Materials Testing and Properties

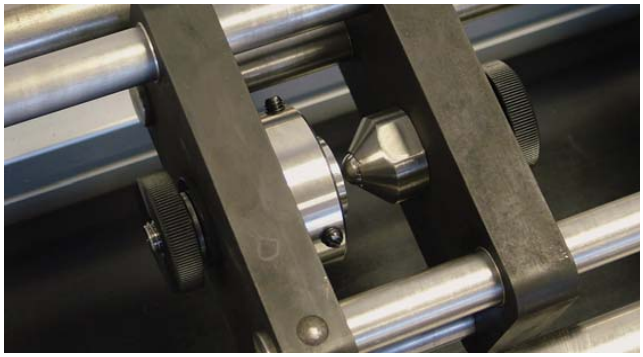
Torsion, Fatigue, Creep, Tensile, Hardness and Impact Testing

Understanding the characteristics and performance of materials, particularly how they behave in different situations, is at the very heart of engineering. TecQuipment offers a comprehensive range of high quality material testing machines that are easy to use, safe and give students direct hands-on exposure to the principles involved.

Each machine can be used as a stand-alone item or, when purchased together, form a suite of machines that students can use to understand the effects of different forces on a wide range of specimens.

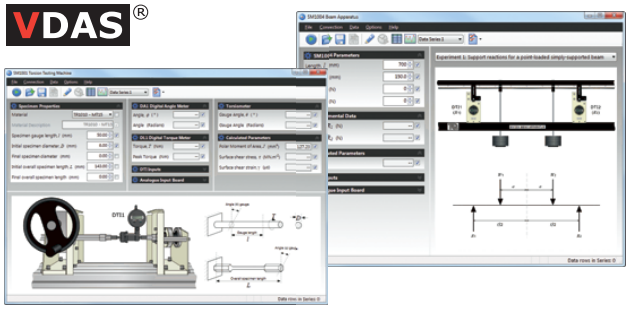
More advanced students can go on to use the machines to note the effects of the many forms of heat treatment and coatings that are used in many different engineering environments when applied to their own samples.

With TecQuipment's usual high standards of design and a build quality which make us the market leader, you can be sure that your investment will give many years of service.



A wide range of test specimens is held in stock and ready for immediate dispatch.

VDAS®



All the products shown here are compatible with TecQuipment's unique Versatile Data Acquisition System (VDAS®). This allows our equipment to be easily connected to a computer to provide accurate real-time data capture. Raw data can be transformed instantly into sophisticated graphs and tables using the VDAS® software and also easily exported to other programs.

Just some of the many products available in our Materials Testing range are shown here.

For more information please visit our website:
www.tecquipment.com

5-YEAR WARRANTY TecQuipment

TecQuipment

Torsion Testing Machine – 30 Nm (SM1001) VDAS®

Bench-mounted machine to allow students to do torsion tests on different materials

- Determination of modulus of rigidity (shear modulus) and yield strength (when used with the optional torsiometer)
- Determination of upper and lower yield stresses for normalised steel specimens
- Reversed torsion tests to demonstrate the Bauschinger effect and the effects of residual body and textural stresses on torsional strength
- Comparison of the different elastic and plastic properties of materials (optional specimens required)

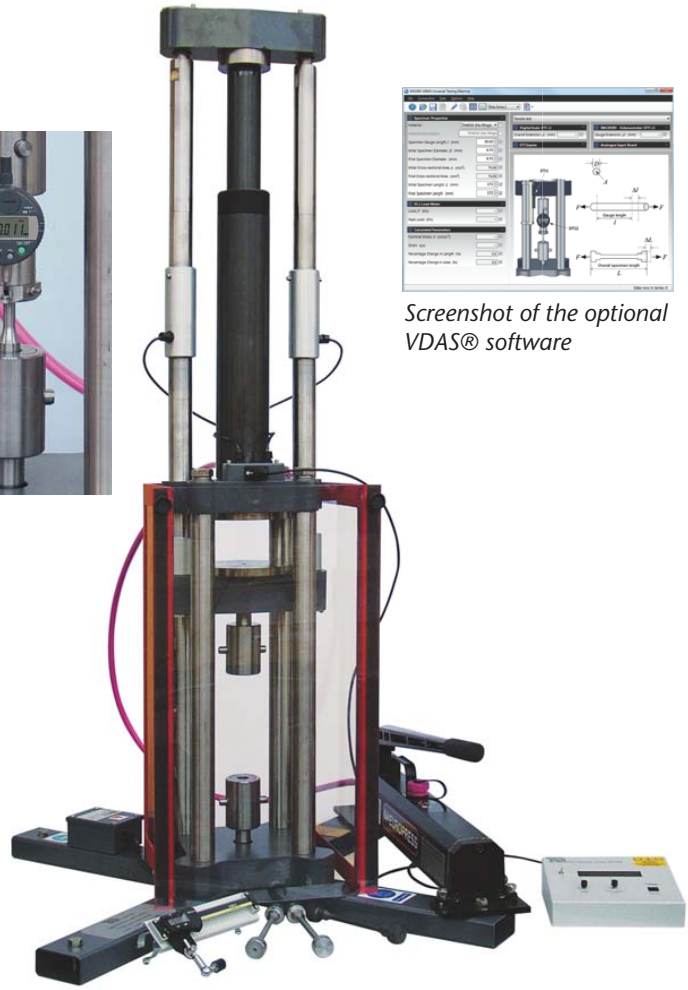
Universal Testing Machine (SM1000)

VDAS®

A compact machine for compressive and tensile tests on different materials and structures

