Mecmesin

OmniTest
Universal Testing Machines
Sales brochure

PHYSICAL PROPERTIES TESTERS GROUP

mecmesin.com

Ensure product quality

Mecmesin has developed the OmniTest with VectorPro® software to perform strength tests on a variety of materials and finished products.

A range of rigid test frames enables the physical properties of metals, plastics, composites, wood, fabrics, glass and ceramics to be accurately characterised in tension and compression up to 50 kN.

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Choosing a universal tester

Your step-by-step guide to testing

Tensile and compression testing is an important part of design and quality control for ensuring product safety and performance. It is also an essential part of the testing regime that helps deliver cost-effective consistency and efficiency in manufacturing and assembly.

Whether for incoming Quality Assurance, Research & Development or Quality Control in production, you can select the most appropriate Universal Testing Machine for your testing requirements by following these six simple steps.

01 Define your testing requirements

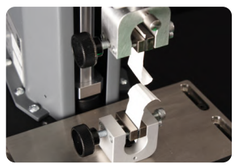
Before you begin looking for a universal tester, you need to define your testing requirements. This includes identifying the maximum load you will apply to the materials or products.

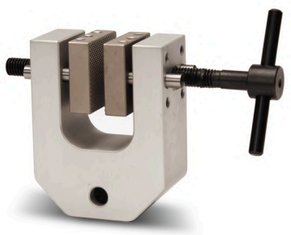
02 Choose the suitable loadcells

Choose the appropriate loadcells for your application, to ensure optimum precision when testing in the lower and upper ranges of the your universal tester.

03 Check grip and fixture requirements

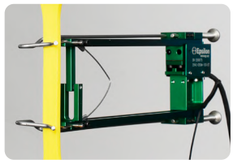
Identify the materials or products for testing and determine if they require tension or compression testing. Choose appropriate fixtures to securely hold the test specimen.





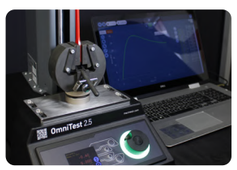
04 Choose the suitable travel stroke

Having defined your test requirements and selected the load range, it's time to consider how much space is required to deform your specimen.



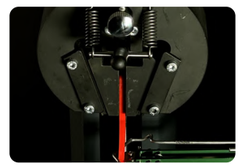
05 Consider the testing speed

Stiff and brittle specimens need slower test speeds compared to elastic materials. Consider the required test speed for all of your applications.



06 Consider the testing environment

Determine the specific data you need to collect and the experience level of your operators. Ensure the test software matches your needs.



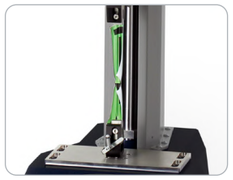
OmniTest

Universal testing machines

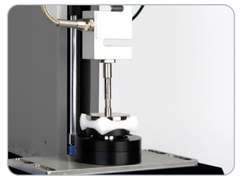
To suit your materials and product testing requirements the OmniTest range comes in two designs. Single-column testers are available in capacities of 0.5 kN to 7.5 kN and twin-column testers cover between 10 kN to 50 kN.

All OmniTests are supplied as standard with VectorPro testing software for installation on your computer, laptop or tablet. Alternatively, when ordering an OmniTest Touch, the tester is delivered with a pre-configured touchscreen console for an integrated solution.

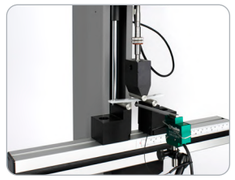
The versatility and ease-of-use of the OmniTest and VectorPro appeals to users, whatever their skill or experience. They all fit comfortably on your bench-top, making them ideal for use in QC and R&D laboratories.



