VENG

SERVICES

060325

YEAR 2025

INDEX


VENG

WE ARE VENG

VENG is an Argentine company of services and technological developments of high added value specialized in the space activity. We offer to the space industry and the industry in general, engineering and manufacturing services for the **resolution of complex R+D+i problems**.

We are developing a satellite launcher to provide **launch services from Argentina to the world**, and thus join the small group of countries that master these capabilities and are part of the global expansion of space activity for commercial purposes.

+17
years of experience

+420
staff of collaborators

+15
years of **ground stations** operations

Operation of the ground station in Córdoba
2009 - - - - - - TODAY

Tierra del Fuego ground station operation and maintenance
2018 - - - - - - TODAY

OUR LOCATIONS

TEÓFILO TABANERA SPACE CENTER

Falda del Cañete, Córdoba

HEADQUARTERS

Buenos Aires City

AUXILIARY INSTALLATION

Villa Elisa, Buenos Aires

GROUND STATION OF TIERRA DEL FUEGO

Tolhuin, Tierra del Fuego

PUNTA INDIO SPACE CENTER

Pipinas, Buenos Aires

MANUEL BELGRANO SPACE STATION CENTER

Bahía Blanca, Buenos Aires

Teófilo Tabanera Space Center

- Satellite Mission Control Center
- Ground Station operation Córdoba
- Engineering
- Metal-mechanical fabrications
- Heat treatment
- Image Processing
- Manufacturing, Integration, and Testing

Manuel Belgrano Space Station Center

- Launching Base
- Engineering

Ground Station of Tierra del Fuego

- Operation of ground stations

Punta Indio Space Center

- Engineering
- Production of aerospace vessels
- Metal-mechanical fabrications
- Engine Testing

Villa Elisa Auxiliary Installation

- Electronic engineering specialized in RF
- Electronic Laboratory

Buenos Aires City Headquarters

- General Administration
- Engineering

SERVICES

We are a company committed to high technology that focuses on space activity and the technology industry in general. We provide high added value in both hardware and software for our customers, getting involved from the design, conceptual and detail engineering, including manufacturing, assembly, integration and testing of our products. Among our products we can highlight the development of systems, subsystems and special parts for satellites.

In addition, we have a Quality Program, which contemplates the adoption of IPC standards as a reference certification, through the creation of an IPC Regional Training Center, with the experience and competence to certify operators.

FACILITIES

LaIEM
Mechanical Integration & Testing Facility

LEM
Mechanical Testing Facility

LaIMe
Mechanical Integration Facility

LEA
Laboratory of spatialization and Assurance

LaRF
RF Testing Facility

LaIEE
Electronic Integration & Testing Facility

LaTVC
Thermal Vaccum Testing Facility

LaMA
Antenna Testing Facility

LaCEM
Electromagnetic Compatibility Testing Facility

LaREs
Space Coating Facility

Support Services


QA & PA


Configuration Control


IT


Software

MECHANICAL INTEGRATION AND TESTING SERVICES

The Mechanical Integration and Testing Laboratory offers mechanical vibration testing, strain gauge measurements, accelerometer calibrations, design and high-level engineering consulting services required by the aerospace and defense industry, and can be extended to the automotive industry, medical equipment and industry in general.

From the space point of view, the stresses that the equipment (satellites, rockets and parts of these) will undergo during the most critical stage of their flight from the structural point of view are reproduced. This stage is the launch, when the launcher begins its race into space to put them into orbit, and during which these elements are subjected to great mechanical stresses (transmitted through the structure) and acoustic stresses (transmitted through the structure and the surrounding environment).

To reproduce these vibrations, special equipment called shakers are used to achieve two objectives: on the one hand, to qualify the parts by subjecting them to stresses greater than those they are expected to receive during flight, to ensure that the design is adequate. On the other hand, acceptance tests are also performed on components to be flown, to ensure that no errors have been made during their manufacture or assembly.

