



## ↘ FIXTURES

**Purpose** : to allow to interface the DUTs to the mounting surface of the test bench, simulating the real installation and configuration of the DUTs.

- **Key features:**
  - Customized design according to specific test requirements, through FEA
  - Stiff and light solutions for high performances
  - Use of aluminium, magnesium and innovative materials
  - Results of dynamic tests included in the Technical manual

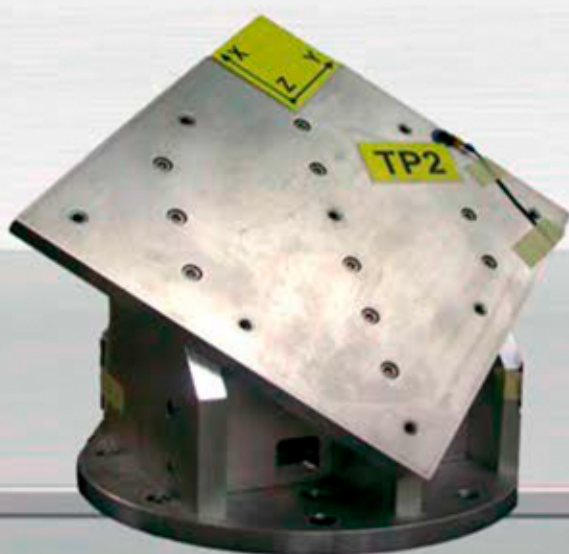
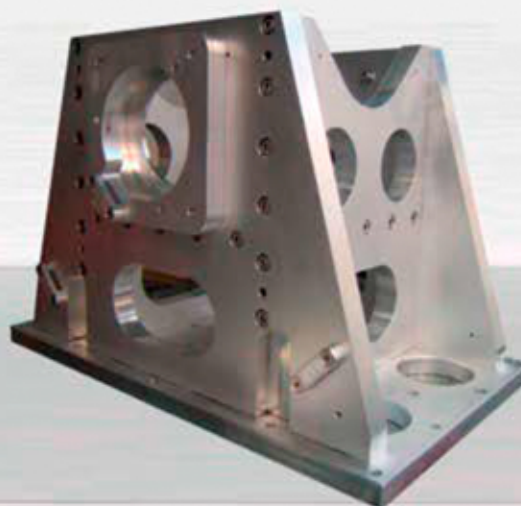




## CUSTOM FIXTURES

Custom fixtures are designed to interface one or more DUTs to the test-bench and to allow the transmission of the same vibration to all DUT's fixing points.

Custom fixtures can be used for test along the three mutual axes by rotating it or by using a slip-table. Fixtures are optimized by FEM analysis to achieve the best compromise between minimum weight and maximum frequency range.



## TRIAXIAL FIXTURES

Triaxial fixtures aim at rotating the DUT in a specific direction in order to fractionate the vibration along its three orthogonal axes.

This allows the test to be performed simultaneously along the three axes with a higher vibration level, along the resultant vector.

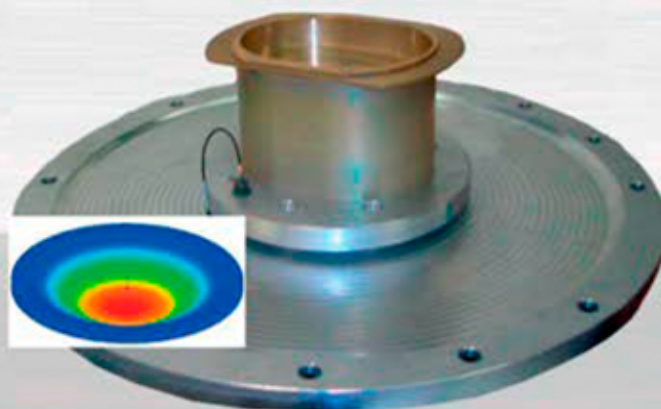
The use of a triaxial fixture speeds up the test by reducing the total test time to 1/3.

## RESONANCE FIXTURES

Resonance fixtures are designed with a done on purpose resonance between shaker and DUT in order to achieve a very high vibration level

The item is mounted in a resonant part of the fixture. The amplification factor allows to reach vibration level of hundreds of g, in a restricted frequency range.

The use of a resonant fixture can save a lot of energy and prevents shaker damages.