Elongation at break



Compression

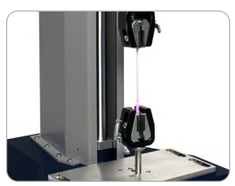


Bend / flexure

Stress

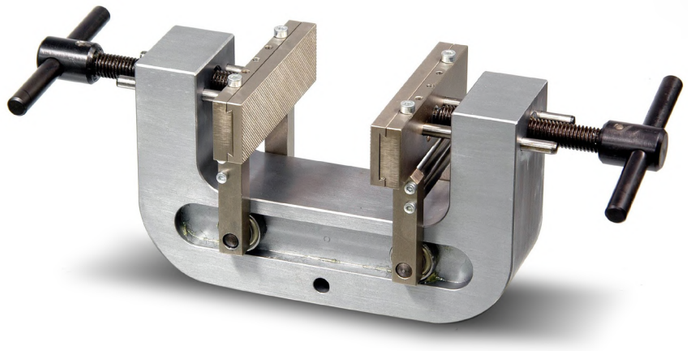
Top load

Push in



Tensile strength

Pull off



▲ OmniTest can be fitted with different fixtures and fittings to suit your testing requirements (see page 18 for more)

VectorPro® software

VectorPro testing software is at the heart of our OmniTest range of universal testers.

VectorPro excels with its user-friendly interface, streamlining the testing process for optimal convenience. Its intuitive design empowers users to effortlessly create, customize, and execute test procedures.

It is the ideal choice for quality assurance checks in the QC laboratory, for more in-depth analysis of material properties, in the R&D laboratory.

Powered by Vector

0.5/1/2.5 kN

Single-column UTM

Intuitive controls make the OmniTest easy to use even for novice operators. These 3 single-column models feature a precision ballscrew driving a crosshead upon which an ELS loadcell is mounted. Their small footprint makes them ideal for bench-top use where space is limited and forces are below 2.5 kN.

All models are suited for general purpose testing of specimens to determine their tension, compression, flexure, shear and fracture.

OmniTest

Part	Model	Capacity (kN / lbf)
820-000.5	0.5	0.5 kN / 110 lbf
820-001.0	1	1 kN / 220 lbf
820-002.5	2.5	2.5 kN / 550 lbf

OmniTest Touch

Part	Model	Capacity (kN / lbf)
830-000.5	0.5 Touch	0.5 kN / 110 lbf
830-001.0	1 Touch	1 kN / 220 lbf
830-002.5	2.5 Touch	2.5 kN / 550 lbf

OmniTest 0.5

For applications up to 500 N. An extended column height of 1616 mm (64"), makes it best suited to elongation testing of highly elastic materials such as rubber and film.

OmniTest 2.5

Suitable for tension and compression applications up to 2.5 kN, this is the ideal choice for a wide range of routine testing.

OmniTest 1 Touch

For tension and compression applications up to 1 kN. The long column height of 1416 mm (56"), makes the OmniTest 1 a preferred choice for the elongation testing of moderately elastic materials and products.

Touchscreen test software

Mecmesin

5/7.5 kN

Single-column UTM

Enhanced rigidity and strength with intuitive controls make the OmniTest an excellent choice for testing mid-capacity stiff specimens below 7.5 kN.

These 2 single-column models feature a precision ballscrew with linear slide mechanism driving a solid crosshead fitted with an ELS loadcell.

Both models are suited for general purpose testing of specimens to determine their tension, compression, flexure, shear and fracture.

OmniTest

Part	Model	Capacity (kN / lbf)
820-005	5	5 kN / 1100 lbf
820-007.5	7.5	7.5 kN / 1686 lbf

