CENTROTECNICA
stress to ensure

Suitable for all kind of shakers and chosen as optional equipment by IMV Corp.

the Slip Tables

SPECIAL SERIES SP

aerospace testing is easier when performed on bearings

RT-SP: EVOLUTION OF RT SLIP TABLES DEDICATED TO SPACE TESTING

RT 2000 SP in use at the clean room
at CENTROTECNICA's space testing laboratory.

RT series slip tables are equipped with a fully mechanical, **OIL-FREE** guiding system, a feature that eliminates the risk of DUT contamination. This feature is particularly appreciated by space-sector customers testing in clean room.

The main innovation of **RT-SP**s consists in the possibility to customize the number and the location of guide bearings[1]. This flexibility allows the bearings to be placed directly at the load points, optimizing the support and reducing the fixture complexity. This innovative approach allows to configure the bearings position under the load areas, instead of the standard approch where the fixture is to be disigned to spread the load up to the fixed position of the bearings.

The possibility to customize the bearing configuration and use a simplified and lightened fixture[1] results in a substantial reduction of the moving mass. An additional benefit is the possibility to remove the RT table and design a tailor made fixture, mounted directly on the bearings.

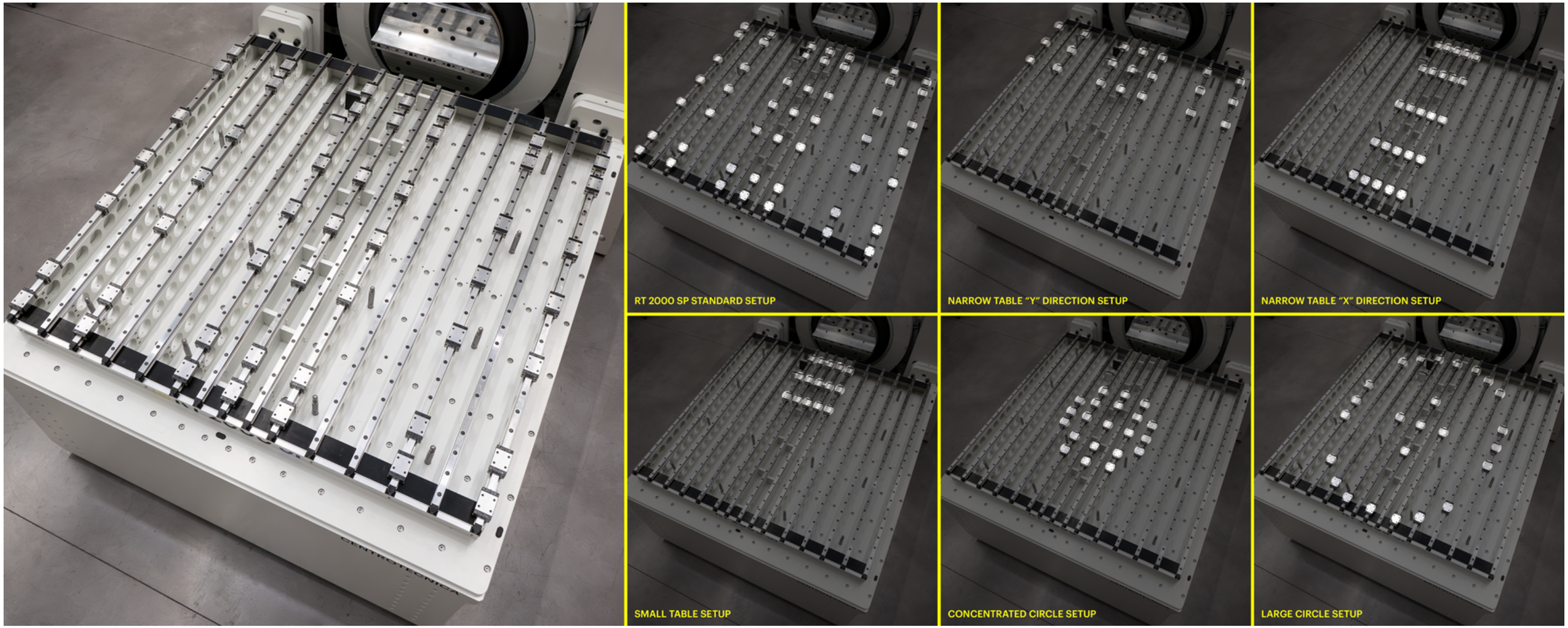
Another plus provided by the **RT-SP** type slip tables is the chance to easily integrate the bearings in the FEM analysis calculations of the entire test structure, including their positions and stiffness. This makes it possible to accurately simulate the behavior of the DUT under the test conditions.