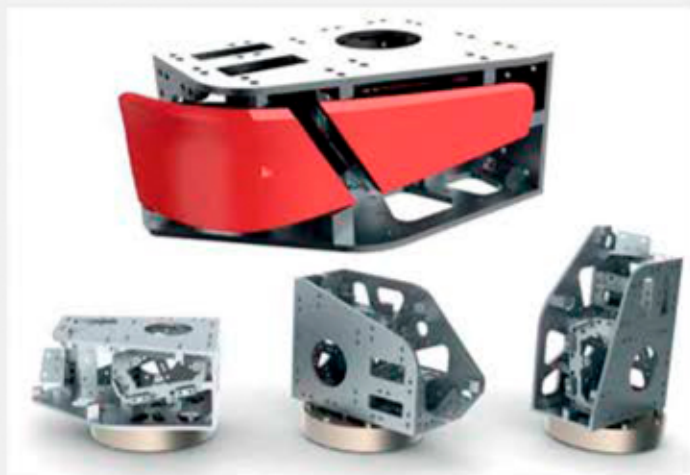


## ➤ AUTOMOTIVE FIXTURE

Centrotecnica supplies fixtures for automotive testing:

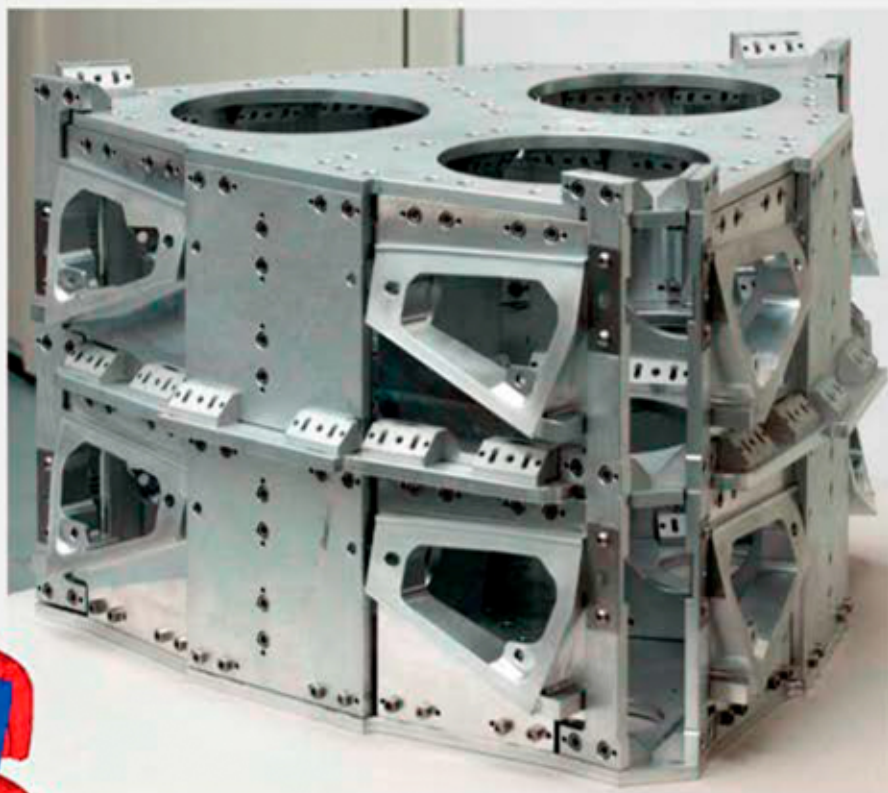
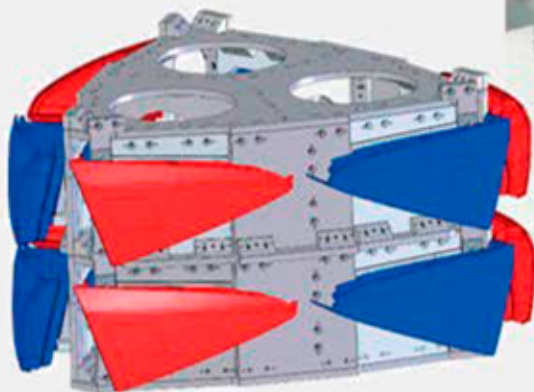
### ➤ **Qualification fixtures**

mountable along three axes, for high vibration level on one or two DUTs



### ➤ **Reliability fixtures**

Usually required after qualification testing campaign, for medium vibration level on many DUTs at the same time, in order to shorten testing duration and to save shaker energy and money.