OmniTest Touch

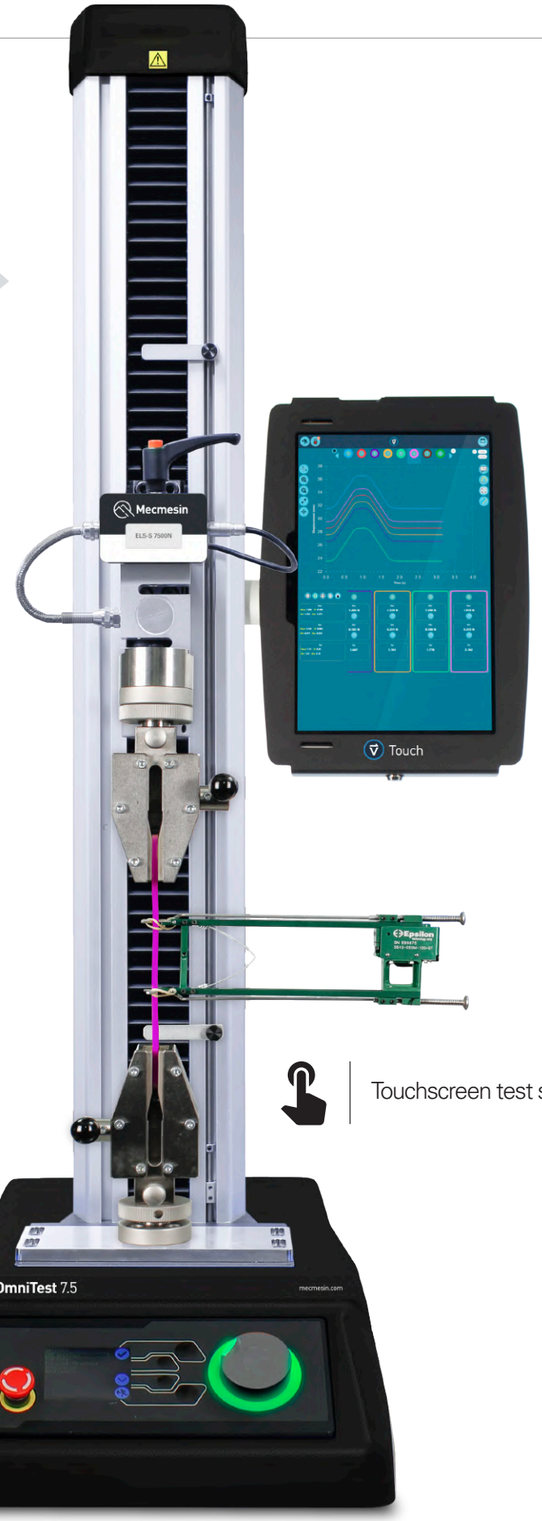
Part	Model	Capacity (kN / lbf)
830-005	5 Touch	5 kN / 1100 lbf
830-007.5	7.5 Touch	7.5 kN / 1686 lbf

OmniTest 5

For applications up to 5 kN. An extended column height and increased throat depth make it suited to testing mid-sized stiff specimens.

OmniTest 7.5 Touch

For applications up to 7.5 kN. An extended column height and increased throat depth make it suited to testing mid-sized stiff specimens.



Touchscreen test software

Mecmesin

10/25/50 kN

Twin-column testing machines

As a versatile and easy-to-use universal testing machine, the dual-column OmniTests provide excellent rigidity with ample space between the columns. Ideal for testing high-capacity and larger-sized specimens up to 50 kN.

These 3 models feature twin precision ballscrews to drive a solid crosshead fitted with an ELS loadcell.

