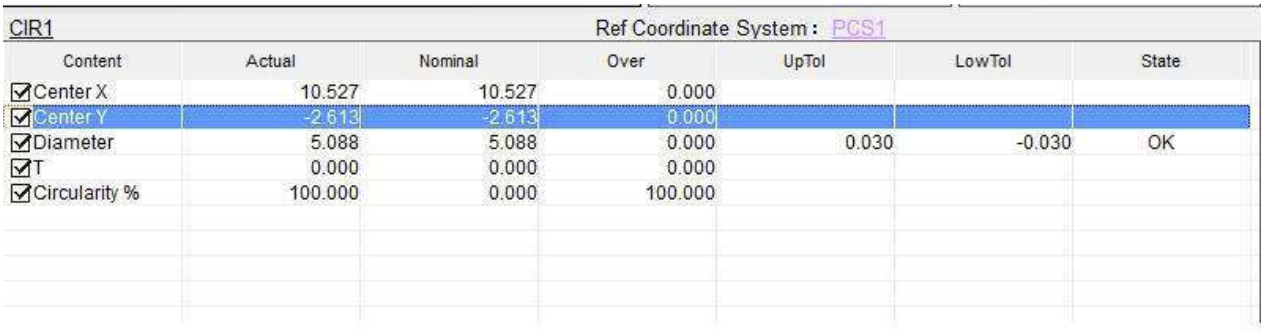
• The user program and each step can be edited, sorted, inserted, deleted, so that it can adapt to various complex and changeable measurement steps.

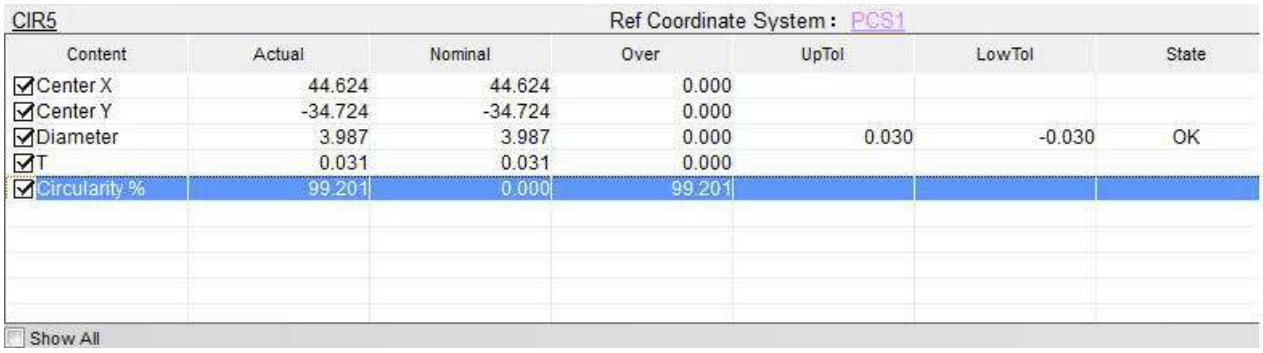
• When measuring a large number of workpieces, only one edge measurement is needed.

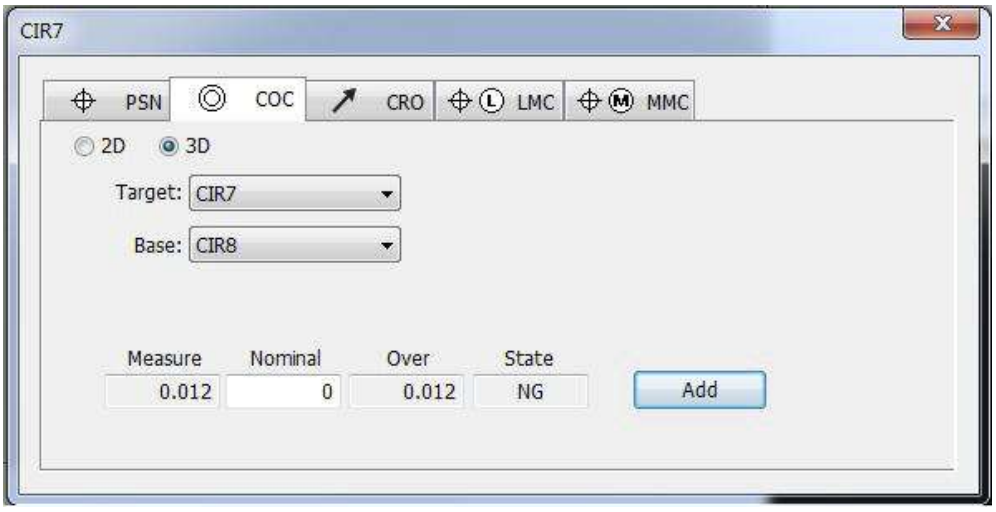
## AUTOMATIC CALCULATION OF GEOMETRIC TOLERANCE OF ELEMENTS

• The software provides complete tolerance setting and calculation functions, which can set and calculate geometric tolerances such as straightness, roundness, flatness, cylindricity, profile, position, parallelism, perpendicularity, concentricity, circle runout, etc.

• It can automatically judge whether the tolerance is OK or NG, and has NG warning and prompt function. The visualized tolerance chart enables users to know the specific out of tolerance position and find out the cause of out of tolerance conveniently.

