

Rock Testing Solutions

be certain.

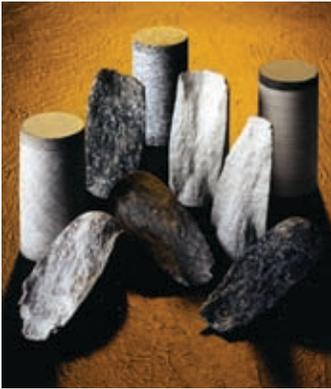
MTS HAS INSTALLED MORE HIGH-FORCE SERVOHYDRAULIC TEST SYSTEMS

THAN ANY OTHER MANUFACTURER, AND MTS SOLUTIONS ARE CURRENTLY
HARD AT WORK IN THE MAJORITY OF THE WORLD'S GEOLOGICAL MATERIAL
EVALUATION APPLICATIONS. TEST PROFESSIONALS INSIST ON MTS TO HELP
THEM ACHIEVE THE DEEPEST LEVELS OF UNDERSTANDING AND CERTAINTY,
TEST AFTER TEST AND YEAR AFTER YEAR. WE CAN DO THE SAME FOR YOU.



Your single resource for rock mechanics evaluation

Unmatched expertise. Exceptional technology. Superior service. This unique combination of capabilities has made MTS the preferred rock testing solutions provider for commercial, industrial and research-focused applications around the world.



Unmatched expertise

Since 1969, MTS engineers have been collaborating with the world's foremost rock mechanics researchers, listening to their needs and driving continuous improvement in our products and services. By working with us, you'll be applying 30 years of industry experience toward your rock testing requirements. Whether your needs are commonplace or unique, we know exactly how to help you efficiently address them.

Exceptional technology

The comprehensive MTS product offering allows our customers to meet all of their rock testing objectives from a single, reliable resource. Every MTS solution provides the precise, repeatable and durable performance you need to maximize your testing uptime. You also get the highest levels of data integrity so you can meet your testing objectives with confidence.

Superior service

No matter where your rock testing occurs, MTS will deliver the ongoing support you need, when you need it. We surround our industry-leading rock testing solutions with a vast service network, featuring a global reach and responsive representation. Combined with smart maintenance programs, MTS will help keep your system up and running, while keeping your cost of ownership down over the long term.

Solutions for every rock testing requirement

MTS has extensive expertise in supporting today's most critical geological material evaluation applications. We've worked alongside test professionals in a variety of industries for decades, with specific expertise to assist rock mechanics researchers in:

- » Fossil fuels exploration and production
- » Geothermal energy development
- » Mining and construction
- » Rock mechanics research
- » Carbon sequestration

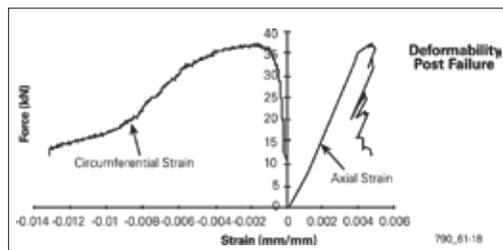
Broad product selection

The MTS offering includes the full range of high-performance hardware, software, and accessories required to meet your rock testing requirements. The products are designed to function as integrated mechanical systems, and can be configured to test all types of rock.

All MTS rock testing solutions also employ the latest technology for managing the high forces, pressures, temperatures and complexity typical to today's geological materials evaluation. If you have unique requirements, nobody customizes like MTS. Tell us your needs and we will work with you to meet them.

The MTS rock testing solutions offering comprises:

- » Versatile servohydraulic load frames
- » Extremely flexible software with application-specific templates
- » Configurable digital servocontrollers
- » Precision triaxial cells, transducers, grips, fixtures and sensors
- » Reliable hydraulic power units (HPUs)
- » Unrivaled global service and support





MTS can help you fully characterize rock specimens in the high-temperature, high-pressure extremes common to “downhole” environments.

The ideal solutions for your rock testing needs

Whether you're exploring hard-to-reach energy sources, excavating a construction site or launching a new research initiative, MTS offers the tools and expertise to help you manage your related rock testing with confidence.

ADVANCED ACOUSTIC ANALYSIS CAPABILITIES

Integrating acoustic emission and ultrasonic analysis techniques into your testing program can yield critical insight into specimen properties and failure mechanisms. These techniques can be applied to help characterize the properties of any material, such as rock, that deforms through brittle fracture. Only MTS provides a complete, fully integrated offering to help you take full advantage of these evolving technologies in the field of rock mechanics. Our systems enable superior measurements, including:

- » Axial Ultrasonic Velocity (P, S1, S2)
- » Biaxial Ultrasonic Velocity
- » Acoustic Emissions

Fossil fuels exploration and production

Engineers working for energy companies constantly seek more efficient ways to profile the vast variety of rock, sand and material encountered when exploring new sources of oil and natural gas, or when expanding production from an existing field. In an era where capital is limited but opportunities are abundant, test labs must develop new techniques and technologies to characterize geological materials in a more timely and cost-efficient manner.

