

**Mecmesin**  
testing to perfection

# MultiTest-i

Computer-controlled Test Frames  
Tension & Compression Test Solutions



# MultiTest-*i* Range

The Mecmesin MultiTest-*i* range of test frames sets the standard in computer-controlled testing, operating through the power of Emperor™; easy-to-use yet powerful force testing and analysis software.

## Key features

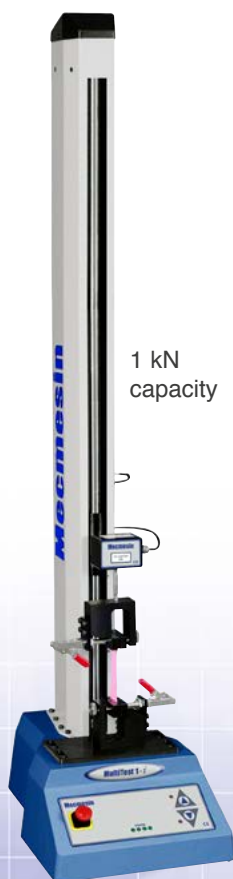
- Complete range from 2 N to 50,000 N
- High speed data collection - 1000 readings per second
- Auto-loadcell recognition/configuration
- Extremely quiet operation
- IP splashproof membrane control panel with emergency stop button
- Auxiliary 'event' input allows the software to recognise when switch contact is made or broken



Spring testing

## Range of capacities

The MultiTest-*i* is available in a range of capacities to meet your exact testing requirement, from the entry-level single-column test stands, through to advanced twin-column test frames, which have been specifically designed to test large or high load samples and products. Extended height frames are also available for testing high elasticity materials.

MultiTest 1-*i*MultiTest 2.5-*i*MultiTest 5-*i*

powerful  
flexible  
easy-to-use

## Flexibility

Intelligent loadcells mounted on the MultiTest-*i* test frame download test data synchronously at a rate of up to 1000 times a second, directly to a PC via the serial port. This ensures high accuracy of testing particularly where peak loads are being recorded.

Should your testing requirements change, a MultiTest-*i* can be easily and economically enhanced by using a different loadcell. All Mecmesin-*i* loadcells are quickly and easily interchangeable - just "plug-and-play".

Mecmesin also offer a wide range of standard grips and fixtures, to hold your specimen. Alternatively, a custom-built fixture can be designed for your specific application.



Intelligent loadcell

## Key features: Machine Control

- Run to load, displacement, time or break detection
- Cyclic testing
- Repeat sections of a program
- Intelligent command functions provide limitless test flexibility
- Operator prompt/delay/resume test facility
- Auto-return of crosshead at end of test

# intelligent command functions



10 kN, 25 kN or  
50 kN capacity

MultiTest 10-*i*  
MultiTest 25-*i*  
MultiTest 50-*i*

## Key features: Data Acquisition

- Extensive suite of calculations e.g. peak, average, minimum and area
- Real-time graphs with zoom and label function
- Comprehensive Pass/Fail analyses
- Variable arguments for programs and calculations
- Loadcell deflection compensation
- Automatic export to Excel and packages

If you have a tension or compression test, which demands any of these machine control or data acquisition features, one of the easy-to-use MultiTest-*i* test frames is the cost-effective solution.