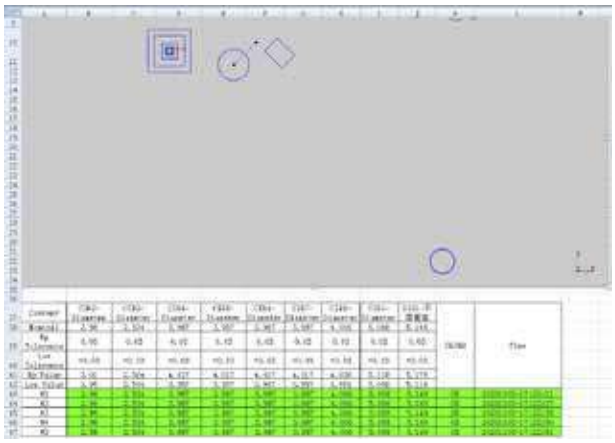


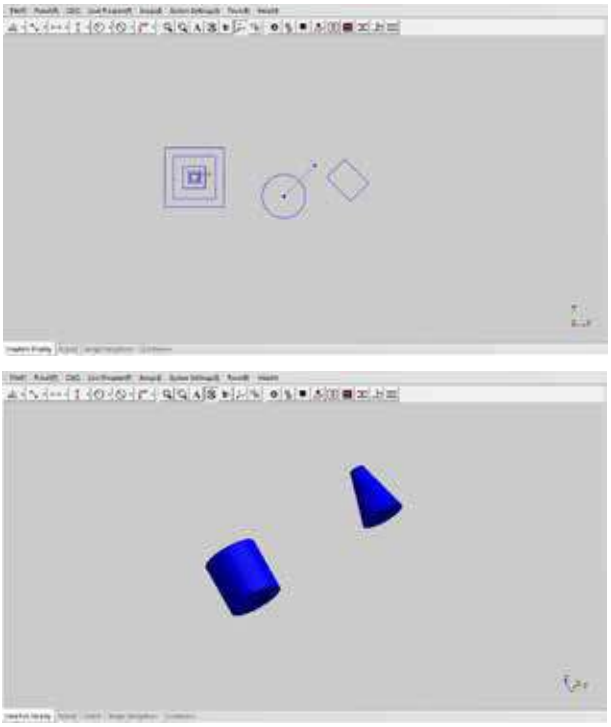



## DIVERSIFIED DATA REPORT AND GRAPHIC DATA EXPORT FUNCTION

• The software can lead-out the result data in a variety of report formats, EXCEL, WORD, TXT, and support the Excel report format setting function.



• The software can export DXF and IGS format graphics data, and can be directly used in reverse engineering.



# VMQ-100 Instant video measuring system

## DESCRIPTION

### One-key instant measuring, batch testing

• Measuring sample can be placed randomly without fixture positioning; software can identify and match automatically.

• Unlimited dimension measurement; measurement task can be completed within 1 second.

• CAD drawing import for direct measurement.

• One-time measurement of the same type of measuring sample.

### Accurate calculation and high repeatability

• Unique patent technology of edge extraction and lens distortion correction.

• Automatic lighting, greatly improves the repeatability.

• It can be compared with the measurement accuracy and repeatability of traditional video measuring machines.

### Easy to operate without training

• Anyone can get started quickly without training.

• Simple interface, intelligent measurement, optimized operation process, real-time operation tips.

• All measurement data can be automatically recorded, statistical analysis can be generated with one key, measurement results can be printed in various file formats or directly printed by printer.

### Various function, automatic report

• The software is divided into three functional modes: measurement setting, continuous measurement and statistical analysis.

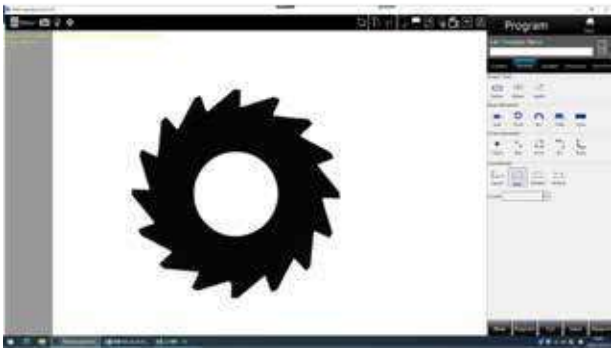
• Continuous measurement can be used for real-time measurement and it can judge NG / OK without pressing the key, providing 80 tools of extraction and analysis , including feature extraction tools (such as maximum point, center line, arc, peak circle, etc.), auxiliary tools (such as arbitrary point line circle, fitting line, fitting circle, tangent line, inscribed circle, etc.), intelligent annotation tool, geometric tolerance tool, special application tool (such as R angle, etc.).

# VMQ-100 Instant video measuring system

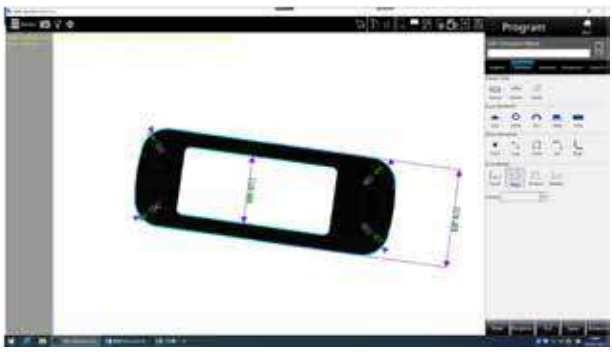
| Technical features | | |
|---|---|---|
| **Product name** | **Instant video measuring system** | |
| Dimensions | 480 x 240 x 680 mm | |
| Weight | 30 kg | |
| Working stage capacity | 3 kg | |
| Software | Fom2d | |
| Camera | 5 MegaPixel CCD industrial camera | |
| Lens | Double telecentric lens | |
| Illumination | Program controlled parallel light or telecentric parallel light, each section of brightness is controlled independently | |
| Field of view | 30 mm ~ 100 mm | |
| Focus | Manual | |
| Measuring accuracy | ± 3 µm | |
| Measuring function | Point, line, circle, multipoint line, multipoint circle, automatic circle, arc, multisection circle, automatic R angle, contour scanning, fixed point, peak line, circle, etc | |
| Tagging function | Aligned, vertical, angular, radius / diameter | |
| Geometrical tolerance | Straightness, roundness, symmetry, profile, etc | |
| Virtual structure | Center line, bisector, tangent point, tangent point of circle line, circle center, line center, etc | |
| Automatic template matching | Support | |
| Report function | SPC analysis report (CPK, CA, PPK, CP, PP) | |
| Software customization | CAD import profile analysis, automatic management link, APP management application | |
| Measuring quantity | 99 pieces/second | |
| Template quantity | Unlimited | |
| Power source | AC 100 ~ 240 V, 50/60 Hz | |
| Working environment | Temperature: 23°C ± 2°C; Humidity: 20 - 80% RH | |
| **Packing list** | | |
| Machine mainframe | Dell 24" computer | Mikrosize measuring software |
| Telecentric lens | High resolution camera | Surface lighting |
| Calibration block | Power line | Product certificate |

## APPLICATIONS

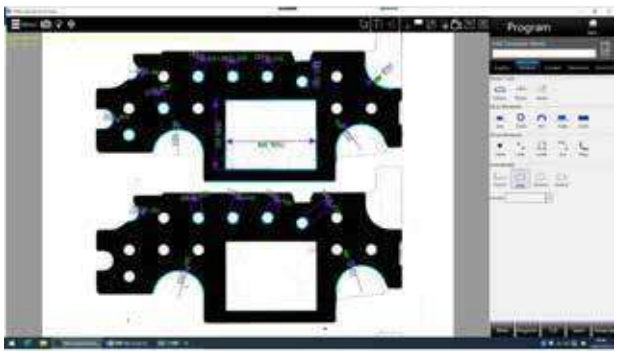
The software can be used in machinery, electronics, mold, injection molding, hardware, rubber, low-voltage electrical appliances, magnetic materials, precision stamping, connectors, terminals, mobile phones, household appliances, printed circuit boards, medical devices, watches, knives and other fields.