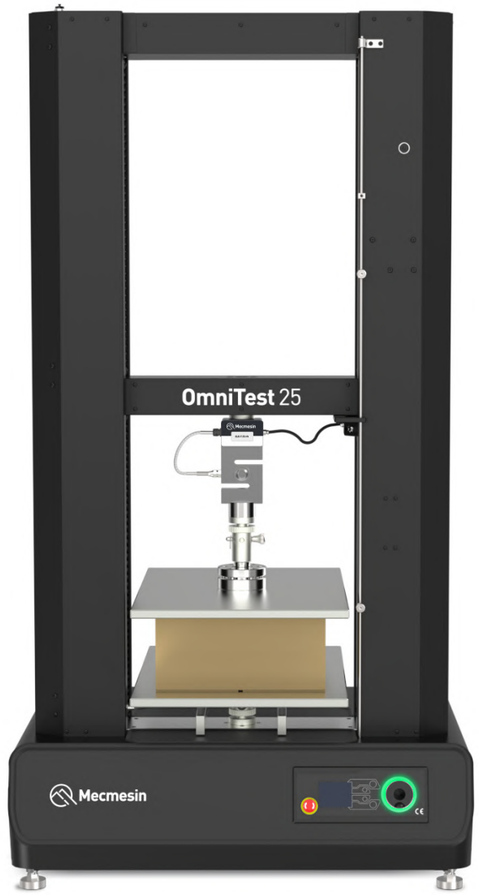
All models are suited for general testing of specimens to determine their tension, compression, flexure, shear and fracture.