Tensile testing



Crush testing

# The Power of Emperor™

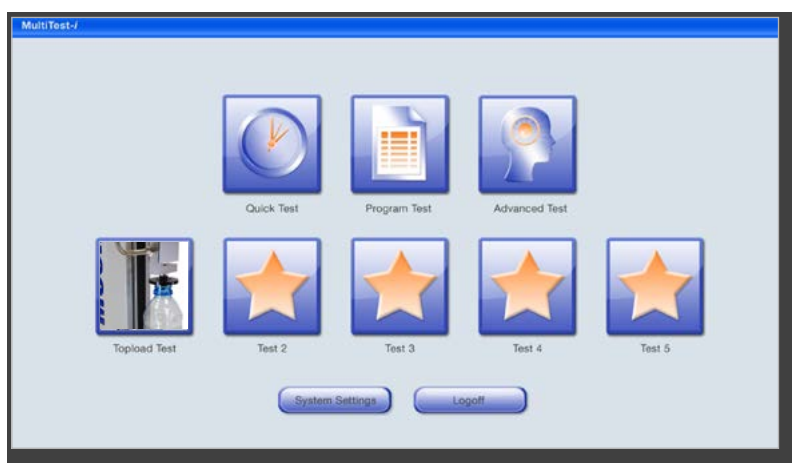
Emperor™ software has been specifically designed to work with the MultiTest-*i* range of test frames for ultimate test performance. It combines ease-of-use with powerful programming tools making it ideal for simple, routine analysis on the factory floor and sophisticated test routines in the laboratory.

## Tests

- Tension
- Flexure
- Tear
- Compression
- Stiffness
- Friction

## Applications

- Elastomers
- Medical devices
- Plastics
- Springs
- Textiles
- Adhesion
- Packaging
- Rubber
- Switches
- Fasteners



Console Mode

Emperor™ has two operating modes - **Console mode** allows tests to be created very simply by selecting options from radio-buttons and drop-down boxes. A number of pre-configured calculations are available and can be included by simply clicking with the mouse. Console mode is ideal for use on the factory floor by operators who need only minimal training to load and run programs directly from one of the five "Favourite" buttons.

For more complex tests, the power of Emperor's™ **Program Testing Mode** is available via a simple user interface.

Using the **Program Testing Mode**, the true power of Emperor™ software becomes evident. With Emperor™ software's comprehensive programming and calculation commands, it becomes a simple task to create customised test programs to evaluate the mechanical strength of components, products and materials.

## Creating a program

The mode has an intuitive interface, which makes the whole test process easy to manage:

- Setting-up test method
- Running the test
- Making test report
- Storing & exporting data



Test screen with operator prompt message

Toolbars simplify testing by helping operators navigate efficiently to key features.

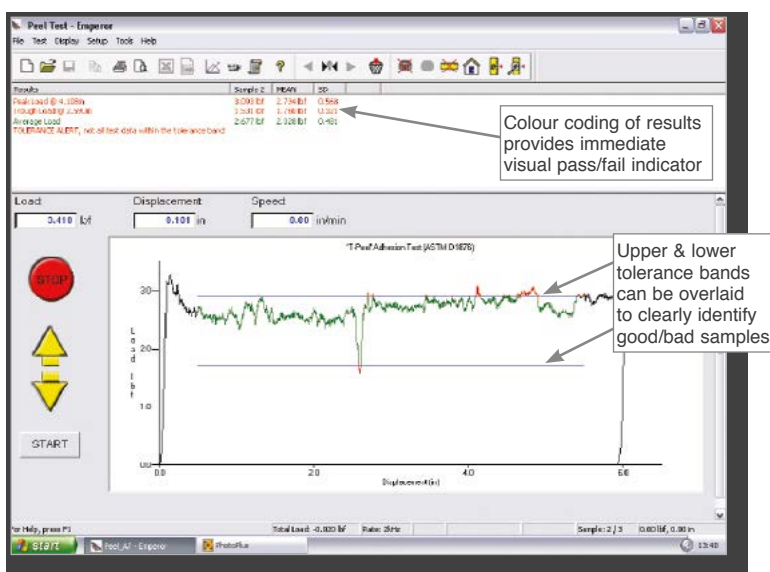


'Report' button

## Performing a test

Emperor™ is supplied with a suite of library test programs for many typical test procedures. Within each test procedure the critical parameters, which determine whether a sample passes or fails, can be automatically detected e.g. peak load, average load, load at a certain displacement.

Test procedures can be initiated by selecting an existing library program or by choosing your own particular program from the Test menu. The library programs can be easily customised and tailored to meet specific testing needs and then saved in the testing library and recalled as needed - very useful for multiple sampling testing.