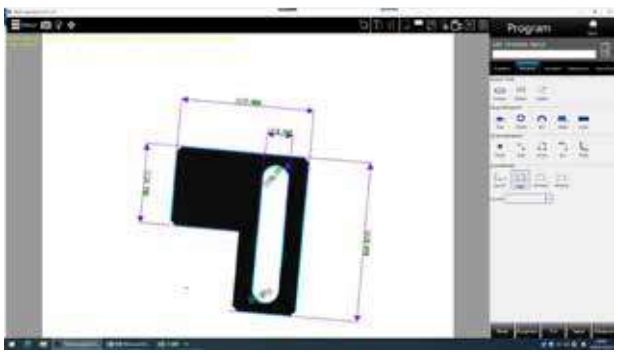
Gears



Mobile phones and watches



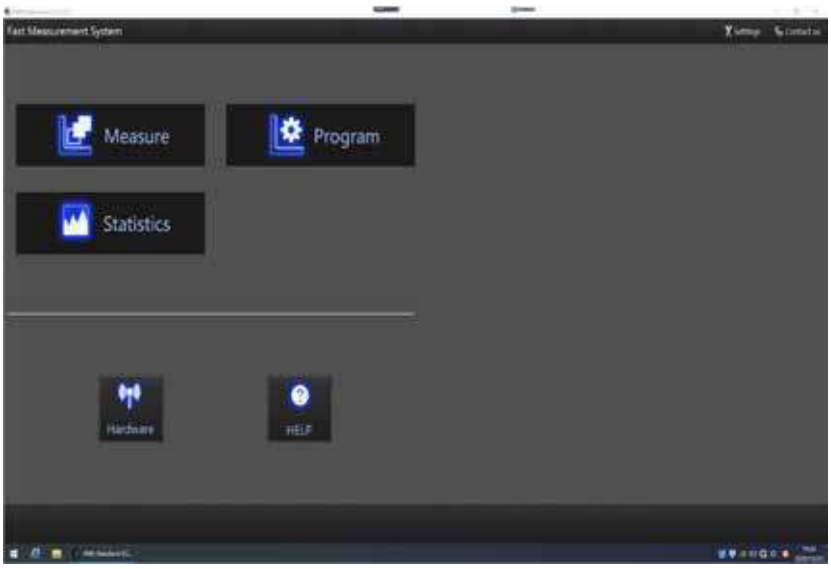
Semiconductors (film)



Hardware

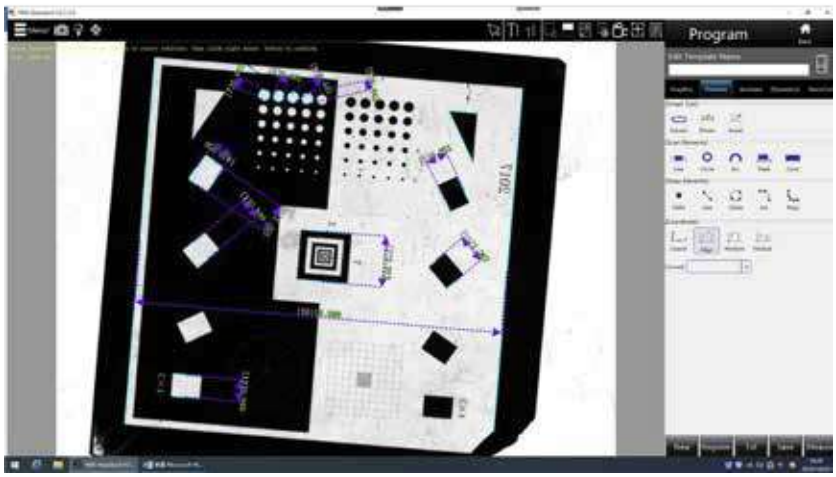
## SOFTWARE INTERFACE

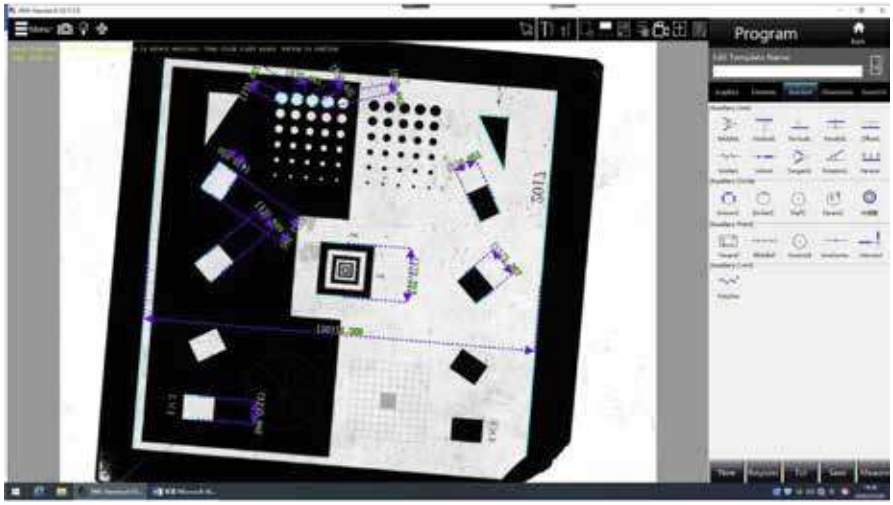
Software main interface is divided into three functional modes: measurement setting, continuous measurement and statistical analysis. Simple, easy to use.