TESTINGS

Planning and development of mechanical vibration	Design and validation of MGSEs (mechanical support equipment)	Numerical, modal and structural simulation to predict the behavior of the parts to be tested
Analysis of test results	Accelerometers calibrations	Mechanical stress and strain testing using strain gauges (strain gauges)
Engineering consulting services	Free fall tests	

FEATURES

- Air treatment that guarantees a 100 K type environment, with a quantity of 100,000 particles per cubic foot of air (Fed-std-209E standard) and with controlled temperature and humidity (Temperature: 22±/- 3 °C, relative humidity: 55 ± 10%), complying with the ISO 8 standard (ISO14644 standard) of the "European Cooperation for Space Standardization" (ECSS).

- Laboratory equipped with "work islands" around each shaker, allowing integration and test preparation tasks to be performed at the foot of the machine, with an overhead crane for handling larger loads.

- Control room isolated from the testing sector, to provide greater comfort to personnel in the operation, at the same time reinforcing hearing protection and preventing impact risks due to detached parts.

- "Satellite" testing room, without air treatment conditions, equipped with a shaker of lower load capacity and an Instron machine for tensile tests. This room is used for mechanical testing of parts or devices that do not require a controlled environment, or are not admissible in a clean room.

EQUIPMENT

SHAKERS

The equipment called shakers (electro-mechanical vibrators) have a similar operation to a loudspeaker used to listen to music. They are composed of a fixed part and a mobile part, but unlike the speaker, these equipments do not have the membrane to produce waves in the air and generate the noise. For vibration tests, the less noise generated, the better, although a lot of noise is generated anyway. That is why, when the tests are performed, the laboratory personnel work with the gates closed and use ear protectors.

The characteristics and capabilities of this equipment can be represented by the force and acceleration that each can develop. The laboratory has available equipment ranging from 5.12 kN force at 111gr to 105kN force at 150g.

LDS V9-HBT 1220

SYNUSOIDAL FORCE (peak)	105 kN
ACCELERATION (sinusoidal peak)	150 g
RANDOM FORCE (ms)	105 kN
INTERNAL LOAD SUPPORT	1800 kg
ACCELERATION (random rms)	70 g
VELOCITY (sinusoidal peak)	3.0m/s
DISPLACEMENT (peak-peak)	- 76.2mm

LDS V875-HBT 600

SYNUSOIDAL FORCE (peak)	35.6 kN
ACCELERATION (sinusoidal peak)	112 g
RANDOM FORCE (ms)	35.6 kN
INTERNAL LOAD SUPPORT	600 kg
ACCELERATION (random rms)	100 g
VELOCITY (sinusoidal peak)	1.8m/s
DISPLACEMENT (peak-peak)	- 76.2mm

UNHOLTZ-DICKIE S-452/ST

SYNUSOIDAL FORCE (peak)	26.7 kN
ACCELERATION (sinusoidal peak)	120 g
RANDOM FORCE (ms)	26.7 kN
INTERNAL LOAD SUPPORT	272 kg
ACCELERATION (random rms)	100 g
VELOCITY (sinusoidal peak)	3.4m/s
DISPLACEMENT (peak-peak)	- 51mm

LDS V780

SYNUSOIDAL FORCE (peak)	5.12 kN
ACCELERATION (sinusoidal peak)	1088 m/s2
RANDOM FORCE (ms)	4.23 kN
INTERNAL LOAD SUPPORT	100 kg
ACCELERATION (random rms)	490 m/s2
VELOCITY (sinusoidal peak)	1.90 m/s
DISPLACEMENT (peak-peak)	- 25.4 mm

TESTS

Random, sine and shock tests	Sinusoidal sweep test	Quasi-static test (sine burst)
Resonance search, monitoring and evaluation (RSTD)	Random-on-random trials (ROR)	Sine-on-random assays (SOR)
Shock Response Spectrum Synthesis (SRS)	Fatigue tests	Time Waveform Replication (TWR)
	Vibration tests according to MIL-STD, DIN, ISO, IEC, SAE	

CALIBRATORS

B&K TYPE 3629

- Vibration transducer
- Calibration system

ELECTRONIC INTEGRATION AND TESTING SERVICES

The Electronic Integration Laboratory is an operational area where the production of electronic boards (assembly and soldering of components), integration of cable bundles (harness) and electronic assemblies is carried out by highly qualified personnel, certified by the high reliability soldering standards of the European Space Agency (ESA) and the Association of Electronic Connection Industries (IPC).