A case study is to be seen at page 6: the weight saved thanks to the targeted support, the shaped table, and the simplified fixture allowed us to perform a "sine burst" test using a 74 kN force shaker. A test that had previously failed at a laboratory equipped with a 120 kN shaker and a standard slip table, demonstrating the effectiveness of the **RT-SP** solution.

[1] the custom fixture, the bearings configuration and the shaped table can be provided by CENTROTECNICA.

THE **RT-SP** SERIES COMPARED WITH THE **RT** - BEARINGS DISTRIBUTION

The **CUSTOMIZATION** of the bearing distribution scheme, in accordance with the mass distribution and the geometry of the test setup, is more accurate due to the presence of a higher number of bearing guides.



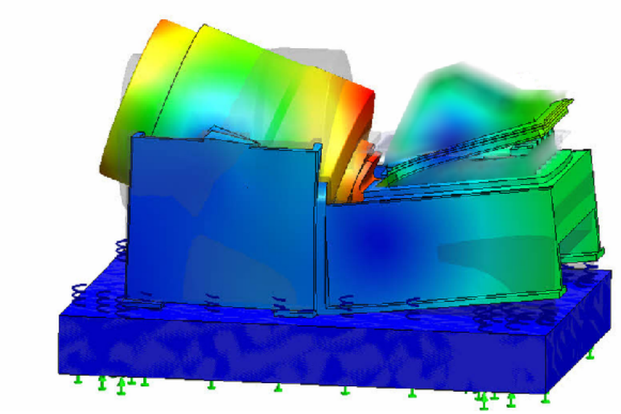
THE **RT-SP** SERIES COMPARED WITH THE **RT** - FEM DATA AND MECHANICAL IMPEDANCE

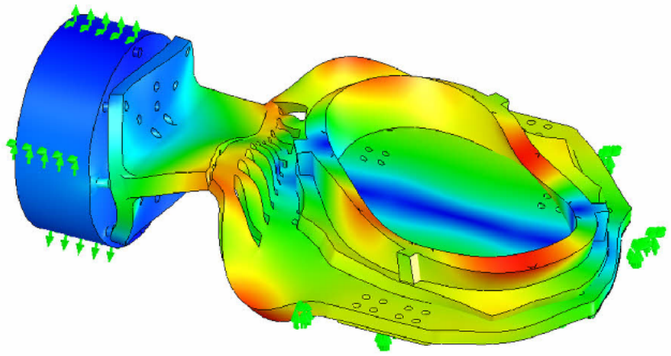
In order to achieve a reliable FEM analysis, a multibody analysis of the entire vibration system should be performed. However, it is possible to characterize the **mechanical impedance** (**MI**)* of the system for the first mode of vibration and use it as a constraining condition in FEM analysis.

The **MI** then becomes a measure defining the vibration system itself.

RT-SP series slip tables allow the calculation and optimization of the bearing configuration according to the **MI**.