- Tensile tests on different materials
- Compression tests on different materials

Screenshot of the optional VDAS® software



Brinell Indenter (SM1000e)

Fits in the Universal Testing Machine (SM1000) for Brinell hardness tests

- Brinell hardness tests of different basic engineering materials

Coil Spring (SM1000f)

Fits in the Universal Testing Machine (SM1000) for compression spring tests on a coiled spring

- Compression tests on a coiled spring

Beam and Leaf Spring (SM1000g)

Fits in the Universal Testing Machine (SM1000) for tests on bending beams and a leaf spring

- Beam bending tests on beams of different shape, material and length
- Spring rate tests on a leaf spring

Bench-Top Tensile Testing Machine (SM1002) VDAS®

A laboratory-scale, hand-driven bench-top tensile testing machine, 20 kN capacity

- Tensile tests up to 20 kN on specimens made of different metals, to find material characteristics such as upper and lower yield strengths, tensile strength and overall extension.
- Tests of Young's modulus (E) for the specimen material (needs SM1002a and TL specimens).

Brinell Hardness Test Set (SM1002c)

Fits in the Compression Cage (SM1002b) of the Bench-Top Tensile Testing Machine (SM1002) for Brinell hardness tests

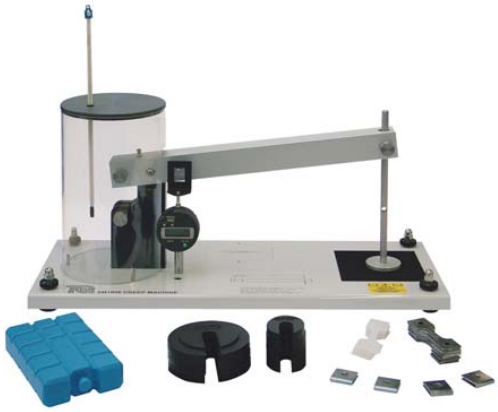
- Brinell hardness tests of different basic engineering materials

Screenshot of the optional VDAS® software

Creep Machine (SM1006) VDAS®

Bench-mounted machine which demonstrates the phenomenon of creep under different conditions and in different materials

- The normal breaking load of a specimen over a fixed time
- Relationship between breaking load and time for lead specimens
- Time extension curves to show the three phases of creep (primary, secondary and tertiary)
- The effect of temperature on the creep rate of specimens
- Creep recovery



Rotating Fatigue Machine – 30 Nm (SM1090) VDAS®

Demonstrates the failure of materials when subjected to an alternating stress

- Low and high cycle fatigue
- How to create and use Wohler (S-N) curves for various materials
- Comparison of fatigue properties of various materials

Energy Absorbed at Fracture (TE15)

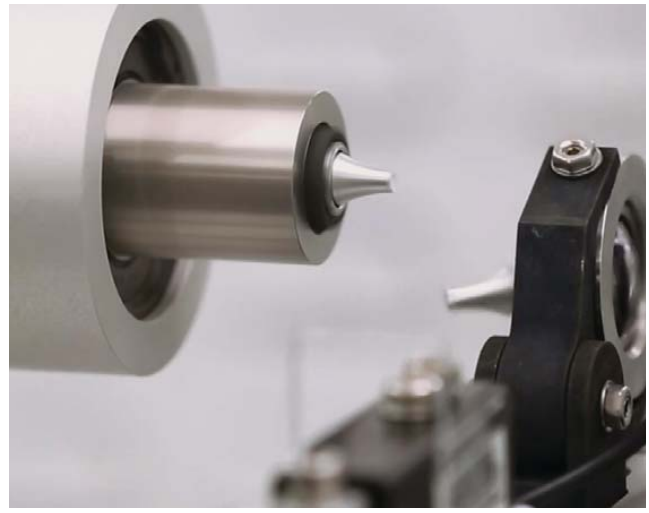
Compact, bench-mounting apparatus for introducing students to impact testing

- Introduction to the principles of common impact testing methods, such as Izod and Charpy tests
- Investigations into the resistance of materials to crack propagation
- Influence of temperature on the fracture properties of materials

Test Specimens

Tensile Test Specimens (TH)

Tensile test specimens of different grade steel for use with TecQuipment's Universal Testing Machine (SM100 or SM1000).



Tensile Test Specimens (TL and TS)

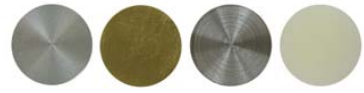
Long (TL) and short (TS) tensile test specimens of different metals for use with TecQuipment's Tensile Testing Machine (SM1002). Will also fit Hounsfield or Monsanto tensometer.

Torsion Test Specimens (TR)

Torsion test specimens of different metals for use with TecQuipment's Torsion Testing Machine (SM1 or SM1001).

Hardness Test Specimens (HTP)

Hardness test specimens of different materials for use with the Materials Laboratory with Data Capture (MF40) and Bench-Top Tensile Testing Machine (SM1002).



Tensile Test Specimens (ML)

Tensile test specimens of different materials for use with the Materials Laboratory with Data Capture (MF40).

Rotating Fatigue Test Specimens (RF)

Fatigue test specimens of different metals for use with TecQuipment's Rotating Fatigue Machine (SM1090).

Creep Test Specimens (CP)

Creep test specimens of different materials for use with TecQuipment's Creep Machine (SM106 or SM1006).

- TecQuipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- **T** +44 115 972 2611 • **F** +44 115 973 1520 • **E** info@tecquipment.com • **W** www.tecquipment.com
- An ISO 9001 certified company

TecQuipment