The products produced include all the electronics for the SAR antennas of the SAOCOM 1A and 1B satellites, electronics for parts of the SABIA-Mar project, specific components for military aircraft, interconnection cables for satellites and launchers, as well as products for the hydrocarbon industry.

TESTS

Aerospace quality manual welding	High quality SMT soldering	Aerospace-quality harness assemblies
Integration, Fabrication, Modification and Repair of Electrical and Electronic Equipment/ Parts	Assembly of electronic boards in cabinets	Integration of electronic equipment racks (Example: EGSE Rack Integration)
Component assembly and PCB soldering	Qualified work under Electronic Equipment or Electronic Consulting Standards	Repair or replacement of components on Electronic Boards (PCBs)

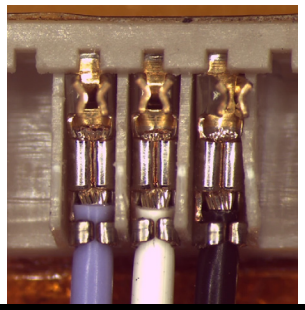
FEATURES

- Air treatment system that guarantees an environment with a quantity of 10,000 particles per cubic foot of air (Standard: Fed-std-209E / ISO14644) and with controlled temperature (22°C ±3°C) and humidity (55% ±15%).
- Pre-room with the same air quality characteristics that serves as an interface between room 10,000 and room 100,000.
- Processes supervised by qualified inspectors.
- Complex manual assembly, integration and assembly work.
- Production capacity with different quality grades (commercial, aeronautical, military, aerospace).

EQUIPMENT

SIENNA 325D LASER CABLE STRIPPING MACHINE

The SIENNA 300 series systems are table-top systems suitable for processing wires and cables with higher strength and hardness, insulating materials as well as the more standard wires and cables used in the manufacture of electronics products.



PCB INTEGRATION AND CABLE MANUFACTURING

The products produced include all the electronics for the SAR antennas of the SAOCOM 1A and 1B satellites, electronics for parts of the SABIA-Mar project, specific components for military aircraft, interconnection cables for satellites and launchers, as well as products for the hydrocarbon in-

