

MIDAS: Mobile Instrumentation Data Acquisition System

MIDAS is a controlled, verified, and well-documented system dedicated to providing high-quality measurement data in support of transportation system testing.

Energy, Climate &
Infrastructure Security

Gathering Vital Information

Testing is a significant element of both the design and certification processes for transportation packages that contain radioactive and hazardous materials. This requires collecting data to accurately characterize what happens to a package under a variety of circumstances including events such as impact, puncture, fire, and immersion.

Sandia National Laboratories created the Mobile Instrumentation Data Acquisition System (MIDAS) to provide on-site data acquisition and analysis capabilities for testing of radioactive and hazardous materials packages. MIDAS allows researchers, designers, and regulators to examine and understand how a package behaves in a variety of environments.

MIDAS: Mobile Data Acquisition

MIDAS is a controlled, verified, and well-documented system dedicated to providing high-quality measurement data in support of transportation system testing. Data acquisition equipment is contained in a 44-foot trailer and, with an auxiliary power generator, provides a self-contained mobile data acquisition and reduction facility.

MIDAS is equipped with acquisition systems to gather both structural and thermal data. The structural data acquisition system is capable of acquiring 72 channels of time domain data from any combination of piezoresistive or voltage-based measurement devices. Commonly used to measure package response to regulatory impact, puncture, and immersion tests, the overall structural data bandwidth extends to 100 kHz at -0.5 dB, by sampling at 500,000 samples per second or greater. The thermal data acquisition system can acquire up to 80 channels of Type K thermocouple data and 20 channels of Type thermocouple data.



Inside the MIDAS trailer

Excellence in Quality Assurance

MIDAS performs in compliance with the highest level of quality assurance, ASME NQA-1 Quality Assurance Program Requirements for Nuclear Facilities. Constantly checking itself for errors and monitoring its own accuracy, the MIDAS onboard diagnostic system verifies that data acquisition components are functioning correctly. This diagnostic system can verify equipment calibration and characterize component performance.

MIDAS also features an incredible level of data retrievability through the system's documentation package. This package allows a record of equipment parameters and performance to be produced both during the test and retroactively, providing a computer-generated audit trail of each piece of gear in the data path. Every piece of data from nearly 1,000 tests using MIDAS is stored, which enables data comparisons over time and facilitates self-calibration.

Supporting Package Design and Certification

While MIDAS is used extensively to gather data in performance and component tests of transportation packages, it is also used in modeling and simulation. Because MIDAS is exceptionally consistent and widely trusted throughout the regulatory community, systems, subsystems, and component-level data are used to benchmark results supporting package design and certification activities.



MIDAS trailer at the
Sandia cable site

For more information
please contact:

Douglas J. Ammerman, Ph.D.
E-mail: djammer@sandia.gov
Phone: (505) 845-8158
Website: ne.sandia.gov