Leafield
Engineering Limited

# Testing Capabilities

- **Lot Acceptance Testing**

Depending on the nature of the product, a range of non-destructive and destructive testing is carried out. These tests range from electrical continuity to fully functioning of the product with each test designed to ensure that the product fully meets its operating requirements.

- **Helium Leak Testing**

Using an Edwards Helium Mass Spectrometer Leak Detector, leak rates as low as 10-9 mbar litre sec-1 can be measured. Leak testing can be carried out on small components, 'bombing' tests on hermetically sealed items and 'sniffer' tests on pressurised joints.

- **Function Testing**

Function testing of explosive products as part of lot acceptance testing, product development and qualification trials is carried out within a dedicated test area. With a maximum explosive limit of 50 grams for hazard class 1.1 items and higher limits for other classes the facility provides a safe area for function testing of all explosive and pyromechanical products.

- **X-ray**

X-ray inspection of products up to 500 mm X 600mm is achieved with a Torrex 150 x-ray machine. This self contained and screened cabinet has a maximum film to focal focus distance of 1 metre an X-ray source of 150 kV max at either 3mA or 5mA.

- **Vibration Testing**

Vibration testing of products is carried out using a Derritron VP85 vibration system and a N+P VibPilot controller. The VP85 3000 Watt amplifier develops a maximum acceleration of 784m s-2 and a maximum velocity of 1.27m s-1. The vibration table has a 25mm maximum displacement and can take an unsupported load in the vertical position of 38kg. Vibration control via the VibPilot gives a 1Hz resolution over the frequency range 5Hz to 2000Hz for sine, random and sine on random vibration.

- **Environmental Conditioning**

Temperature cycling and humidity control during product testing is obtained using a range of conditioning cabinets within the test facility. The various conditioning chambers cover the temperature range –50 C to + 600C and humidity up to 95%RH.

- **Shock Testing**

Half sine shock testing is achieved within the test facility using Lansmont type 23 shock machine and elastomer programmers. The shock machine table is capable of carrying a payload of 36kg on its 225mm x 225mm specimen mounting area. The half sine shock programmers currently in use cover the durations 6ms to 35ms: Maximum peak acceleration at 6ms, 100gn. Maximum peak acceleration at 35 ms, 35gn.

## ■ Acceleration Testing

Leafield Engineering has currently two beam centrifuges allowing for either fixed radius or variable radius acceleration testing. For both centrifuges electrical powering and monitoring of the product during testing is achieved via the centrifuge sliprings.

Maximum payload for fixed radius testing is 80gn kg-1 and a maximum acceleration of 75gn.

The variable radius centrifuge allows for boost simulations to be carried out using a moving test table and pneumatic cylinders. This system allows the test item to be placed so that it experiences zero gn at the start of the test, then when required the test table is forced out to full radius so that the test item experiences the required acceleration level. Maximum payload for this test is 80gn kg-1 for a maximum of 20gn with a typical rise time of 100 ms.

## ■ Hydraulic Pressure Testing

External pressure testing of test items is available using various test facility pressure chambers. The largest pressure chamber can take a test item measuring 1750 mm long x 500 mm diameter and has a working pressure of 34 bar. The smallest chamber has a working pressure of 95 bar and can take test items up to 750 mm long x 200 mm diameter.