

Space - Launch Vehicle Testing

CSIR-NAL, India

The Acoustic Test Facility (ATF) at CSIR, NAL in Bangalore uses a Prosig DATS system to measure vibration and strain during tests as part of the Indian Space Programme. The acoustic facility simulates, the fluctuating sound pressure field experienced by the payload/launch vehicle during lift off and atmospheric flight in an 1100m³ reverberation chamber.

Rocket blast can damage the payload and launch vehicle subsystems and so this testing is vital to successful missions. The facility is capable of providing acoustic qualification to MIL-STD 810G standards.

Vibration responses due to acoustic loading on the structure are measured using accelerometers mounted at critical locations on to the structure. Acquired time domain data are processed for power spectral density and the root mean square values.

Data Capture & Analysis

The Prosig system at NAL consists of DATS-hyper12 hardware (previously known as P8048) with nearly 200 channels of vibration measurement and a further 16 channels of strain measurement. To date CSIR-NAL have tested more than 100 spacecraft, launch vehicles and its sub systems till date.

The DATS - hyper12 is a rack-mount chassis which can be populated with a number of data acquisition and signal conditioning modules. Each rack is stand-alone with its own controller and data storage which provides an overall acquisition and storage rate in excess of 100kHz. Multiple units can be connected and synchronised together to a common clock signal, acting as a single, high channel-count system. The captured data can be exported to a number of



industry standard file formats to allow easy export for post-processing by specialist third-part analysis and simulation packages.

The hyper12 design philosophy provides for a highly flexible and modular system to suit a wide range of complex testing scenarios to meet the needs of the space industry.

About Prosig

Prosig is a UK company specialising in the testing and monitoring of complex machinery, vehicles and structures within the advanced engineering, automotive, aerospace, and industrial sectors. The company offers a wide range of system capabilities, experience and innovation, with a particular focus on advanced vibration and acoustic monitoring and analysis techniques. Prosig is part of Condition Monitoring Group Ltd, an international group, with headquarters in the UK and subsidiaries in three USA, Germany and Italy.

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