By remaining on the cutting edge of rock testing technology, MTS allows test professionals working for energy companies to fulfill their exploration and production initiatives as efficiently and profitably as possible. Our customers glean valuable insight faster into the types of structures, drill bits and techniques required to efficiently extract oil and natural gas from often difficult-to-produce sources.

Mining and construction

Industrial researchers face the seemingly incompatible tasks of minimizing risk on the job site while simultaneously improving the speed of their mineral extraction techniques. To optimize operational safety and efficiency, test professionals must deliver reliable recommendations based on regular sampling and sound analysis, which must be completed in less time and for less money.

MTS fully understands these challenges and how to address them. We have a proven history of helping mining and civil structural professionals safely and efficiently characterize the geological materials surrounding their excavation sites.

Rock mechanics research

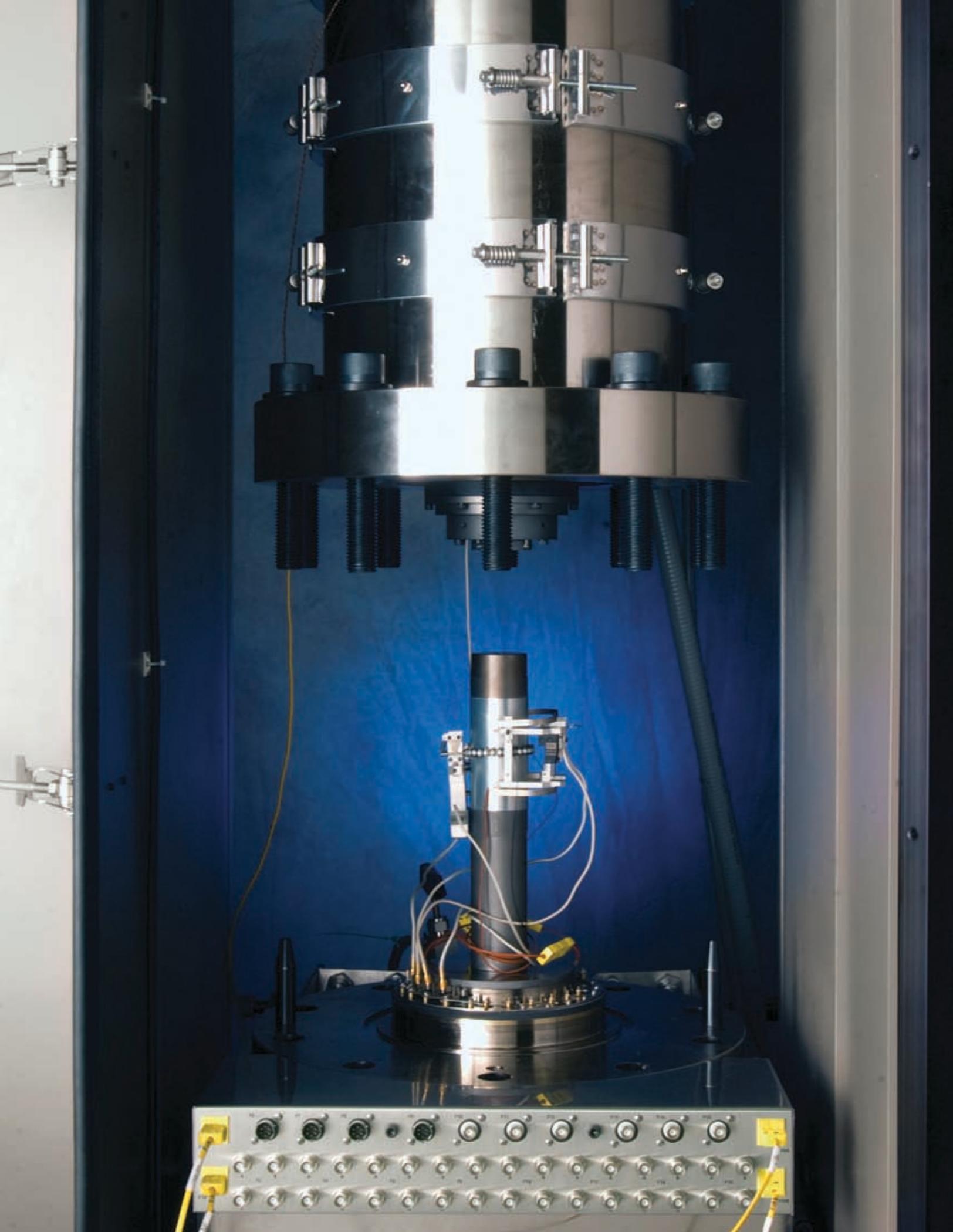
With an infusion of government and corporate capital funneling into research involving geological materials, significant opportunity exists for university and government entities to play a meaningful role in advancing the rock mechanics body of knowledge. MTS specializes in helping independent-minded scientists pursue their research initiatives with confidence. That includes extensive expertise in applying the evolving science of acoustic emission and ultrasonic velocity analysis (see sidebar).