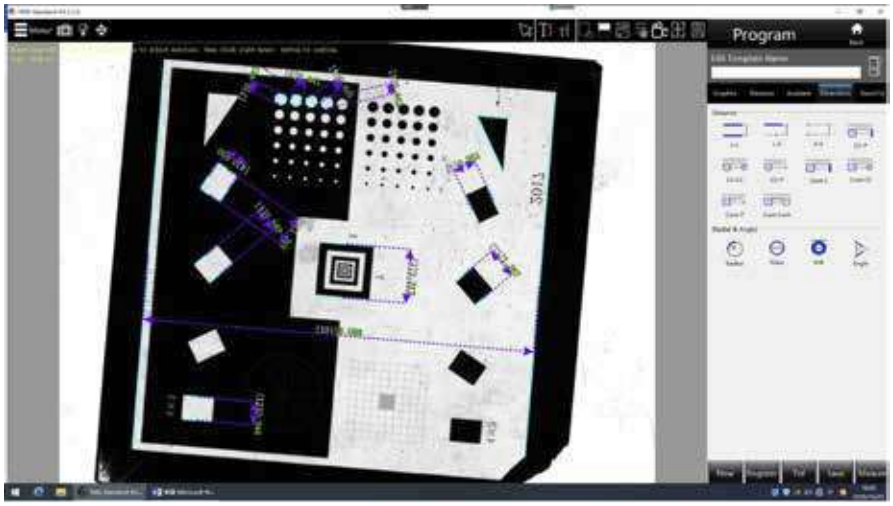


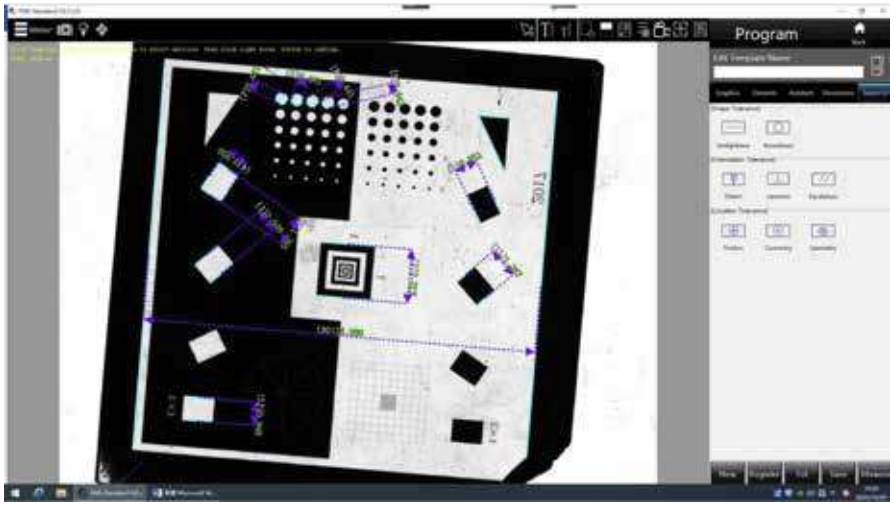

### Measurement setting

In this mode, we can quickly extract geometric elements and do dimensioning to complete the measurement setting.



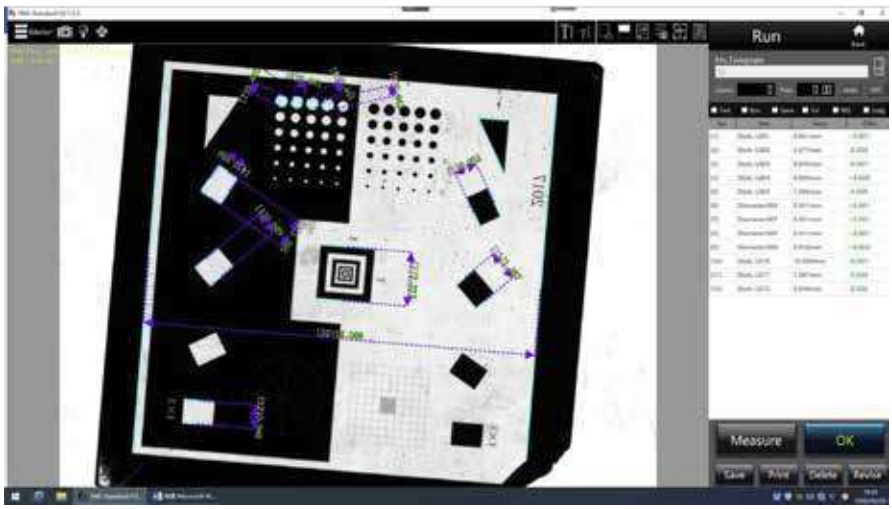

Program


Program


Program

## Continuous measurement

After measurement setting, software enters to the continuous measurement mode, which can be doing rapid and accurate batch measurement.

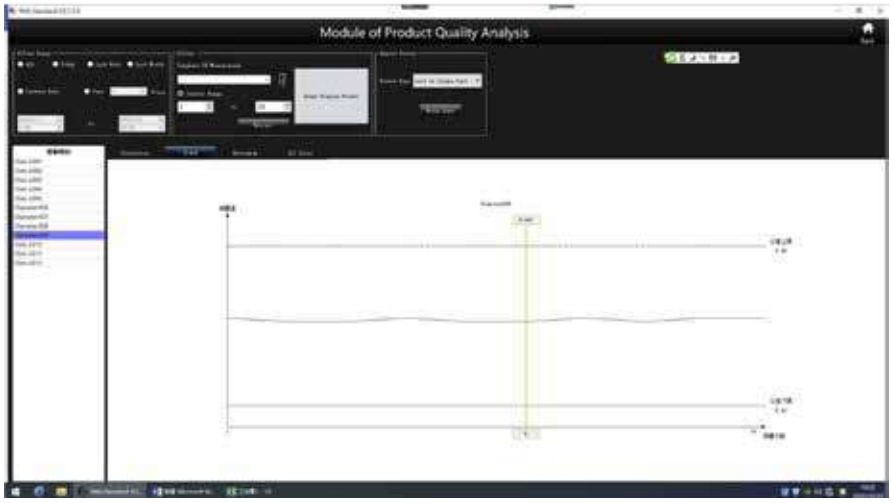



## Statistical analysis

Mikrosize software provides a variety of extraction and analysis tools, the statistical analysis interface has statistical value, trend graph, histogram and data. Measurement results and main statistical information (such as average, σ, 3σ, 6σ, Cpk, etc.) will be automatically recorded and filed. The operator can select different filter conditions to extract history records.

## PRODUCING PROCESS CONTROL AND IMPROVE PRODUCT QUALITY

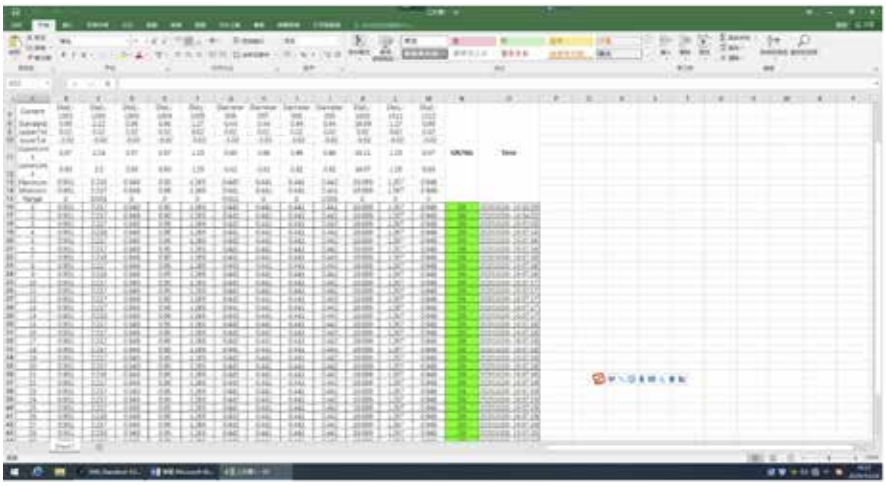
The trend graph can monitor the abnormal of producing equipment and producing process through the regular tendency of measured value, such as monotonic change and periodic change of measured value.