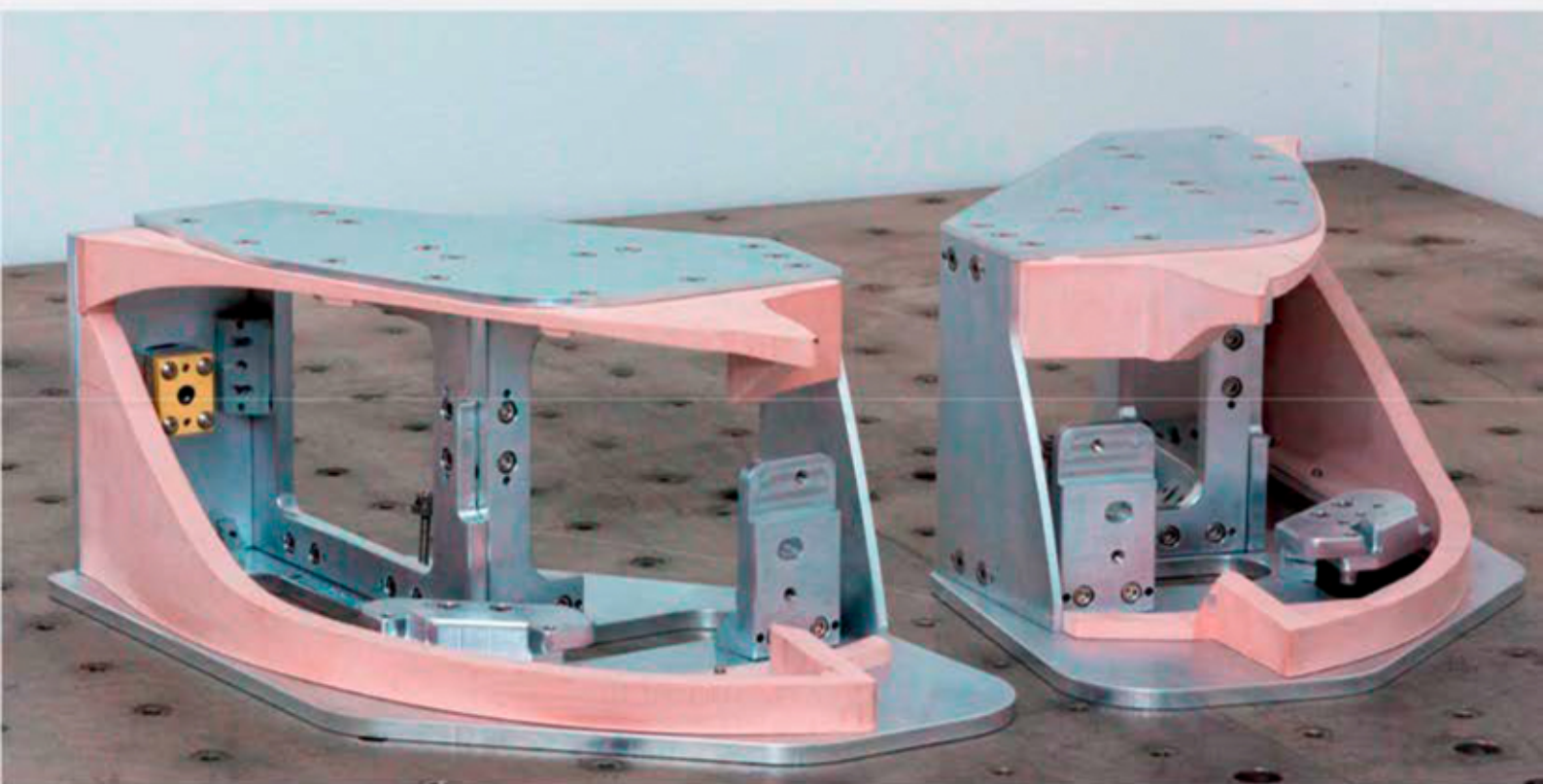






➤ **Photometric, Rain and Shock fixture**

light equipment with special accessories, innovative material and advanced manufacturing technology