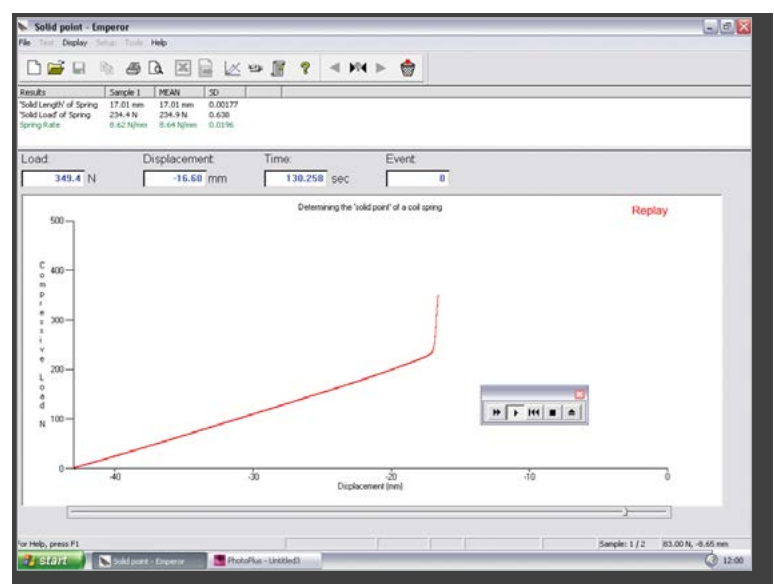


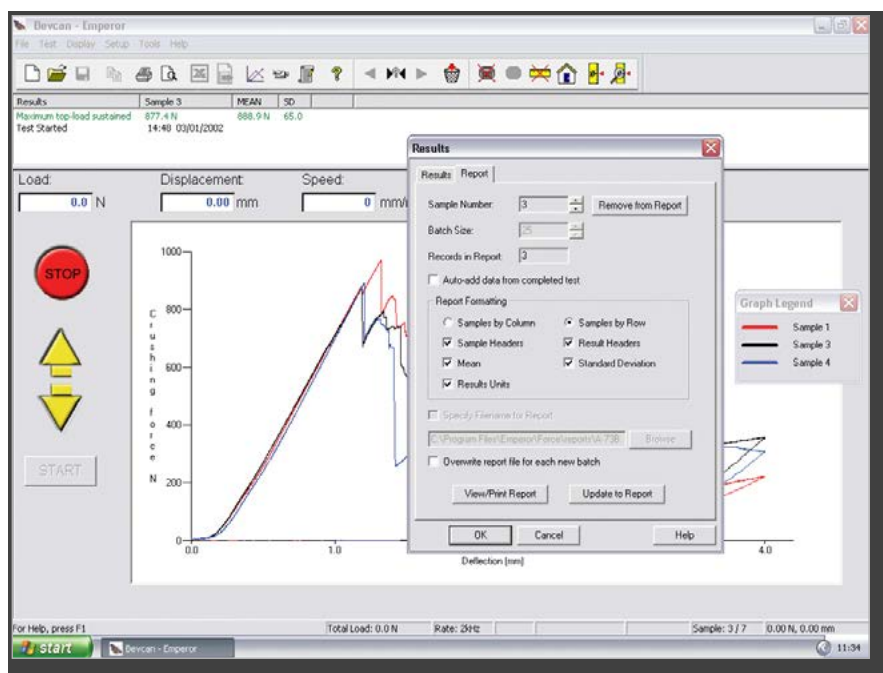
Emperor™ allows development of test procedures that are best-suited to individual testing needs. An operator can be prompted at any stage of the program to perform a specific action, so that step-by-step test routines become easy for semi-skilled users.

Another useful function is tolerance alerting. By setting up tolerance bands the option exists for detecting any data that do not fall within specification. In this case a “tolerance alert” warning will be flagged up on the results screen. There is also an additional facility for detecting when any particular result does not fall within predefined upper and lower limits.