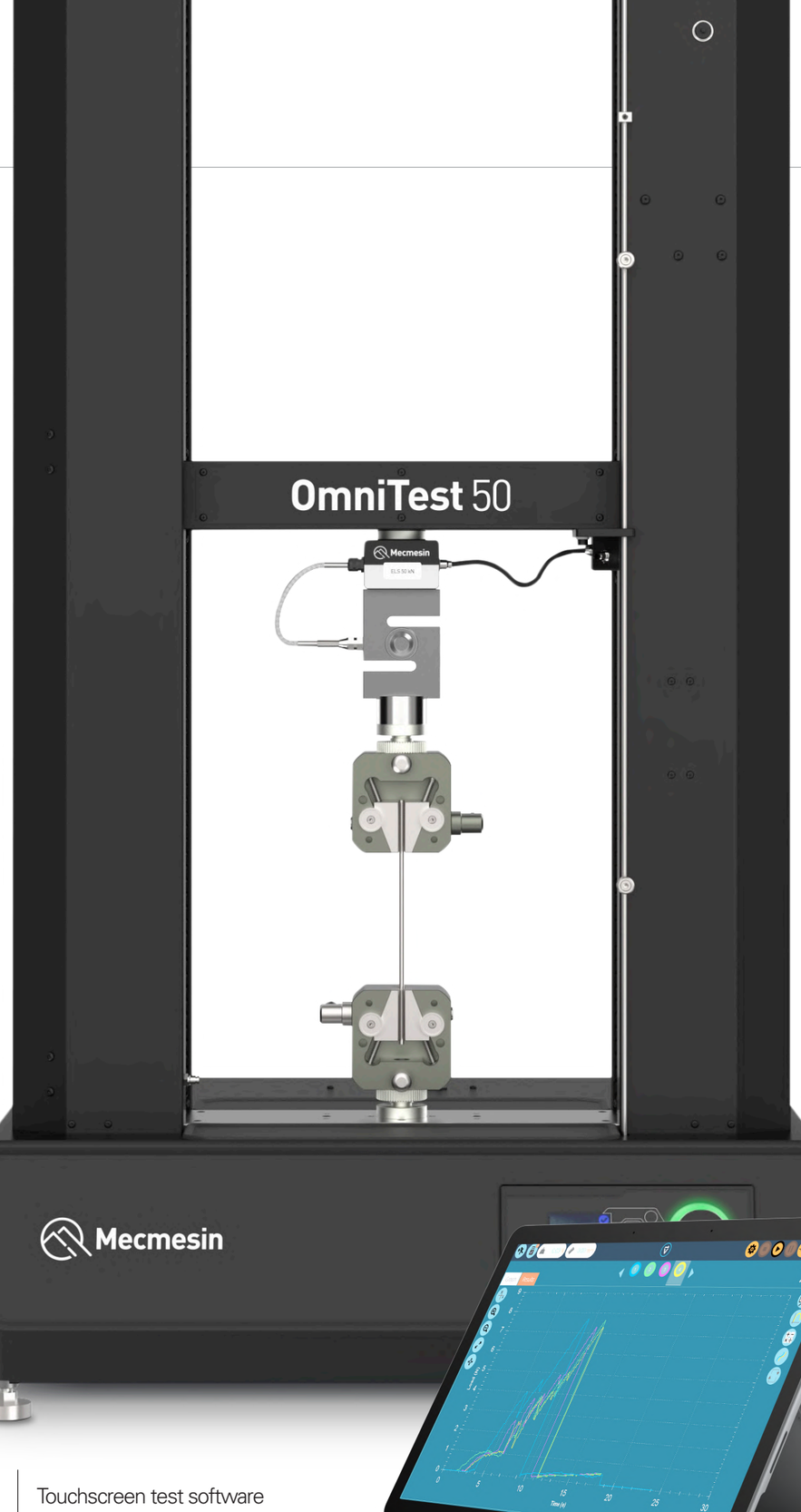
OmniTest

Part	Model	Capacity (kN / lbf)
820-110	10	10 kN / 2200 lbf
820-125	25	25 kN / 5500 lbf
820-150	50	50 kN / 11000 lbf

OmniTest Touch

Part	Model	Capacity (kN / lbf)
830-110	10 Touch	10 kN / 2200 lbf
830-125	25 Touch	25 kN / 5500 lbf
830-150	50 Touch	50 kN / 11000 lbf





Touchscreen test software

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Loadcells

Enhanced Load Sensors (**ELS**)

A range of ELS loadcells are provided to ensure that you can test with optimum precision across the full capacity of your OmniTest universal tester. By selecting several ELS loadcells you can accurately test even the lowest of forces on a test frame rated to a much higher load.

Each loadcell is automatically detected by the OmniTest without the need for user configuration. They all read from zero to their full nominal capacity and are accurate to ±0.5% of reading from 2 - 100% of range. Class 0.5 according to ISO7500-1

Sensors

Type	Models available	Capacity (kN / lbf)
ELS	8	2 N to 500 N / 0.4 lbf to 110 lbf
ELS-S	7	100 N to 5kN / 22 lbf to 1100 lbf
ELS-T	9	100 N to 25 kN / 22 lbf to 5500 lbf
ELS-P	2	20 kN to 50 kN / 4400 lbf to 11,000 lbf

Discover Loadcells online -
visit mecmesin.com/els-loadcells

ELS (2 N - 500 N)

The ELS comprises a robust dovetailed-mounting box with an internal loadcell complete with small fixing thread and occupies minimal space.

ELS-S (100 N - 5 kN)

The ELS-S comprises the same dovetailed-mounting box with an external S-beam loadcell situated beneath. It provides a more rigid and secure connection for large, heavy grips and fixtures.

ELS-T (100 N - 25 kN)

The ELS-T comprises a mounting box with an external S-beam loadcell situated beneath. It is designed for use with the OmniTest 7.5 and the twin-column test frames for higher loads and provides a rigid and secure connection for large, heavy grips and fixtures.

ELS-P (20 kN - 50 kN)

The ELS-P comprises a mounting box with an external Pancake loadcell beneath. It is designed for use with the OmniTest 50kN twin-column test frame when testing higher forces and provides greater immunity to extraneous "off-axis" loading.

Extensometers

Universal testing machines

The OmniiTest test frames use as standard an internal displacement encoder to measure crosshead movement. For measuring tensile strain more accurately an extensometer can be connected directly to the test specimen to enable the precise calculation of material properties.

Short-travel contact extensometers are available for stiff materials like metals, reinforced composites and rigid plastics.

Long-travel contact extensometers are best suited for highly extensible materials such as elastomers, semi-rigid plastics and films.

▲ Short-travel axial extensometer

▲ Long-travel axial extensometers

Guards

Universal testing machines

Health and safety is extremely important when using machinery with moving parts and universal testers are no exception.

All OmniTest testers can be supplied with a standard safety guard. This includes a rigid metal frame with integrated polycarbonate panels to allow the operator to view the test area from outside.

