

Application Note

Vibration and Shock Testing at Leading International Test House

TÜV SÜD Product Service Ltd is part of the Certification Division of the TÜV SÜD Group, which employs over 15,000 people across 600 locations and is one of the leading technical service companies in the world. The test house group has been operating in the UK for over 50 years and provides testing, certification, qualification, training and consultancy services to a range of industries covering the aerospace, defence, medical & health, radio & telecoms, rail, trade, electronics & consumer sectors. It is recognised for independently testing and certifying conformance to a wide variety of international standards and regulations and holds over 100 accreditations and approvals.

TÜV SÜD Product Service Ltd has some of the most comprehensively equipped, accredited facilities in Europe. Environmental testing services include EMC, shock, vibration, climatic and mechanical testing. The vibration and shock test laboratory based at Octagon House (Hampshire) is among the most extensive in Europe. It has a range of hydraulic and electromagnetic shakers covering a frequency range of 1 Hz to 3 kHz. Unique features include the large shakers set into the floor which reduces set-up time and provides a safer working environment. The interchangeable slip tables are capable of up to 159 kN, some with a displacement of up to 100 mm. Besides there are several shock machines, the largest having a table size of 2.1 m x 1.5 m.



Vibration and shock test laboratory of TÜV SÜD Product Service Ltd

Any job going through the vibration and shock test laboratory of TÜV SÜD Product Service Ltd will use vibration control and data acquisition systems from m+p international. Five VibPilot measurement frontends with 16 and 24 input channels each are available. These all-in-one devices support both m+p international's VibControl software for vibration and shock testing and the SO Analyzer software for multi-channel data acquisition and analysis.

Based on the latest generation of IC technology, VibPilot offers high-precision measurement ability and impressive real-time performance in signal analysis. It is a portable frontend with 24-bit resolution and high-speed USB 2.0 interfacing that covers the complete measurement process from acquisition to reporting. Signal conditioning also provides source capabilities for ICP sensors including cable break indicators and TEDS support for automatic frontend set-up. The eight digital inputs and outputs enable automatic operation under climatic chamber control thus allowing the TÜV laboratory to combine vibration and shock with temperature.

The VibPilot device covers the full functionality of the proven VibControl shaker control software and all test modes used in vibration and shock testing today. Vibration control capabilities of the TÜV laboratory include sinusoidal, random, sine-on-random, swept sine-on-random, gunfire and shaker induced shock including SRS as well as time history replication. The m+p international controllers are also used at the shock machines



16-channel VibPilot hardware

to test the robustness and fragility of packaged samples and their packaging. The facilities allow product testing up to 5 tons in accordance with the requirements of MIL STD 810, DEF STAN 00-35, BS EN 60068 to name but a few. The controllers offer instant analysis of results, allowing for accurate and efficient problem solving and reporting.

For multi-channel recording of vibration signals, the VibPilot measurement devices support m+p international's SO Analyzer software. This package acquires FFT and time data while displaying the data in real time for high-resolution online FFT analysis. It is crucial for multi-channel data acquisition to have a powerful tool for central management of the

potentially large data sets acquired. Therefore the SO Analyzer software provides comprehensive capabilities for browsing, viewing, editing, analysing and reporting data as well as full ActiveX compliance. Optionally, the SO Analyzer software also acquires data for structural analysis, rotating machinery, acoustics and many other advanced applications.

With m+p international's products for vibration testing and data acquisition, the vibration and shock test laboratory of TÜV SÜD Product Service Ltd tests everything from mobile phones to large military equipment cabinets. Richard Thompson, the Environmental Test Manager, says, "m+p was selected because of the flexibility offered by the modular controllers, intuitive frontend and the excellent support received from m+p over recent years."

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