A ‘video replay’ facility is included. A toolbar allows the accumulation of test data to be re-displayed in real time. ‘Fast-forward’ and ‘return-to-start’ buttons are provided.

A timeline slider can be dragged to a suitable point, thus allowing critical parts of a test to be replayed as many times as necessary.





Reporting dialog box

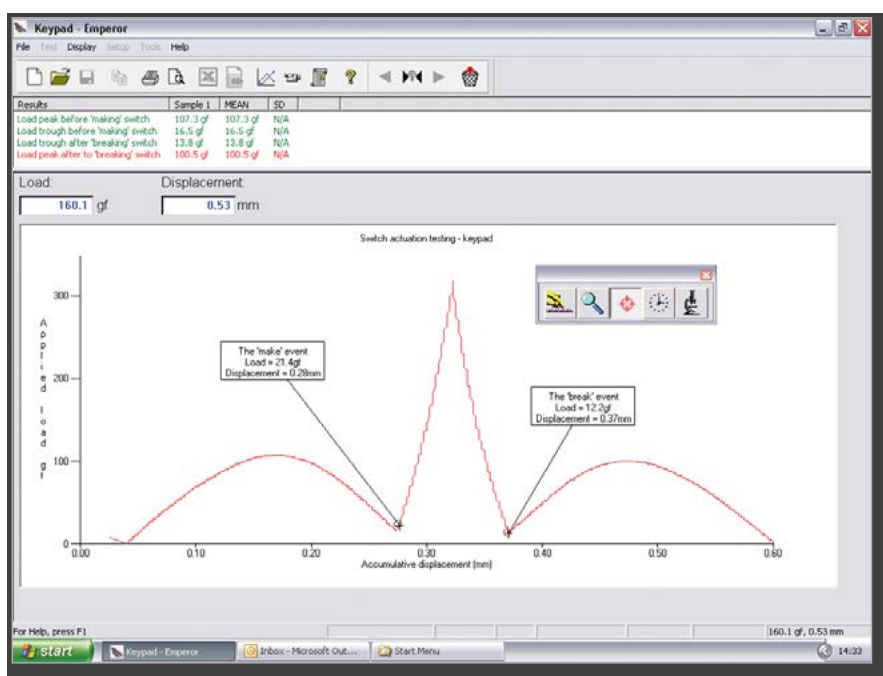
## Data analysis

Emperors™ software capabilities are exceptional:

- reporting, archiving and exporting of data
- fast accurate display & analysis of tension/compression data
- option to display test results graphically
- graphical interrogation enables calculations to be reviewed and changed

Results can be easily manipulated, stored and exported to other software packages such as Microsoft® Excel for trend analysis and reporting, if required.

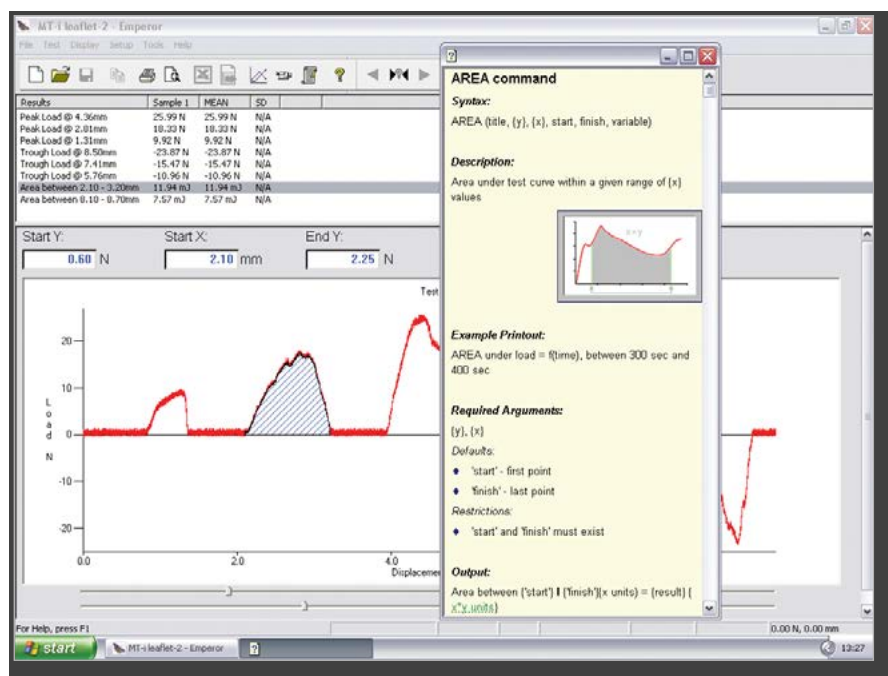
Emperor™ also benefits from a multi-level zooming facility, with timeline function allowing you to home-in on a portion of the curve which is of particular interest.