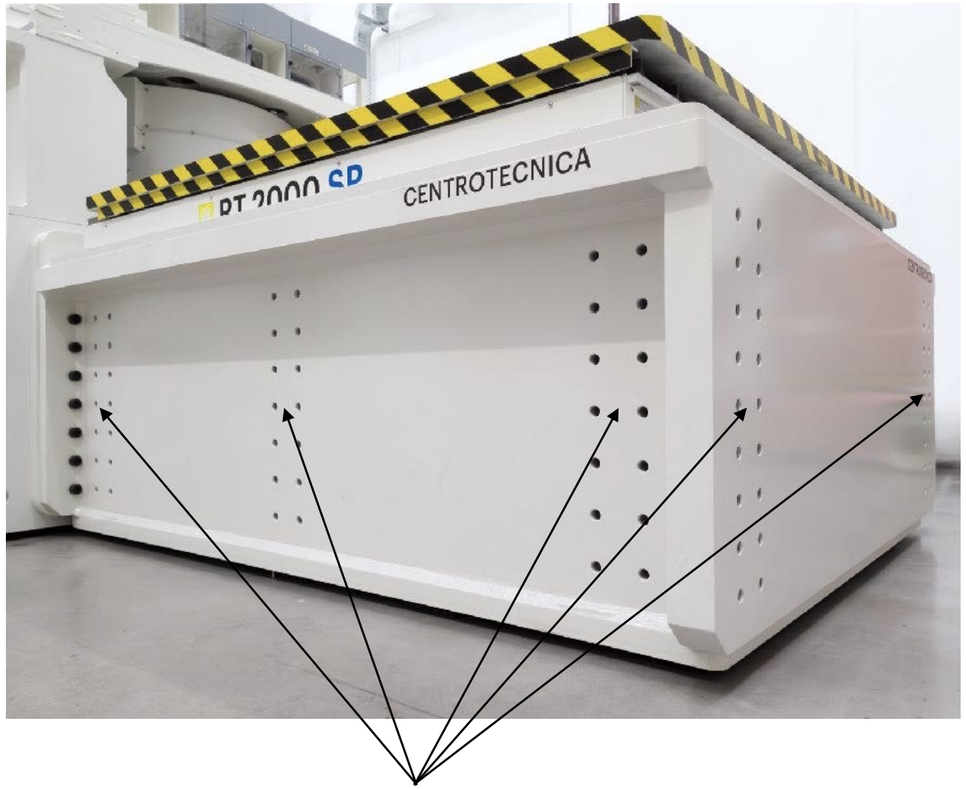
An advantage in the space testing domain is to be able to correctly match the vibration test to the results of the FEM analysis, allowing an accurate validation of the FEM model.





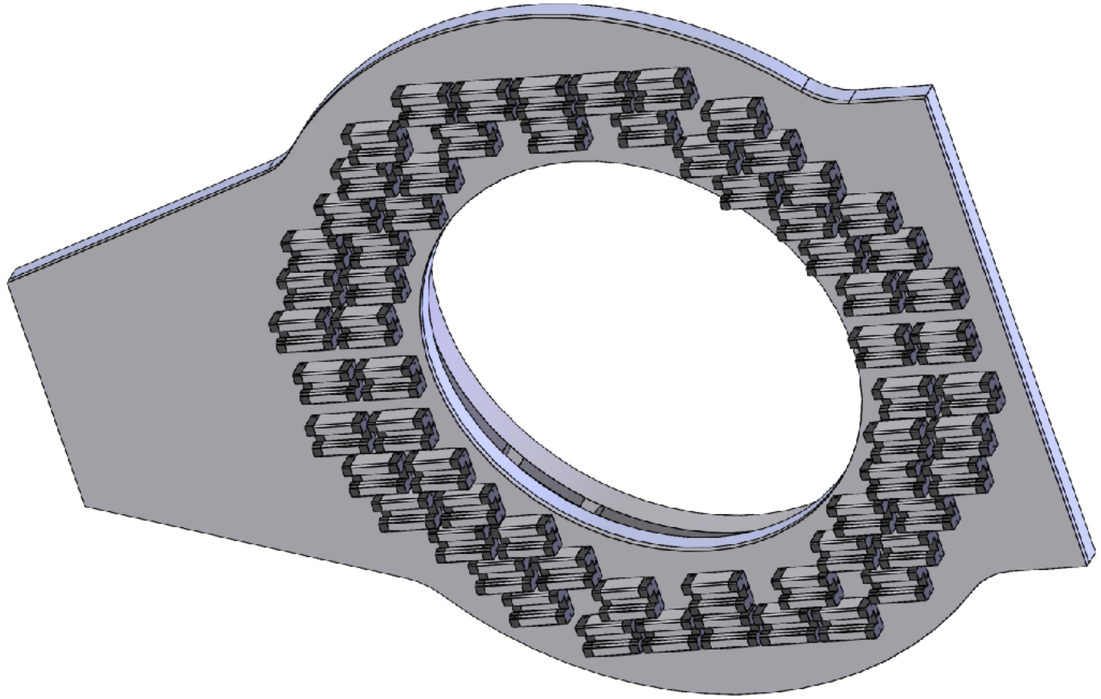
* the **mechanical impedance** is a characteristic of the vibrating system that allows to define the dynamic behavior of the slip table and understand how it will interact with the sample during the test, and it is the result of a research carried by CENTROTECNICA's R&D department that was selected among the abstracts for the interactive presentation at IAC 2024 in Milan. Therefore, it is not still possible to disclose more details before this event.