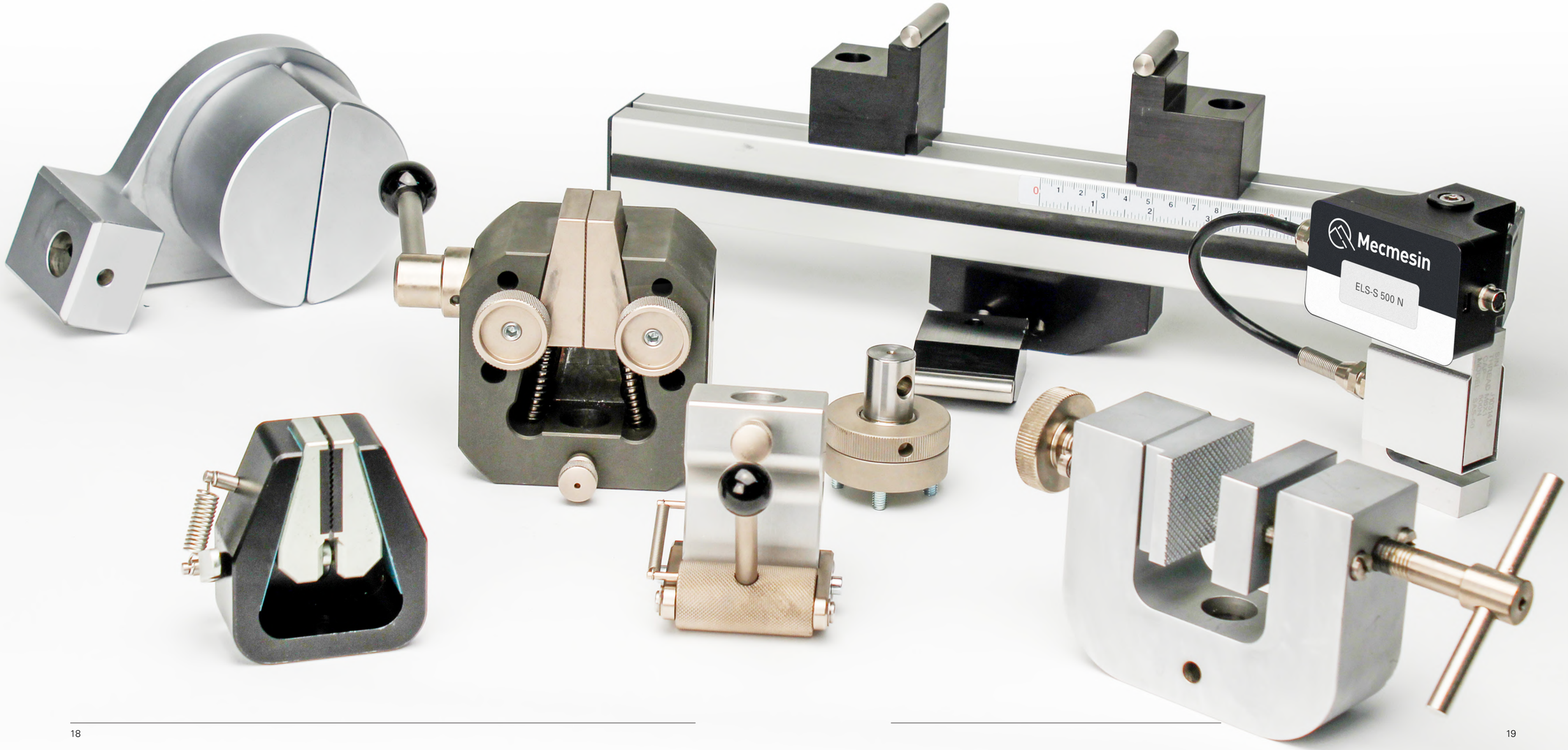
Hinged doors are fitted with switch-activated interlock mechanisms to prevent system operation when open.