Cursor drop facility

Signals from external devices can also be incorporated into Emperors™ via an 'event' input facility.

A switch for example, can be connected to this port and the state ('open' or 'closed') of this switch can be monitored - ideal for quantifying the 'feel' of buttons, control levers and other switches.



Review and 'fine-tune' calculations screen (+ Help facility)

## Ease-of-use

Emperor™ software is easy and intuitive to use. However, if required, there is a comprehensive Help system built into all aspects of the software and this is never more than a few clicks away. Once the Help system is opened, information can be found using a comprehensive index, a table of contents, text search facility and glossary of terms.

The software sets new standards for flexibility and user-friendliness. For example, a comprehensive de-bugging facility enables messages, variables and graphs to be viewed on a real-time or step-by-step basis, so that the test process can be easily refined. Emperor™ also has an electronic notes function to enable test identification, user ID, batch, date and time information to be recorded.



## High-capacity load testing

The MultiTest-*i* range of test frames combined with the power of Emperor™, offers a comprehensive solution to product, component or materials testing needs.

The twin-column MultiTest 10-*i*, 25-*i* and 50-*i* enables significantly larger-sized or high-load samples and products to be tested, while still fulfilling the requirements for ease-of-use in a production or quality laboratory environment.

# Specifications

MultiTest- <i>i</i>		0.5	1	2.5	5	10	25	50	
<b>TEST FRAME</b>									
Rated capacity	N	500	1000	2500	5000	10000	25000	50000	
	kgf	50	100	250	500	1000	2500	5000	
	lbf	110	220	550	1100	2200	5500	11000	
Number of ballscrews		1	1	1	1	2	2	2	
Speed range	mm/min	1 - 1000	1 - 1000	1 - 1000*	1 - 500	1 - 1000	1 - 1000**	1 - 400***	
	in/min	(0.04 - 40)	(0.04 - 40)	(0.04 - 40)	(0.04 - 20)	(0.04 - 40)	(0.04 - 40)	(0.04 - 15)	
Crosshead speed accuracy		±0.2% of indicated speed							
Distance between columns		-	-	-	-	400 mm (15.7")	400 mm (15.7")	420 mm (16.5")	
Throat depth†		67 mm (2.6")	67 mm (2.6")	67 mm (2.6")	95 mm (3.7")	-	-	-	
Vertical daylight ††		1359 mm (53.5")	1159 mm (45.6")	590 mm (23.2")	710 mm (28.0")	1140 mm (44.9")	1140 mm (44.9")	1330 mm (52.4")	
Height		1710 mm (67.3")	1510 mm (59.4")	941 mm (37")	1082 mm (42.6")	1500 mm (59.1")	1500 mm (59.1")	1931 mm (76")	
Width		290 mm (11.4")	290 mm (11.4")	290 mm (11.4")	328 mm (12.9")	826 mm (32.5")	826 mm (32.5")	864 mm (34")	