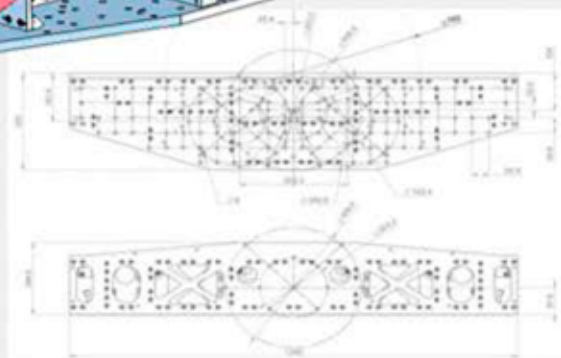
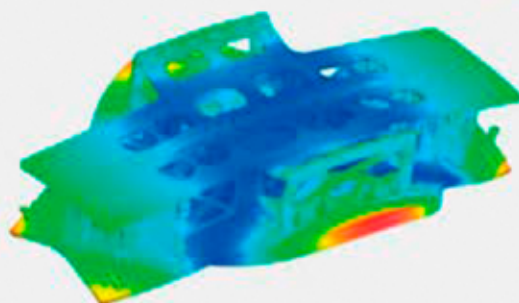
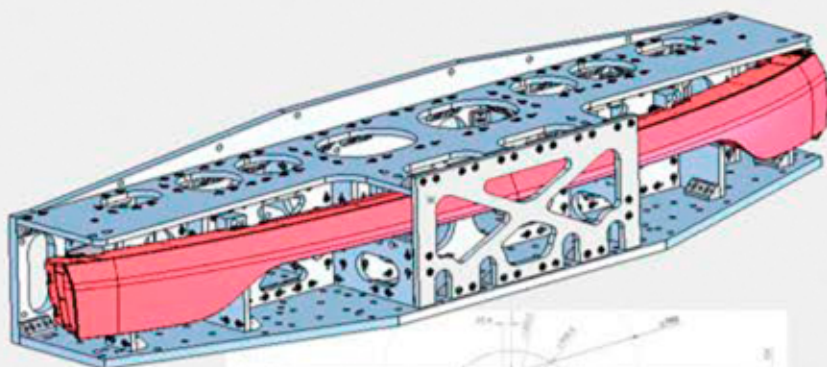




## MAIN FEATURES:

### ➤ *Accurate design and FEA optimization:*

- perfect reproduction of fixing points, RPS, car body surface and more..
- best compromise between stiffness and weight for sine, random and shock tests



### ➤ *Manufacturing and Assembly:*

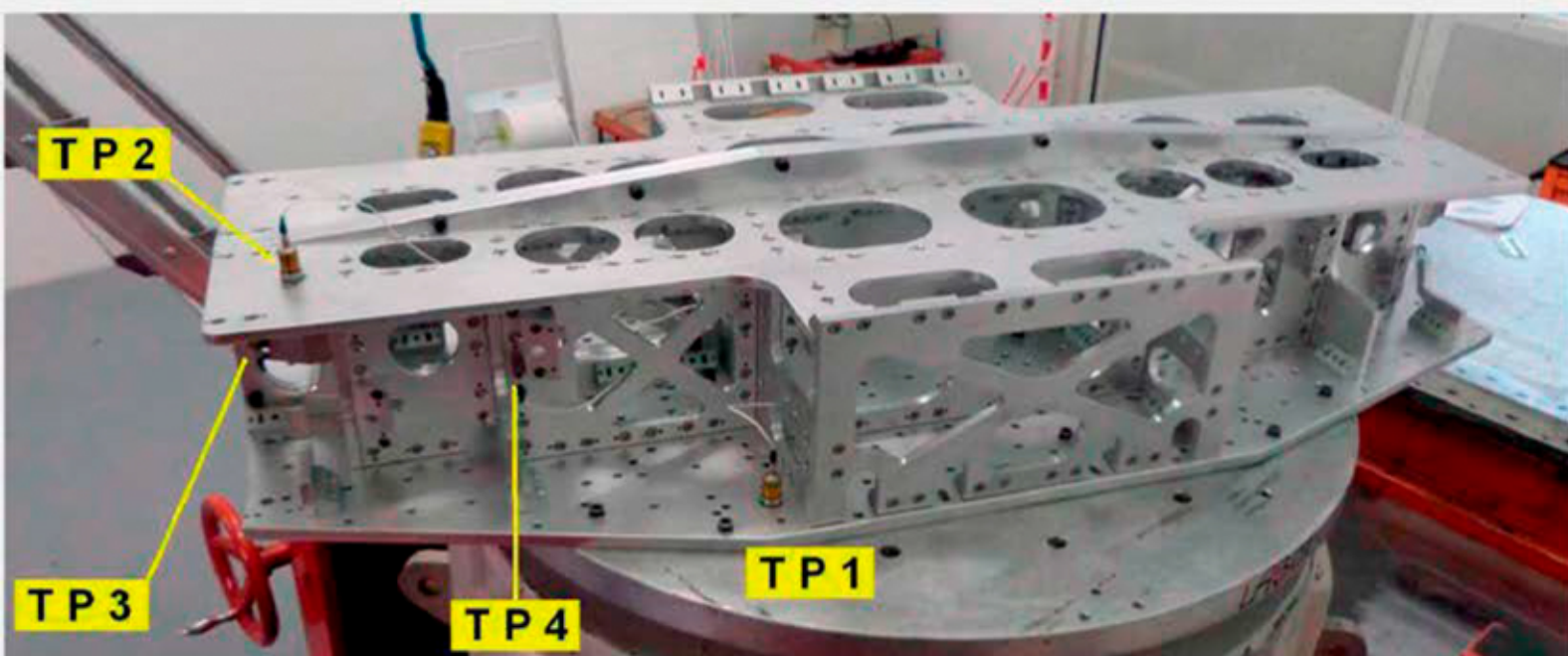
- innovative construction techniques
- CAM programs for CNC machine
- finishing treatments
- flexible and multifunction production

