

US Patent 9,952,254

SD# 13176

Technology Readiness Level: 7

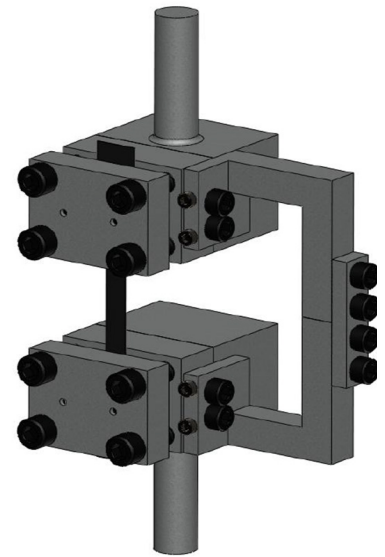
Final development deliverable demonstrated in an operational environment

Sandia's electromechanical grip tester allows for simultaneous electrical and mechanical testing, resulting in reduced testing time and decreased costs.

The increasing demand for products to meet industry accepted performance standards such as ASTM and ISO has resulted in the need for improved test equipment designs that can deliver faster and more comprehensive results at lower costs. A common challenge faced during the testing of conductive materials is that their electrical characteristics are known to vary in response to external thermal conditions and mechanical loads.

Sandia's electromechanical grip tester allows for simultaneous and coupled electrical and mechanical testing to characterize a sample's electrical performance while under dynamic mechanical loads, resulting in reduced testing time and decreased costs. Since mechanical stresses and strains can change material electrical properties, Sandia's grip tester has advantages over other testing equipment as it can capture both electrical and mechanical properties dynamically. A measured electrical resistance of the material can be used to determine the mechanical status of the material. This in turn allows materials to be strategically designed with known coupling effects between their electrical and mechanical performance.

The electromechanical grip tester allows for the in-situ determination of a material's resistance during the application of a tensile, compressive, and/or torsional load. The electromechanical coupling response behavior can be measured using a series of electrically isolated contacts that are integrated into the grip jaws of this device. As the specimen is securely clamped for mechanical testing, the electrodes are engaged and allow the direct measurement of the electrical resistance as a function of mechanical strain.



Sandia's Electromechanical
Grip Tester

Technical Benefits

- Simultaneous electrical and mechanical testing
- Reduced testing time
- Decreased costs

Industries & Applications

- Materials testing and design
- Flexible electronics
- Conductive thin films