Histogram can reflect the fluctuation and distribution of product quality, and intuitively transfer the information of quality status, which can be used to judge and predict product quality and unqualified rate. By quality diagnosis, SPC uses statistical methods to monitor the change tendency of product quality and producing process. It plays a preventive role in the producing process as to improve the product quality.

## Test report generated with one key

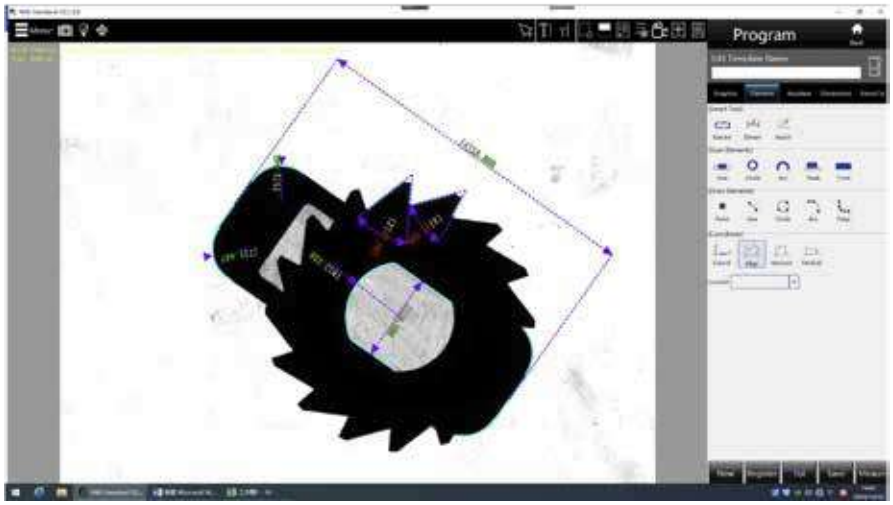
The test results report and SPC analysis report can be automatically generated with one key.



## Special function

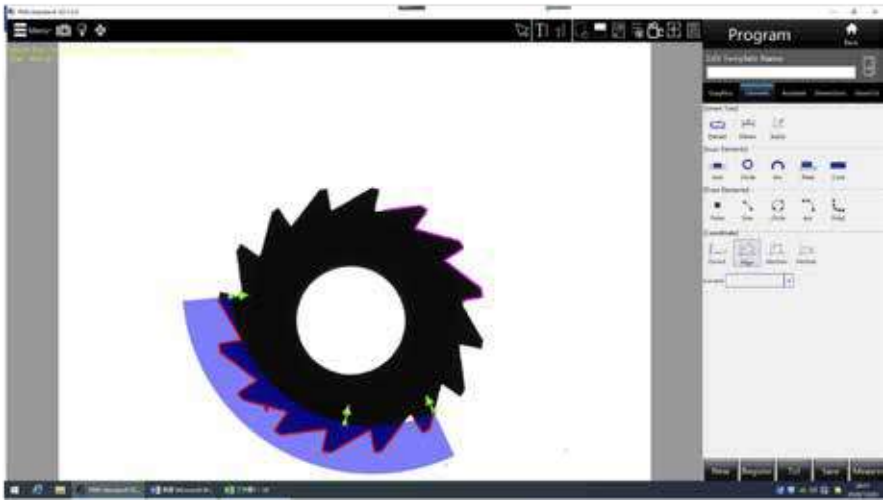
• INTELLIGENT EXTRACTION FUNCTION:

The line, arc and circle can be extracted automatically by mouse clicking the area near the elements to be measured.



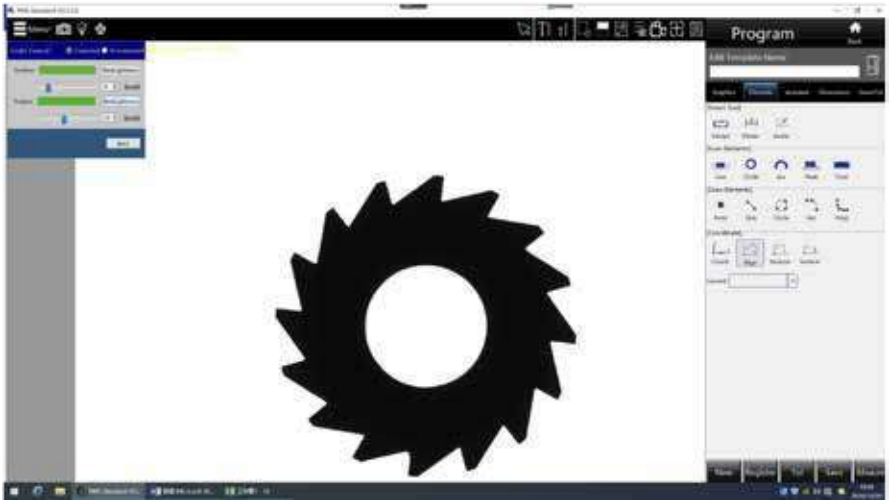
• CONTOUR EXTRACTION FUNCTION:

It provides various methods of contour extraction and contour conversion tools, which can measure irregular objects and small objects.




• AUTOMATIC LIGHTING:

When a single lighting unit, falling lighting or projection lighting, is used, the software can automatically and quickly determine the best illumination brightness (within 5 seconds).



• QUICK MODULE SEARCH:

For the measurement of a large number of different spare parts, the software can automatically find out the corresponding measurement program (within 0.1s) from the measurement module pool after placing a spare part.