### ➤ *3D dimensional certification*

through 3D 7 axes measurement FARO instrumentation

### ➤ *Dynamic validation*

- performed at our laboratory, before delivery
- technical report including the mounting procedure and test results with the best control strategy



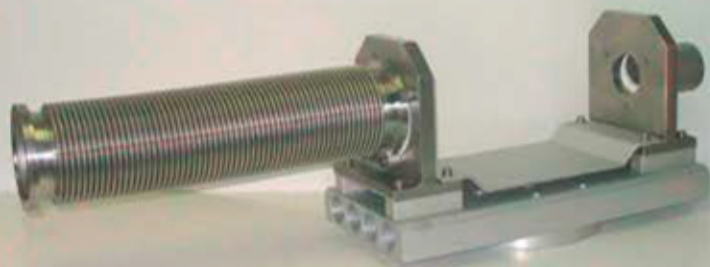
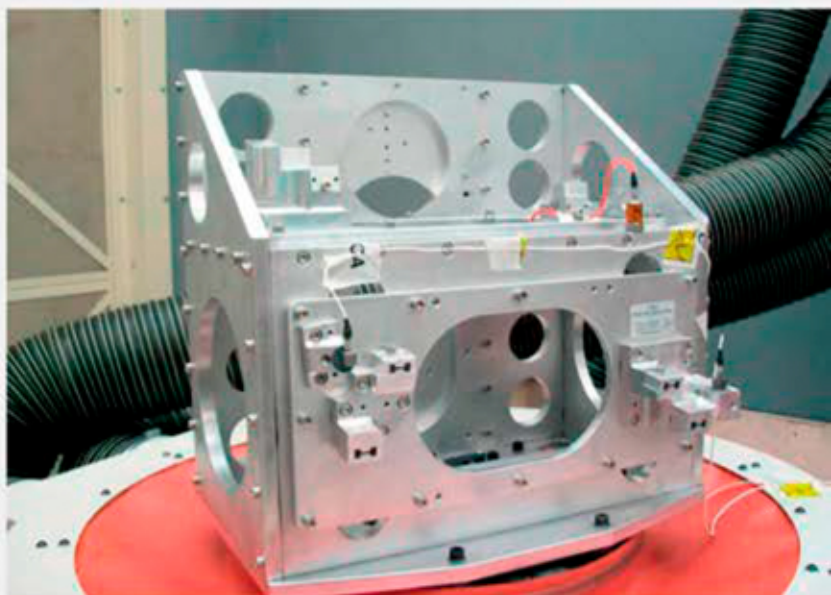
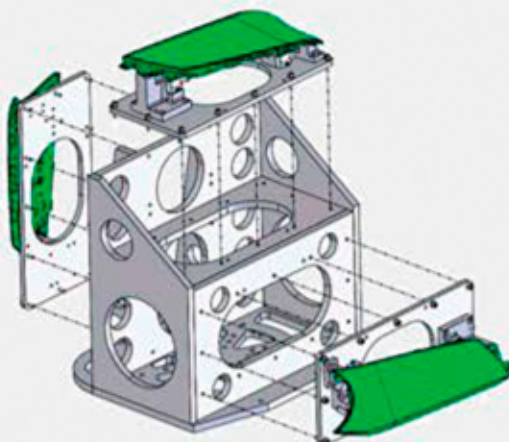