Depth		414 mm (16.3")	414 mm (16.3")	414 mm (16.3")	526 mm (20.7")	542 mm (21.3")	542 mm (21.3")	572 mm (22.5")	
Weight		38 kg (84 lbs)	36 kg (79 lbs)	22 kg (49 lbs)	38 kg (84 lbs)	140 kg (309 lbs)	140 kg (309 lbs)	285 kg (628 lbs)	
Max. power requirement		120 watts	200 watts	250 watts	150 watts	450 watts	450 watts	450 watts	
Voltage		230 V AC 50 Hz or 110 V AC 60 Hz							
<b>LOAD MEASUREMENT</b>									
Available loadcell ranges	N	2 to 50000 (14 models)							
	kgf	0.2 to 5000 (14 models)							
	lbf	0.45 to 11000 (14 models)							
Loadcell measurement accuracy		±0.1% of full scale for loadcells from 2 N to 2.5 kN ±0.2% of full scale for loadcells from 5 kN to 50 kN							
Loadcell measurement resolution		1:6500							
<b>DISPLACEMENT</b>									
Crosshead travel††		1200 mm (47.3")	1000 mm (39.4")	500 mm (19.7")	590 mm (23.2")	950 mm (37.4")	950 mm (37.4")	1100 mm (43.3")	
Positional accuracy per 300 mm (11.81") of travel		±130 µm (±0.005")				±100 µm (±0.004")			
Displayed resolution		±0.01 mm (±0.0004")							
<b>SOFTWARE</b>									
Digital display of load/length/speed		Yes							
Communication with test stand		Via RS232 port or USB port (converter supplied)							
Computer requirements		100 Mb available HD, CD-ROM plus available RS232 port/USB port							
Operating system (OS)		Compatible OS installed as listed; Windows® 2000, XP, Vista, 7, 8, and 10							
Sampling rate		Selectable from 1 kHz, 500 Hz, 100 Hz, 50 Hz and 10 Hz							
Secondary input		Event Input (switch), Digital control I/O Ports							
Data output		LPT1 (Printer port), RS232 Port (direct or via USB/Network converter in ASCII format) ASCII file (Export to spreadsheet, SPC package etc...)							

\* 2.5 kN - above 2 kN, the recommended maximum speed is 750 mm/min (30 in/min)

\*\* 25 kN - above 10 kN, the recommended maximum speed is 500 mm/min (20 in/min)

\*\*\* 50 kN - above 25 kN, the recommended maximum speed is 250 mm/min (10 in/min)

† Measured on centre line of loadcell

†† Measured without loadcell or grips

**Note:** See Technical Datasheet 431-343 for dimension drawings

## Common Specifications

Operating temperature	10 - 35°C (50 - 95°F)
Humidity range	Normal industry and laboratory conditions
Compensation for system movement	Yes
Loadholding	Yes
Graphical representation	Yes
Output of test results to PC/Printer/Datalogger	Yes - includes auto-export to Microsoft™ Excel and via USB/Network Ports or Wireless Network RS232 via USB/Network converter in ASCII format
Communication with PLC/Digital Control Interface	Yes - via programmable digital ports 6 Inputs + 6 Outputs