# RETROFIT

Measuring instruments update

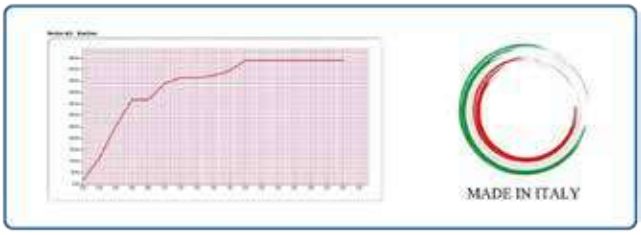
## VBM SYSTEM FOR HARDNESS TESTERS AND MICRO-HARDNESS TESTERS

This system has been created to be installed on Brinell and Vickers **hardness testers** with loads up to 250 kg. The system is installed on the original instrument and this procedure is always reversible, any time.
A camera with suitable technical features and the needed lenses is set up.
The whole system is connected to a PC.


The system consists of:
- VBM measuring software
- CCD or CMOS camera
- USB security key
- CD ROM with original software
- PC on customer's request

## TC SOFTWARE SYSTEM FOR SPRING AND ELASTIC ELEMENT TESTING MACHINES

This system has been created to be installed on **spring testing machines**. It allows the user to have the same results as new and more efficient instruments, starting from machines with an outdated detection system but a very sturdy mechanical structure. New linear potentiometers or optical scales and new load cells are set up. The new system is connected to a detection unit which can interface with a PC.




The system consists of:
- TC measuring software for compression and traction testing
- Measuring optical scales or linear potentiometers for movement
- New load cell
- Digital control unit with microprocessor
- USB security key
- CD ROM with original software
- PC on customer's request

## GEAR SOFT SYSTEM FOR GEAR TESTING MACHINES

This system has been created to be installed on **manual** or **automatic gear measuring machines**. The system is installed on the original instrument; it allows the customer to obtain the same results as new and more efficient machines, starting from instruments with an outdated detection system but a very sturdy mechanical structure.
New measuring optical scales and a new testing head are installed according to the type of instrument, and the whole hardware is connected to an interface box that can be managed from any computer.


The system consists of:

- Gear Soft measuring software
- Measuring optical scales for movement
- New LVDT testing head
- Hardware interface box
- USB security key
- CD ROM with original software
- PC on customer's request

## TC SOFTWARE SYSTEM FOR TRACTION TESTING MACHINES

This system has been created to be installed on **universal testing machines**. It is installed on the original machine; it allows the customer to obtain the same results as new and more efficient instruments, starting from machines with an outdated detection system but a very sturdy mechanical structure.
New linear potentiometers or optical scales, load cells and/or pression sensors are installed according to the model and type of instrument. The new system is connected to a detection unit which can interface with a PC.


The system consists of:

- TC measuring software for traction, compression, bend and flexion testing machines
- Measuring optical scales or linear potentiometers for movement
- New load cell or pression sensors (if necessary)
- Digital control unit with microprocessor
- USB security key
- CD ROM with original software
- PC on customer's request

# NON-DESTRUCTIVE TESTING INSTRUMENTS

## ULTRASONIC THICKNESS GAUGE UT-1M


Portable ultrasonic thickness gauge UT-1M, for operative non-destructive testing of the thickness, works on the principle of ultrasounds' propagation time measurement in the analysed material.

### Advantages

- Wide range of measured thicknesses
- Convenience and ease in operation
- Minimum number of controls
- Select the type of probe through single button
- Preset velocity of ultrasound
- Graphical display with backlight
- Compensation of probe delay
- Control of the batteries
- Mapping the presence of acoustic coupling on the graphic display
- Fixation of the last measurement result in the removal of the transducer surface

## ULTRASONIC THICKNESS GAUGE UT-2A (A-Scan)

It is a powerful, lightweight and portable instrument, made in an ergonomic shock-resistant case with rubber protectors – a modern industrial version of a general-purpose thickness gauge.


### Advantages

- Wide range of measuring thicknesses.
- Function of thickness gauge and flaw detector.
- Convenience and ease in operation.
- B-scan mode, which allows user to get the product profile like a picture that is easy to read.
- Minimum number of controls.
- Select the type of probe from archive.
- Preset velocity of ultrasound.
- High brightness color display.
- Acoustic indicator of the presence of contact.

## EMAT THICKNESS GAUGE UT-3M-EMA


EMAT thickness gauge allows users also to carry out tests in cases where traditional methods, such as piezo-ultrasonic, laser-optical, X-ray, mechanical, etc., are not applicable.
Electromagnetic-acoustic (EMA) technology for measuring thickness is based on the excitation of ultrasonic waves in the material by the generator of the device's probe, and fixing the path time of ultrasonic waves in the material.
The instrument automatically analyzes the signal, selects the correct measurement method, and adjusts the settings.
The gauge also features a B-scan mode. This mode gives users a visual profile of the product, like a picture, making it easy to read.

## ACTIVE EMAT TRANSDUCER

This transducer expands the capabilities of standard flaw detector /thickness gauge with A-scan up to EMAT thickness gauge. It can be used with any ultrasonic thickness gauge with A-scan that enable bipolar excitation of the required amplitude.
The transducer allows to:
• measure the thickness of metal products through rust;
• measure the thickness of metal products through coatings;
• measure the thickness of metal products through an air gap (contactless);
• take product profile through the surface's scan (* through a special scanning trolley, buying separately).

## COATING THICKNESS GAUGE TP-2020

Portable coating thickness gauge NOVOTEST TP-2020 - device for operative non-destructive testing of coating thickness with high measurement accuracy.


### Advantages

- Automatic sensor detection
- Storing individual calibrations in probes memory
- Average calculation, minimum and maximum indication
- Transfer of measurement data to PC via USB
- Shockproof housing with a special protective silicone bumper case
- Four operating modes: Normal, Control, Statistics, Automatic Averaging mode
- Different specialized probes to measure many parameters

## COATING THICKNESS GAUGE

Coating thickness knife tester is designed to measure the thickness of both single and multiple layer coatings on any grounds, both metallic and non-metallic. The operation principle is based on the local cut (notch) of the coating at the tested place of object with following thickness measurement of this coating. The thickness of coating is determined by the width of notch, it is possible because of the special form of cutter of the instrument.

The measurement is performed by any portable measuring microscope with a suitable measuring range.

Coating thickness knife tester TPN-1 complies with ISO 2808, ASTM B 4138, DIN EN 1071-2.

## ULTRASONIC FLAW DETECTORS

An ultrasonic flaw detector is designed to search for voids and inhomogeneities inside the materials under testing with ultrasound. It is the most common device for non-destructive testing of metal (and other materials with low attenuation of ultrasonic waves) products in production, as well as objects in operation.
Ultrasonic flaw detector **UD2301** is a powerful, ergonomic, portable device that has all the functions of a general industrial ultrasonic flaw detectors and can be used in laboratories and workshops, and is perfect for field use. The device is supplied with PC software for uploading the measurement archive and processing the results.

