The MTS Planar Biaxial Testing System with Torque combines modular load frame technology, innovative control methods, advanced alignment techniques and an integrated environmental chamber to effectively simulate the mixed mode loading environments of aircraft materials and components.

The increasing sophistication of aircraft designs has necessitated the development of more descriptive and complex material and component models. Validating these models, however, requires very realistic simulations of airframe and turbine operating environments. Employing uniaxial testing technology for this yields less than accurate results, while full-scale tests with spinning components are expensive when evaluating design iterations. Achieving truly accurate and affordable simulation of these environments requires the use of multiaxial loading technology.

The Planar Biaxial Testing System with Torque employs multiaxial loading technology to apply and measure linear displacement in the X and Y axes, and torque and angular displacement around the x axis. Key system attributes include:

- Low friction actuators with hydrostatic bearings
- High lateral stiffness that provides accurate test results and very high frame natural frequency
- Optional acceleration compensation for high frequency work

Aerospace Material Applications

The Planar Biaxial Testing System with Torque provides better “real world” studies of a wide variety of aircraft materials than axial torsion test systems. Typical applications include 2D planar studies of material property stress states, 2D planar high cycle fatigue and crack growth studies, and tests under environmental conditions with elevated temperatures and vacuum. Materials that can be tested include metals, alloys, composites and more. A common use for this system in the aerospace market is in the study of jet engine turbine materials. Another common use is to gain a better understanding of failure mechanisms in design elements, sub-systems and small components - for example, testing of grommets or anchors within a composite material.
**System Components**

The Planar Biaxial Testing System with Torque features a highly stiff frame, four actuators and load cells, mechanical grips and fixtures, rubber isolation mounts and an MTS hydraulic power unit (HPU). In the Y axis, the system is capable of delivering 500 kN of force over a linear displacement of 100 mm. In the X axis it can deliver 250 kN of force over a linear displacement of 100 mm, and 500 Nm of torque over a rotational displacement of 90 degrees.

Innovative test control methods are achieved with an advanced FlexTest® GT digital controller and powerful Multipurpose (MPT™) TestWare® application software. Based on decades of MTS expertise in servohydraulic structural and material testing, FlexTest controllers employ proven VME-based MTS hardware to deliver high-speed closed loop control, data acquisition, function generation, and transducer conditioning for up to 8 channels and 4 test stations. FlexTest digital controllers run proven MTS Model 793 Software, allowing you to integrate your system into your organization’s computer network and take advantage of the full array of proven MTS test application software.

MPT software is designed to help you keep up with changing test requirements. It features an easy-to-use “drag and drop” environment for building both standard and nonstandard tests.

**FlexTest GT Controller with MPT software**

Users can link basic processes, including function generation, data acquisition, events, and triggers, to quickly and easily build complex tests. MPT software also allows you to use your favorite spreadsheet program or analysis package to analyze, plot, and report data.

**Optional system components** include a variety of integrated environmental chambers to simulate real world service environments, as well as an advanced alignment system comprised of a special strain-gauged specimen and software to ensure precise system alignment.

**For more information**

Browse to http://www.mts.com, call toll free 1-800-944-1687, or email info@mts.com.