

# Vibration and Shock testing

Evaluate the behavior of components and equipment in terms of the vibration and shock conditions that can occur during their useful life



During their useful life, components and equipment are subject to vibrations and shock resulting from their operation or transportation. Manufacturers need to evaluate and validate their reliability, performance and structural integrity to meet both the market's demands and the applicable regulations.

To avoid test repetitions and engineering and manufacturing cost overruns, preliminary virtual vibration and shock simulations can be performed during the design phase.

## **Our solution**

Our global network of NVH laboratories offers a wide scope of testing and virtual simulation services focused on speeding up product validation times.

Our services include:

- Test specifications analysis
- Writing the individual specifications
- Full tool design and manufacture
- Vibration and shock virtual simulations
- Turnkey testing
- Defect analysis and diagnosis
- Solutions and product improvement proposals.

Our technical teams conduct tests under the following standards:

- UNE-EN 60068 vibration and shock environmental tests:
- EN 61373 Railways applications Rolling stock equipment Shock and vibration tests

- RTCA/DO 160 Section 8 Vibration and Section 7 operational shocks and crash safety
- MIL-STD-810

We perform the following tests:

- Sinusoidal vibration tests
- Random vibration
- Sine on random vibration
- Random on random vibration
- Classic shock and SRS
- Playback of real time signals acquired in the field
- Combined vibration, temperature and humidity tests
- Equipment and structures dynamic analysis
- Multi-axial simulation tests
- Tests customized to the client's specifications

The vibration and shock testing laboratories are accredited by ENAC to perform electrical safety tests, road equipment and environmental testing, and have the following equipment:

- 53 kN electrodynamic vibrator equipped with a 1200 x 1200 mm sliding table and climatic test chamber (-50 °C/+150 °C) of 1500 x 2000 x 1500 mm
- 20 kN electrodynamic vibrator equipped with a 600 x 600 mm sliding table
- 13 kN electrodynamic vibrator
- 1500 x 1500 mm shock and fragility table
- Multichannel acquisitions system of up to 16 channels to monitor the dynamic response of equipment and components.
- Multi-axial simulation tables combined with climatic loads and solar radiation.

Applus+ Laboratories can combine this service with other technologies and carry out the full validation plan for your product.

We have been working for over 20 years with shock and vibration testing technologies in the industrial, transportation and aeronautics sectors.

### **Benefits:**

- Ensure the reliability of the product during its transportation and useful life
- Product design optimization and improvement
- Product certification in accordance with current regulations or customer or industry specific requirements
- Speed up the validation plan's execution time