## AUTOMOTIVE FIXTURES FOR MANY APPLICATIONS:

### ↘ *Special configurations*

A common base fixture for interchangeable elements to test different items, at three orientations at the same time.



### ↘ *Fixture for mufflers*

Fixtures connected to a furnace to test mufflers with air flow at 800°C, with rectangular machined expander for mounting on the shaker armature.



### ↘ *Custom design for engines*

Fixture for automotive engine electronic ignition with gas inside at the pressure of 16 bar, with a base aluminium plate for mounting on the shaker armature.







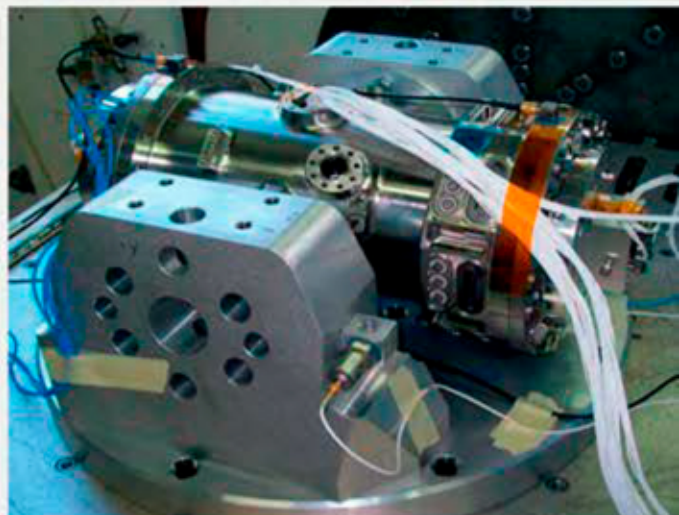
## ▷ SPACE SECTOR

**Key features:**

- Rigid and precision fixtures
- Innovative and quality materials
- Compliance to norms, i.e. ECSS

**Main references:**

- EADS Astrium, Thales Alenia Space, AVIO, Ferrari Space, OHB, etc.



## ▷ AERONAUTICAL SECTOR

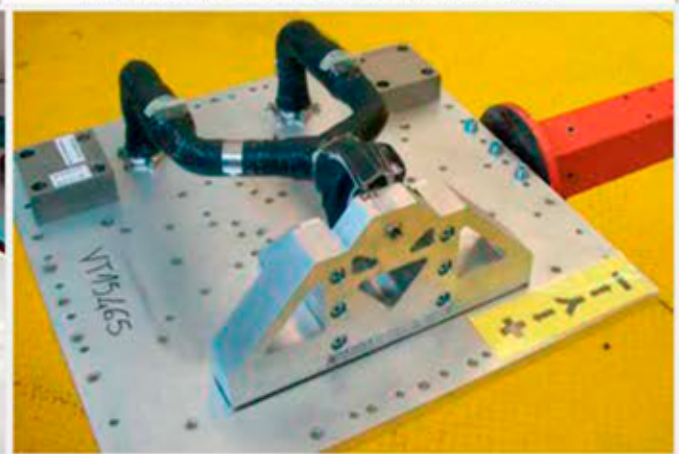
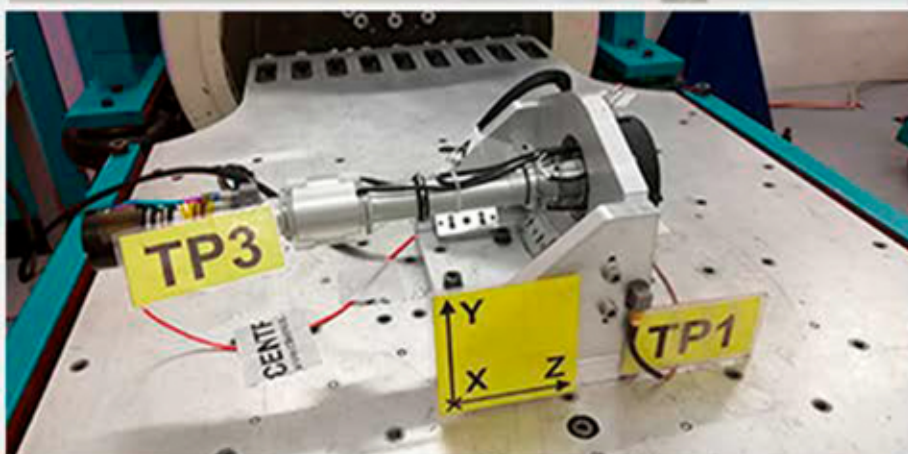