Accessories

Grips and fixtures

An extensive range of tensile grips, compression jigs and test accessories are available for use with all models of the OmniTest. For ease-of-use grips can be connected to the test stand and loadcell via threaded or quick-change adaptors.

Discover your next Mecmesin grips and fixture solution online - visit mecmesin.com/accessories



VectorPro® software

Software core functionality

VectorPro® is dedicated software for use with the OmniTest range of universal testing machines. It enables and stores test routines, acquires data from load sensors and displacement encoders then performs calculations on the data before generating test results for export and reporting.

By connecting the OmniTest to your own PC (or the touchscreen controller of the OmniTest Touch) you can take advantage of running in a VectorPro® environment to create a more sophisticated test system. Your configuration is automatically detected and the software guides you through the whole process with only the relevant parameters presented.

Key Features

- Real-time graph plotting
- Immediate display of results
- Full data export
- Customised report generation
- Drag and drop interface
- Personalised workspace
- Secure user accounts

Powered by VectorPro®

Discover VectorPro software - visit mecmesin.com/vectorpro

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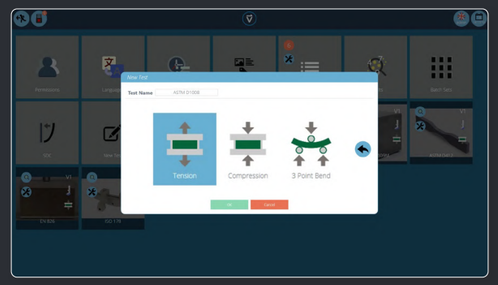
VectorPro® testing

Your step-by-step guide to getting started

01 | Login

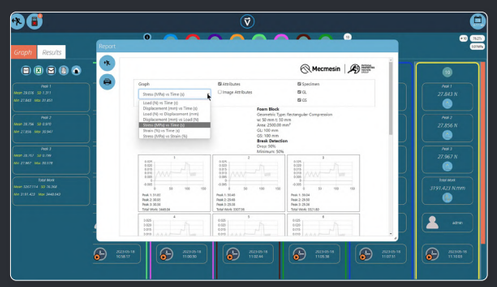
02 | Select



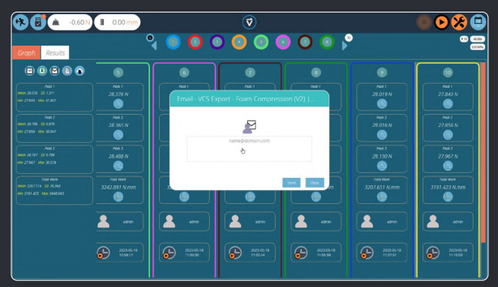
03 | Design

04 | Analyse

05 | Report



06 | Share



By connecting the OmniTest to your own PC (or the touchscreen controller of the OmniTest Touch) you can unlock the power of VectorPro® to create a trully exceptional testing system to meet all your materials and product testing requirements.

Touchscreen test software

Control

Take control of your testing requirements

The OmniTest Touch features a touchscreen controller which has been designed as an alternative to a desktop or laptop PC.

It provides full PC capability, operating with Microsoft Windows® Windows, specifically optimised for and pre-installed with Mecmesin's VectorPro™ software making it ready for immediate use with the OmniTest.

For complete flexibility it is attached directly to the side of the test stand column and can be tilted or rotated for optimum ease of viewing.

OmniTest manual settings and controls

Designed specifically for ease-of-use and precision when selecting test parameters. A simple and convenient control panel ensures easy selection of display parameters and a precise jog-control for quick crosshead positioning.

▲ Colour display of speed, displacement and load

▲ Four multifunction buttons for all settings and operation. Multi-language display.