THE **RT-SP** SERIES COMPARED WITH THE **RT** - FURTHER POTENTIALS

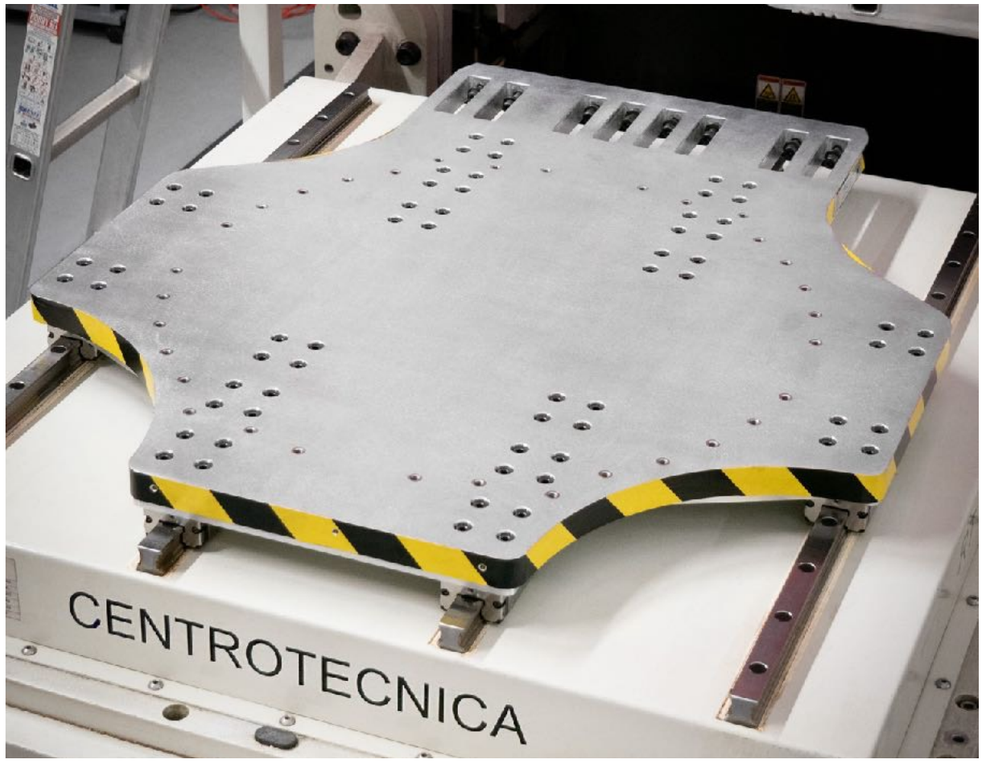


SEISMIC MASS with predisposition for applying additional loads, supports or guides through threaded holes.