Ultrasonic flaw detector **UD2303** is a compact version of an industrial flaw detector with a set of functions and modes that are designed to simplify the routine process of product quality control as much as possible. Shock-resistant aluminum alloy case with a large battery will provide a long service life of the device and ability to be used in adverse conditions. UD2303 ultrasonic flaw detector has the function of screen rotation.


The ultrasonic flaw detector **UD3701** is designed to detect internal defects, such as discontinuities and heterogeneities of materials in products and welds; determine coordinates and evaluate defect parameters; measure thickness and the velocity of propagation and attenuation of ultrasonic waves in the materials (metals, plastics, glass, etc.); the search for places of corrosion, cracks, internal delamination and other defects.

## PULSE HOLIDAY DETECTOR

Pulse Holiday Detector is a device for detecting defects (thinning, microholes, cracks, etc.) in dielectric coatings on metals.
The principle of operation of the device is based on the electrospark method. A probe with electrode connected to one pole of the voltage source scans the surface of the tested object directly along the coating.
The second pole of the voltage source from the ground connector is connected directly to the metal structure.
The electronic unit fixes the gaps by voltage between the electrode and the conductive base.

## MAGNETIC FLAW DETECTOR

Magnetic flaw detector (magnetic yoke) applies in circumstances where the electric equipment must not be used or is prohibited by the rules.
Device is used during magnetic particle inspection (where it is applicable) according to ASTM E 709, ASTM E 1444, ASME Section V Article 7 and MIL-STD-1949. Magnetic flaw detector is used to detect surface and subsurface cracks of all kinds (flake, lack of fusion welded joints, tears etc.) in structures made of ferromagnetic materials.
The device has two permanent magnets placed in a cylindrical shells, which are connected by a flexible magnetic wire, so it can be used for MPI of remote locations, corner welds and other products of various shapes and sizes.

## MAGNETOMETER


Magnetometer is designed to control the residual magnetization and study the magnetic heterogeneity of the surface of ferromagnetic products, to control the level of residual magnetization before welding gas and oil pipes, to control the induction of static (DC), alternating (AC) and pulsed magnetic fields generated by various magnetic and electromagnetic devices, such as magnetic particle flaw detectors, magnetic tables and chucks of grinding machines, demagnetizing devices, permanent magnets etc.
The device has the ability to create a measurement archive that can be transferred to a PC using special software.

## STEEL STRUCTURE ANALYZER

Steel structure analyzer is designed for measuring coercive force of metal products and is used for non-destructive testing of chemical-thermal, thermal and thermomechanical treatments, evaluation of mechanical properties and residual stresses. It is used for determination of mechanical properties, and for measurement of the hardness of metal products, as well as measurements of products of ferromagnetic alloys in the presence of correlations between the studied parameters.
In addition, the device is used for testing the surface layer of ferromagnetic material for grading the metal in steel grades. It has an electromagnet transmitter with integra-

## ADHESION TESTERS

Adhesion is the tendency of dissimilar particles or surfaces to cling to one another. In the field of quality testing, adhesion of coatings to the base material, such as paints, plastic, epoxy mixtures, sprayed metal, laminate to wood and other metal and polymer coatings, is the most often measured.
There are various instruments for adhesion testing of a coating over the base, depending on their nature and measurement's requirements.

Peel adhesion tester

Tensile adhesion tester

Bitumen and mastic insulation adhesion tester

Scratch adhesion tester

Cross hatch adhesion plate

Cross cut adhesion tester

## DENSITY AND VISCOSITY CUPS

An important parameter of lubricants, paints and other liquids is viscosity. This parameter characterizes the ability of materials to resist the movement of one part relative to another.

Density cup – Pycnometer

Viscosity flow cup

Viscosity mug

## COATING HARDNESS TESTERS

The coating surface hardness testing allows to measure the scratch resistance of coatings and paints.

Pencil coating hardness tester

Scratch hardness coating tester


Buchholz coating hardness tester

## BENDING COATING TESTERS

The instrument measures the elasticity and the flexural strength of coatings through rounding the test sample on the set of cylindrical rods with different diameters. Starting from the rod with maximum diameter, if it does not cause any mechanical destruction or de-lamination of paint film, the user has to continue bending the test sample on smaller rods.
The result is the minimum diameter of the rod in millimetres that causes no destruction when testing the paint film.

Bending coating tester

Conical bending coating tester

Cylindrical bending coating tester


Bending coating tester ShG

## IMPACT TESTERS

The impact coating strength tester is used to check the resistance of technical products to external factors during operation (such as punching, impacts), as well as to verify the manufacturer's specifications .
There are various instruments for measurements on different types of coating, like paints, laminate and plastic coatings, and many kinds of bases.
Impact testing is useful to measure coatings resistance to damages caused by accident, but also to verify the quality of coatings during the production process, so that all required resistance standards are satisfied.
Tests result is evaluated based on cracking or deformation of the coating.

Pipe impact tester

Impact tester

Impact tester Universal

## OTHER COATING TESTING INSTRUMENTS

Film applicator

Erichsen cupping tester

Pinhole detector

## ROUGHNESS TESTERS

Instruments used to measure the roughness of surfaces in non-destructive way. Possibility to measure different parameters and to set various measurement profiles. They are commonly employed for quality control activities and to check incoming and outgoing goods.


### iSurfa-100 Surface roughness tester

High measurement accuracy, wide measurement range, simple operation, easy portability and stable operation. It can be widely used in the detection of various metal and non-metal processing surfaces. It is a pocket instrument integrated with a host and a sensor. It has the characteristics of hand-held, and is more suitable for use in the production site. The exterior is made of aluminium, which is durable and has remarkable anti-electromagnetic interference ability. Low-power consumption ARM processor is used for data processing and calculation. Equipped with Bluetooth adapter, it can communicate with devices such as smart phones. The sensor probe has a protective door, which effectively protects the sensor probe and ensures the accuracy of measurement.

### iSurfa-300 Roughness waviness tester

High precision large stroke guide rail, length up to 50 mm, and sensor range ± 500 µm. 5 measurement types and skidless measurement for more realistic feedback on the morphology of machined surfaces. The sensor can be switched vertically or in the same direction with the guide rail at will, so the measurement of deep grooves can be made from the side without being limited by the depth of the stylus and groove. Data can be directly stored in the built-in memory of the machine. It supports automatic multiple calibration of standard blocks, so that the calibration error is greatly reduced.