Whether your research focuses on geothermal energy development, carbon sequestration, nuclear waste storage, hydroelectric dams or other applications requiring careful geological material characterization, MTS offers the tools and expertise to help you complete it with precision and efficiency.

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MTS rock testing solutions help engineers glean the data required to ensure mine safety and productivity.



Everything you need for high-performance geomaterials testing

MTS is a complete rock testing solutions provider. We offer the technology, expertise and support you need to perform highly accurate and efficient geomaterials testing anywhere in the world.

DURABLE ACCESSORIES TO OPTIMIZE YOUR TESTING

MTS rock testing solutions include proven, top-quality accessories designed to meet rigorous industry standards, all optimized to improve the quality and efficiency of your rock testing.

Triaxial Accessories. MTS triaxial rock testing assemblies are integrated into rock testing systems to achieve high-fidelity simulation of in-situ conditions such as high confining pressures, high or low temperatures, high-pressure pore fluids, and various specimen stress states, including extension.

Uniaxial Accessories. MTS uniaxial rock testing packages are designed to help you meet a full spectrum of industry-standard testing requirements, including compression, direct tension, indirect tension and fracture toughness.

Rock Extensometers. Specifically created for measuring rock strains at high pressures and temperatures, the Model 632.9X family of MTS extensometers provides outstanding accuracy, control and durability for uncovering the deformative characteristics of geological materials.

MTS Direct Shear Apparatus. The direct shear apparatus applies both normal and shear strain simultaneously, yielding a clear understanding of the in-situ shear properties of geological materials.

Load frames

MTS offers load frames for the full spectrum of rock testing requirements. That includes the high-capacity MTS Model 815 test system, featuring a high-stiffness design that is ideal for fossil fuels exploration and production. The lower-capacity MTS Model 816 test system offers a more flexible design for performing a broad range of tests common to mining, construction and research applications. The MTS Landmark™ test system provides utmost flexibility when high force and high stiffness are not required.

Software

MTS Geomechanics Application Software provides a complete set of test templates that follow standard test sequences and analyses described by ASTM and ISRM. These templates guide you through testing, data acquisition and report generation using familiar macros from Microsoft® Office. Or, you can easily create custom templates of your own. This software is based on MultiPurpose TestWare® (MPT™) software, which offers a highly flexible, “drag-and-drop” environment for building standard and nonstandard tests.

Digital servocontrollers

Versatile FlexTest® controllers provide the flexibility you need to address a full spectrum of testing needs and adapt readily to evolving standards. Scalable and easy-to-use, FlexTest controllers provide the high-speed closed-loop control, data acquisition, function generation and transducer conditioning required to conduct reliable single and multi-channel material testing across multiple stations. FlexTest digital controller software can be integrated with office PC networks and support the full array of MTS test application software.



MTS Model 815 test system



SilentFlo Hydraulic Power Unit and FlexTest Controllers

Hydraulic power

Test professionals around the world choose SilentFlo™ hydraulic power units (HPUs) for their superior performance, compact footprint and low-noise operation. They are so small and quiet, in fact, that they can easily be installed almost anywhere in your laboratory. SilentFlo HPUs are up to 30 dB(A) quieter than conventional HPUs, and a “wall-hugging” design requires minimal floor space. A variable-volume pump design also helps to optimize energy-efficiency.

Unrivaled service and support

MTS fields the largest, most experienced worldwide service, support and consulting staff of any testing solution provider. This global team offers complete lifecycle management services for all your test systems, helping to maximize your productivity and uptime, so you can complete your test programs as quickly as possible. The exhaustive MTS service offering includes:

- » Professional services and consulting
- » Maintenance services and spare parts
- » Accessories and upgrades
- » Lifetime system protection

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