**Key features:**

- Accuracy and flexibility of the fixtures
- Special machining
- Compliance to norms, i.e. MIL-STD, RTCA-DO

**Main references:**

- AGUSTA Westland, Airbus, Leonardo, Aermacchi, DIEHL, Zodiac aerospace, etc.







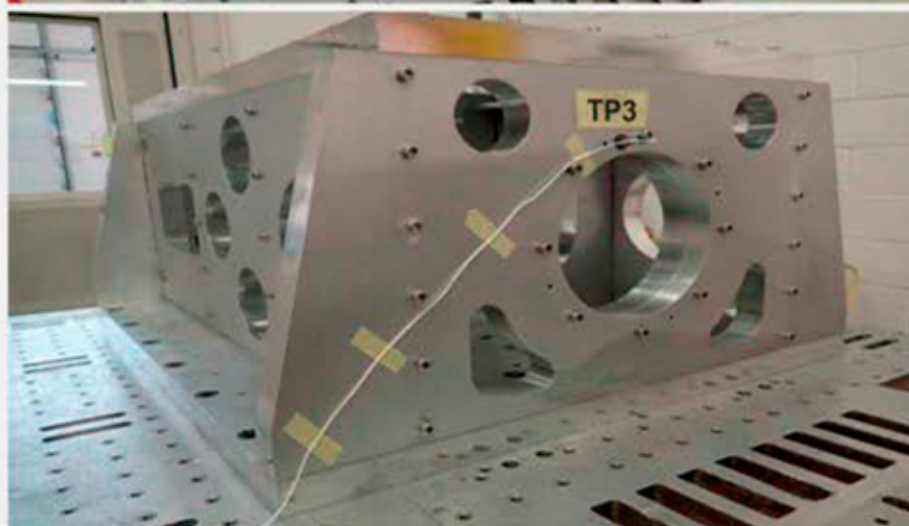
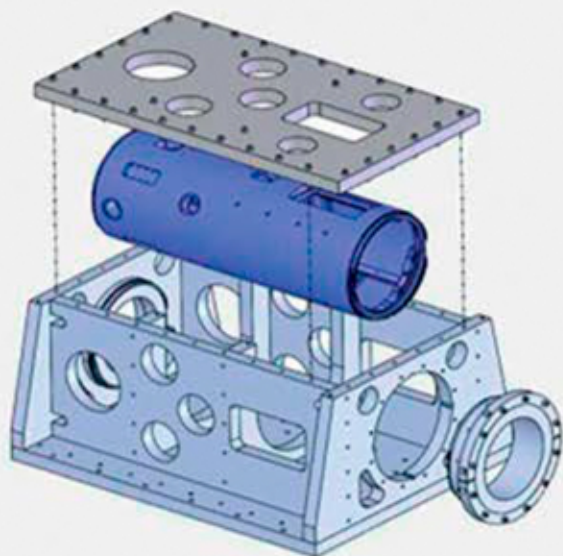
## ▷ DEFENCE SECTOR

### Key features:

- High performance and technology
- Maximum reliability
- Compliance to norms, i.e. MIL-STD, DEF STAN, AECTP, RTCA-DO, STANAG

### Main references:

- BAE Systems, Airbus Defence and Space, MBDA, Selex, Leonardo, etc.







## ▷ RAILWAY SECTOR



**Key features:**

- Fixtures for each DUTs size
- Steel and aluminium solutions
- Compliance to norms, i.e. CEI EN 61373, IS 00 402A

**Main references:**

- RFI rete ferroviaria italiana, Alstom, ABB, Leonardo, Ansaldo, Webasto,, etc..