## Options



Column gaiter  
Safety guard

*available upon request*

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



# Mecmesin Motorised Test Frames Overview

Load Rating	Potentiometer-controlled	Touch Screen Console	Computer-controlled
			
<b>0.5 kN</b>	Speed Range: 1 - 1000 mm/min Throat Depth: 67 mm Travel: 1200 mm	Speed Range: 1 - 1000 mm/min Throat Depth: 67 mm Travel: 1200 mm	Speed Range: 1 - 1000 mm/min Throat Depth: 67 mm Travel: 1200 mm
<b>1 kN</b>	Speed Range: 1 - 1000 mm/min Throat Depth: 67 mm Travel: 1000 mm	Speed Range: 1 - 1000 mm/min Throat Depth: 67 mm Travel: 1000 mm	Speed Range: 1 - 1000 mm/min Throat Depth: 67 mm Travel: 1000 mm
<b>2.5 kN</b>	Speed Range: 1 - 1000 mm/min* Throat Depth: 67 mm Travel: 500 mm	Speed Range: 1 - 1000 mm/min* Throat Depth: 67 mm Travel: 500 mm	Speed Range: 1 - 1000 mm/min* Throat Depth: 67 mm Travel: 500 mm
<b>5 kN</b>	—	Speed Range: 1 - 500 mm/min Throat Depth: 95 mm Travel: 590 mm	Speed Range: 1 - 500 mm/min Throat Depth: 95 mm Travel: 590 mm
<b>10 kN</b>	—	Speed Range: 1 - 1000 mm/min Width between Columns: 400 mm Travel: 950 mm	Speed Range: 1 - 1000 mm/min Width between Columns: 400 mm Travel: 950 mm
<b>25 kN</b>	—	Speed Range: 1 - 1000 mm/min** Width between Columns: 400 mm Travel: 950 mm	Speed Range: 1 - 1000 mm/min** Width between Columns: 400 mm Travel: 950 mm
<b>50 kN</b>	—	Speed Range: 1 - 400 mm/min*** Width between Columns: 420 mm Travel: 1100 mm	Speed Range: 1 - 400 mm/min*** Width between Columns: 420 mm Travel: 1100 mm

\* 2.5 kN - recommended maximum speed when testing above 2 kN is 750 mm/min (30 in/min)

\*\* 25 kN - recommended maximum speed when testing above 10 kN is 500 mm/min (20 in/min)

\*\*\* 50 kN - recommended maximum speed when testing above 25 kN is 250 mm/min (10 in/min)

E&OE

# Applications



Packaging testing

Mecmesin's range of testing equipment has been successfully used in a number of different industry sectors including:



adhesives & coatings



construction



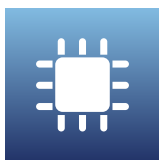
consumer packaging



cosmetics & personal care



education



electrical & electronic



fabric & textiles



food & agriculture



general engineering



home & office



medical & veterinary



product safety



sport & leisure



transit packaging



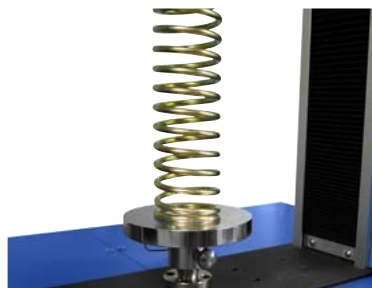
automotive & aerospace



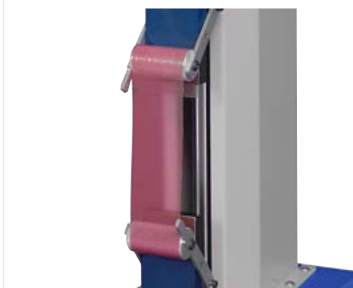
Textile testing



Materials testing



Spring testing



Extension testing

## Testimonials

“In the absence of an ‘industry standard’ measurement for the performance of our product, it was necessary to develop our own. It was only by modifying ‘off the shelf’ equipment that we were able to arrive at the perfect solution. Mecmesin offered total, cost-effective support throughout this process. I have, and will continue to recommend them to others.”

*S. Checkley*  
e-Medix - Precision Medical Engineering

“We purchased the MultiTest 10-i to test 80% of the springs, which we have in our railcars. The system is very easy-to-use and the program is convenient to test. Also the support of A&D Korea was very positive.”

*S C Yoon*  
Seoul Metropolitan Railway Transit Corporation

## Calibration, Service & Repair

Offering a prompt service, our calibration, service & repair centre is able to deal with all your force & torque testing equipment and gauges from Mecmesin and other manufacturers. All gauges and loadcells are supplied with calibration certificates traceable to UK National Standards to meet ISO requirements.



In-house calibration

## Support Services

- Comprehensive international network of distributors
- 24 month warranty
- Website support
- Calibration, service & repair centre
- On-site installation and training
- Grips & accessories
- Application support



On-site calibration