CUSTOMIZATION of the table that can be suitably shaped (and lightened) according to bearing distribution.

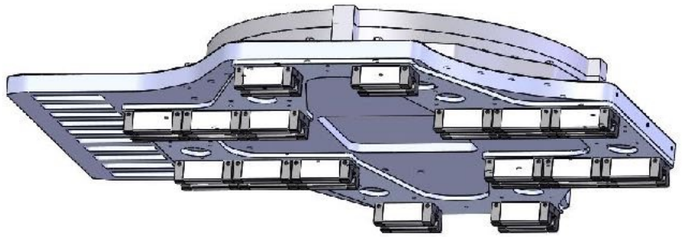


CASE STUDY: THE STARTING POINT FOR THE DEVELOPMENT OF THE **RT-SP** SERIES

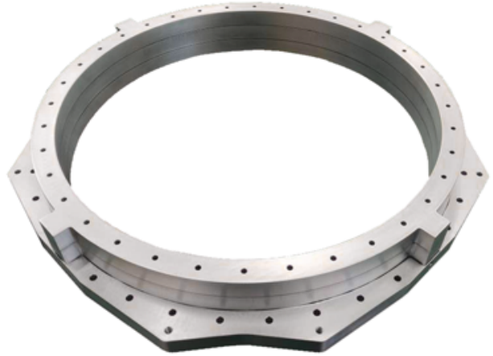


RT-series slip table shaped to achieve maximum weight savings and reduce tipping moment under tests with very demanding acceleration levels.

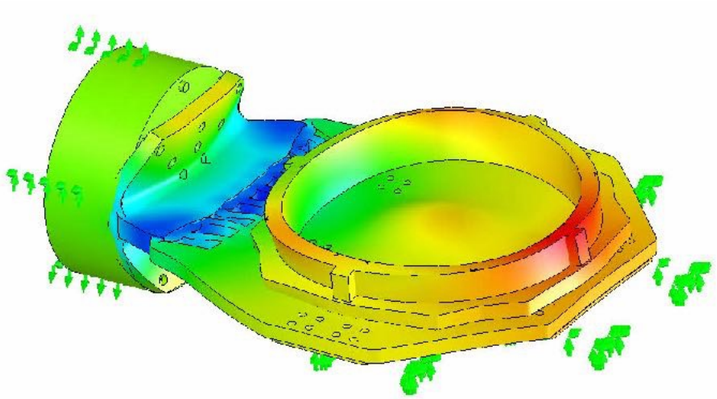
Intended use of this specific model: aerospace testing of a satellite.



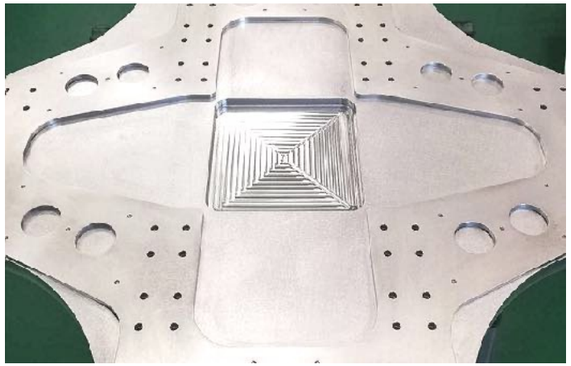
The bearings are placed at the support area of the ring fixture to maximize the resistant moment.



Ring fixture, it is simple and lightweight.



FEM analysis of dynamic behavior.



Lightening discharge of the sub-plate.

CENTROTECNICA
stress to ensure

REFERRING LINKS

slip tables
Instant Clamp
thermal barriers
fixture RT
CT-SPP
design department
production department

CENTROTECNICA provides installation, support, service and maintenance for all slip tables delivered worldwide.
These services are provided through its network of distributors or directly.

For info or RFQs, pls contact us at mail: sales@ctecnica.it - phone: +39(0)255305888

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