## iSurfa-360 Surface roughness gauge

Small size, light weight, and easy to use. Adopting DSP chips for control and data processing, with fast speed and low power consumption. Compatible with multiple national standards such as ISO, DIN, ANSI, and JIS. Large capacity data storage, capable of storing 100 sets of raw data and waveforms. Equipped with power saving functions such as automatic sleep and automatic shutdown. Displays various prompt instructions such as measurement information, menu prompt information, error information, and on/off machine information. Optional Bluetooth function; can connect computers and printers, prints all parameters or any parameters set by the user. Optional accessories such as curved sensors, small hole sensors, measuring platforms, sensor sheaths, extension rods, etc.

## iSurfa-520 Surface roughness tester

Portable surface roughness tester is a high accuracy instrument for measuring surface roughness. It can be used on variety of machining parts and operates on various surfaces, not only flat but also outer cone, outer cylinder, curved, pinholes, grooves, recesses grooves and axle etc.
Portable surface roughness tester allows surface roughness measurement both on metal and non-metal workpieces. It is suitable for machining and manufacturing, quality control, inspection departments, especially for measurement on large and heavy workpiece, assembly line on site. The roughness tester is a non-destructive testing instrument, damage won't caused to testing piece.

## VARIOUS NON-DESTRUCTIVE TESTING INSTRUMENTS

Grindometer

Concrete rebound hammer – Sclerometer

Strength meter

Concrete cover meter

Digital surface profile gauge


Dew point meter

Depth gauge

# ACCESSORIES AND SERVICES

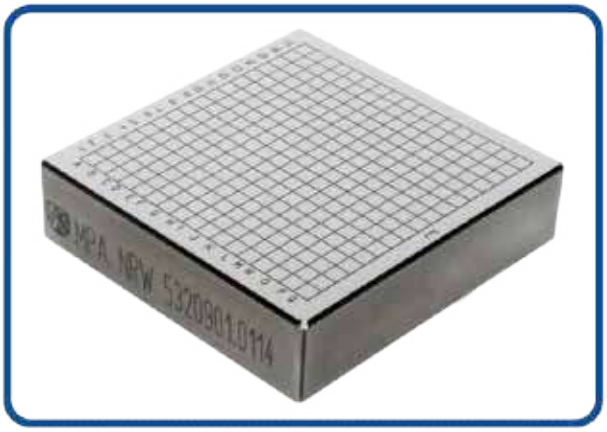
## TECHNICAL SERVICE

**Installation**, **calibration** and **education**: these are the services CRASE s.r.l. offers after sales. They are developed with planned maintenance contracts carried out directly by our specialized technicians.

### SPARE PARTS

The spare parts' warehouse is equipped with the whole product line, and we are able to create accessories on customer's specific request.

- Instrument work benches
- Measuring dial gauges
- Lamps and lighting systems
- Diamond indenters with calibration certificate ISO - ASTM
- Ball indenters with calibration certificate ISO - ASTM
- Spares for measuring and optical microscopes
- Measuring probes
- Workpiece holders
- Reference test blocks with calibration certificate ISO - ASTM



### ON-SITE REPAIR

In case of fault, the intervention is carried out on site by our technicians. In this way the downtime of your instrument can be reduced.

### PREVENTIVE MAINTENANCE

We provide annual maintenance contracts which establish that your instruments would be maintained at regular prearranged intervals. Thanks to these contracts you will always have calibrated and verified instruments. A regular maintenance guarantees to the customer a longer lasting in time of the machine and a better control of operating costs.

## INSTRUMENTS REPAIR SERVICE

Equipement for metrology room of all the best brands.

**REPAIR:**

Hardness testers (with issue of Accredia certificate, also on site), micrometers (also with surface polishing), dial gauges, thickness testers, glossmeters, roughness testers, bore meters, bench instruments, calipers, altimeters, profile projectors, pneumatic instruments and digital instruments.

**SUPPLY:**

Masters and calibration blocks
ORIGINAL SPARES


# ACCESSORIES AND SERVICES

## TECHNICAL CONSULTING

Thanks to technical knowledge of testing and production processes, CRASE s.r.l. offers a consulting service for choosing new or secondhand equipement to realize your project. In order to do that, we can count both on our staff and on collaborations with technicians and engineers working in the sector.

## SECONDHAND SALE

CRASE s.r.l. is in secondhand market. Various instruments are available, such as hardness testers, gear measuring machines and universal testing machines, all inspected and with a warranty. You can find the complete list of available secondhand instruments on our website *www.crase.com*.

## INSPECTION

CRASE s.r.l. offers measuring systems which allow to update almost every machine of various known brands. Our retrofits combined with mechanical inspections, carried out in our laboratory in Burago di Molgora, are able to lengthen the instrument's life, updating just the measuring system. In this way, our customers can have a modern and inexpensive testing machine.

## CERTIFICATION

We guarantee our instruments for 12 months, the quality warranty is given by the *ACCREDIA* primary certificate, accomplished by an external laboratory.

**ACCREDIA CALIBRATION CERTIFICATE:** it is a document issued exclusively by an accredited calibration centre. This certificate is officially valid in Italy and it is recognised in the EA's European States. An *Accredia* certificate guarantees that the instrument has been calibrated according to all the procedures recognised as valid by primary institutions of expertise. The *Accredia* certificates relieve the user from proving that calibrations were carried out in compliance with the standards of calibration institutions' quality system (UNI CEI EN ISO/IEC 17025) and with methods approved by *Accredia*. The Accredia certified instruments and test blocks are usually used as "primary standards" for calibration and control of other instruments.

**CALIBRATION REPORT WITH TRACEABILITY TO NATIONAL STANDARDS (RDT) (UNI EN ISO 10012: 2004):** it is a document released by calibration centres which assure the measurement traceability to national standards, without any validation by the responsible institutions. The validity of these documents is given by the laboratory's qualification, the technical knowledge of workers and the used metrological procedures. The customer has the right to verify these elements with on-site inspections. A calibration report can be released either by an accreditated *Accredia* centre or another centre, but in the first case you will have more guarantees.

## INSTRUMENTS' CALIBRATION SERVICE

Equipement for metrology room of all the best brands.


### CALIBRATION WITH POSSIBILE ISSUE OF ACCREDIA CERTIFICATE FOR:

Hardness testers, micrometers, dial gauges, thickness testers, bore gauges, roughness testers, bench instruments, smooth cylindrical buffers and rings, smooth flat buffers, measuring forks, set or single parallel reference test blocks, conical buffers, threaded buffers and rings, prisms, masters to design, calipers and special equipement, altimeters, profile projectors, pneumatic instruments, digital instruments, torque wrenches, thermocouples, conductivity meters, gas analyzers.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