▲ Lights indicate stand status

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Specification table

OmniTest Model		0.5	1	2.5	5	7.5	10	25	50
Load									
Rated capacity	kN	0.5	1	2.5	5	7.5	10	25	50
	kgf	50	100	250	500	750	1000	2500	5000
	lbf	110	220	550	1100	1650	2200	5500	11,000
Number of ballscrews		1	1	1	1	1	2	2	2
Max data acquisition rate	Hz	1000			1000				
Displacement									
Crosshead travel *		1186	986	507	650	650	950	950	1230
Resolution		0.001 mm (1 micron)			0.001 mm (1 micron)				
Accuracy (whichever greatest)		±0.13mm per 300mm of travel			±0.1% of indicated position or ± 0.01mm (10 microns) whichever is greater				
Speed									
Speed Range **	mm/min	0.01 - 1200			0.01 - 1200		0.01 - 1000		0.01 - 500
	in/min	0.0004 - 47.2			0.0004 - 47.2		0.0004 - 39.4		0.004 - 19.7
Resolution	mm/min	0.001			0.001				
Accuracy		Better than ±2% of indicated speed or ±20 microns/minute, whichever is greater			Better than ±2% of indicated speed or ±20 microns/minute, whichever is greater				
Dimensions									
Distance between columns	mm	N/A			N/A		420	420	425
Throat depth ***	mm	70.5	70.5	70.5	125	67	N/A	N/A	N/A
Height	mm	1616	1416	941	1089	1089	1576	1576	1938
Width	mm	290	290	290	330	330	851	851	986
Depth	mm	414	414	414	570	570	603	603	649
Vertical Daylight	mm	1267	1067	588	750	750	1050	1050	1330
Weight	kg	31	27.5	24	70	70	315	315	442
Electrical Supply									
Voltage		230V AC 50Hz or 110V AC 60Hz			230V AC 50Hz or 110V AC 60Hz				
Max Power		120W	200W	250W	150W		750W		750W
Enhanced Load Cells (ELS)									
Accuracy		When calibrated as part of a system to the requirements of EN ISO 7500-1, suitable for use with Class 0.5 systems down to 2% of range.			When calibrated as part of a system to the requirements of EN ISO 7500-1, suitable for use with Class 0.5 systems down to 2% of range.				
Resolution		1:50,000			1:50,000				
Environment Specification									
Operating Temperature		10°C- 40°C			10°C- 40°C				
Operating relative humidity		30-80% non-condensing			30-80% non-condensing				
Software And Communications									
Stand Connectivity		USB (for PC communications), Extensometer input, 2 additional ELS inputs, Digital i/o.			USB (for PC communications), Extensometer input, 2 additional ELS inputs, Digital i/o.				
PC requirements (recommended)		Intel Core i5, 8 GB RAM, SSD, USB 2.0 or 3.0 port, graphics- Full HD (1080p) To make use of Vector Cloud Solutions, an internet connection is required.			Intel Core i5, 8 GB RAM, SSD, USB 2.0 or 3.0 port, graphics- Full HD (1080p) To make use of Vector Cloud Solutions, an internet connection is required.				
PC requirements (minimum)		Intel Core i3, 4 GB RAM, HDD, graphics- 720p			Intel Core i3, 4 GB RAM, HDD, graphics- 720p				
Operating System		64 bit only recommended. Windows 10 or 11 Pro or better			64 bit only recommended. Windows 10 or 11 Pro or better				
Data output		Pdf, xlsx, csv, txt, email and image files can all be exported from VectorPro Software			Pdf, xlsx, csv, txt, email and image files can all be exported from VectorPro Software				

* Measured without fixtures
** Speed calibration as standard is between 1mm/min to full speed. Calibration below 1mm/min is available upon request.
*** Measured to centreline of loadcell

PPT Group

Configure your OmniTest online:
visit mecmesin.com/omnitest

Mecmesin reserves the right to alter equipment specifications without prior notice. E&OE.

+44 (0)1403 799979 | mecmesin.com | info@mecmesin.com

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