Civil Engineering
Testing Solutions
For Materials, Structures And Components
MTS provides solutions for your civil engineering testing challenges with quality, innovative testing products and on-going technical support. Our application specialists develop test system configurations that provide results you can use with confidence to evaluate your structural or material design problem.

In cooperation with leading researchers, we design our testing products to be rugged and reliable for long life in the laboratory environment. We integrate these products into systems that provide many years of accurate test information.

Materials Testing Capabilities

- Uniaxial and Triaxial Rock Mechanics
- Cement-Based Materials
- Foundation Design Studies
- Compression, Tension, Fatigue and Fracture
- Construction Materials
Structural Testing Capabilities

- Large Scale Static and Dynamic Structural Simulation
- Seismic Simulation using the Pseudodynamic Method
- Component Fatigue and Quality Verification

Services That Provide Complete Testing Solutions

- We strive to fully understand your testing program before we make our final proposal. This approach protects your equipment investment by ensuring that your system will give you the information you need.
- Your total testing success is our objective, so the MTS customer team includes application specialists who understand test methods, experienced project managers who process your order, and installation engineers who commission your system.
- Formal and informal training classes, sometimes conducted by leading researchers, help you start getting test results.
- Our world-wide service organization provides routine maintenance. In addition we offer maintenance contracts, tailored to your specific technical and budgeting needs.

Laboratory Information Management

- Our networking tools provide a familiar environment which smoothly links computers and analysis components so you can spend more time studying test results.
- Incorporate experimental results quickly into your design model by down-loading laboratory data from materials or structural tests to your analysis package.
Equipment That's Flexible, Modular, And Easily Integrated

MTS structural testing products are modular and flexible because you may not know what kind of component or structure you'll be testing next. You can configure a fully integrated test system quickly using MTS control, software and hardware elements.

You can perform long-term durability tests of structural components using a simple configuration of one or more fatigue-rated actuators. Or, you can test large scale structures using higher force, long stroke actuators in complex multi-channel configurations. Special tests might require a combination of dynamic and static actuators using sophisticated multi-channel, multi-station control technology.

If you're building a new facility, MTS can provide a complete testing solution for your structural laboratory, including planning assistance, strong floor and strong wall designs, and reaction frame components. We will integrate all the elements of your structural testing laboratory to help ensure your total testing success.

• Choose from a wide range of available standard force capacities and displacements.
• Portable actuators, backlash-free swivels and hydraulic controls are quickly re-configured for new tests.
• Economically priced quasi-static actuators are tailored for structural testing.
• A variety of fatigue-rated actuators can be customized for high performance durability testing.

Full-Scale Five-Story Building Test At The University Of California, San Diego

This test contributed to the verification and development of new recommended seismic design standards for reinforced masonry structures.

• Researchers test a full scale masonry wall building to validate an earthquake-resistant design philosophy.
• Simulated seismic loads are calculated using ground motion records and a pseudodynamic test technique.
• The test is conducted from the undamaged state to failure.

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Meaningful Information For Accurate Material Evaluation And Design

For over 30 years, MTS geomechanical testing systems have helped leading researchers investigate underground construction, borehole stability, and geo-science problems.

Test accessories and software help rock mechanics researchers make permeability and non-destructive ultrasonic measurements more accurately than ever before.

We've made it easy to input measured material properties information into geomechanical modeling packages such as those developed by Itasca Consulting Group, Inc.

If you’re a building materials researcher, accurate concrete post failure strength and fracture toughness information will help you develop better products and components.

Rock And Concrete Test Packages

Post Failure

Fracture Toughness

• MTS software provides brittle specimen failure control using the feedback parameter of your choice. It prints a record of specimen information, plots, and tabulation of results in standard format.

• Direct contact extensometers reduce the effect of unpredictable specimen-endcap friction on test results.

• The chevron notch fracture toughness package is an integrated subsystem that includes bend fixture, load cell, deformation transducers, specimen alignment devices, signal conditioning, and test control software.

• Precision measurements, and alignment devices which orient the specimen chevron notch and transducers in the fixture, help provide accurate test results.

Triaxial Testing Systems

Load frames, triaxial cells, pressure and temperature controllers, instrumentation and software are integrated into testing systems.

• Modular design allows you to add capability to meet your expanding testing requirements.

• Upgrade your uniaxial base system with new testing packages or triaxial capability when you need it.

• Easily control complex triaxial tests over a range of temperatures, pressures and axial loads.

Powerful Control Modes

• Calculated variable control allows you to define a new feedback control signal consisting of a mathematical combination of signals from up to eight individual measurement transducers.

• Calculations and servo loop closure are performed in real time by programmable digital signal processors, providing unprecedented speed of calculation and control accuracy.

• The calculated variable control feature is fully integrated with the control system for easy feedback signal definition and full limit and interlock capability.
Systems for Seismic Earthquake Simulation

MTS is the world leader in providing seismic earthquake simulation testing capabilities. Our shaking table systems are used for a variety of civil engineering applications including fundamental research for seismic isolation of buildings and bridges to seismic qualification of components and piping systems.

MTS can provide various levels of solutions ranging from simple installations to full-scale turn-key systems. Whether your needs are for individual components or for complete engineered capabilities including foundation and building designs, our seismic team can discuss and plan your future laboratory requirements.

MTS seismic systems are used worldwide and include many different types of earthquake table configurations, with specimen capacities ranging from small test articles to full scale buildings. Typical table configurations include one, two, three, and six degrees of freedom capabilities.

For unique applications such as offshore earthquake simulation, MTS engineered a six degree of freedom under water table system.

For testing single-span or multi-span bridge structures simulating waves propagating from a seismic event, MTS developed a two degree of freedom multiple table testing system.
For testing full scale wood wall structures simulating gravity and inertial loading under the influence of seismic events, MTS designed a unique uni-axial table solution.

For real time hybrid simulation testing simultaneously incorporating seismic table testing, structural actuator load application and numerical modeling simulation, MTS has developed an advanced capability for large scale structural and building simulation.

If you are considering seismic simulation testing, MTS can provide a custom solution to satisfy your requirements. Our customer list includes academic and industrial researchers, construction companies and government laboratories all interested in improving the design and safety of buildings, structures and components.