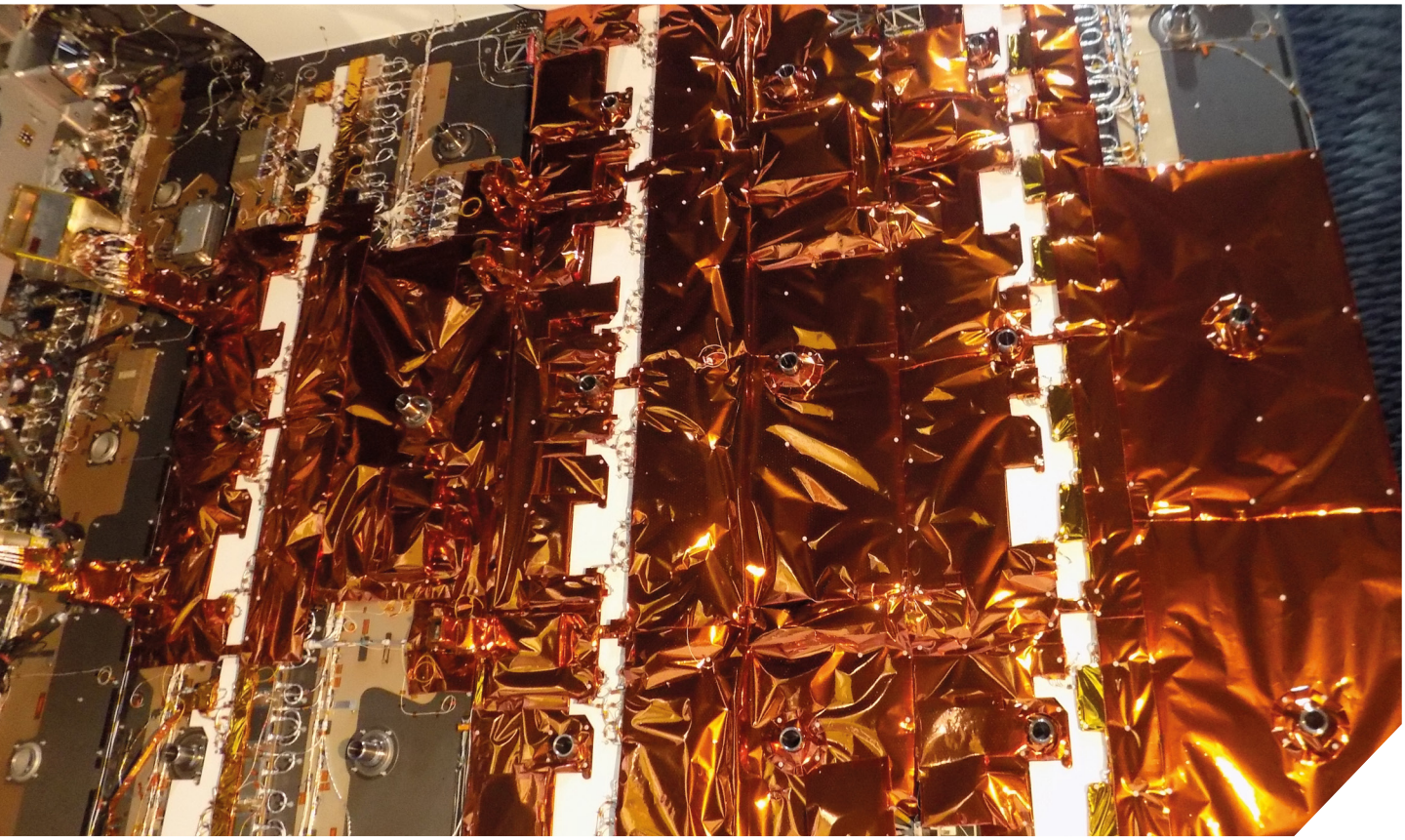
CNC MILLING MACHINE FOR DOUBLE LAYER PCB PROTOTYPING (LPKF ROUTER SYSTEM)

The LPKF ProtoMat X60 are specially designed circuit board plotters ideal for most in-house prototyping applications where speed and safety are essential, including multilayer and RF applications. These circuit board plotters feature particularly large working areas, perfect for antennas, sensors, sign etching, depaneling and large circuit board substrates.

CABLE TENSILE TESTING MACHINES (PULL TEST)

The pull test consists of applying an axial stress to a specimen until it breaks. The strain rate applied must be low in order not to distort the result. During the tensile test, the force and extension of the specimen are measured.

SPECIALTY COATINGS SERVICES



In the Special Coatings Laboratory, processes related to thermal control coatings are developed, whether they are of the specific thermal paint type or multi-layered stacked coatings (MLI). Tailor-made preparation processes are carried out, as well as activities to ensure the quality of the environment and the inputs used.

These coatings, as components of the passive thermal control of a satellite or part of it, play a very important role given the extreme working conditions required by the space environment (high vacuum and wide thermal range). In this context, the coatings act as protection for the hardware on which they are applied, functioning as a heat shield or as a radiation medium to dissipate excess heat.

TESTS // SERVICES

- Thermal analysis and design to adopt the optimal solution for the product in terms of coatings.
- Development of ad hoc processes for paint application (aeronautical or space) and final acceptance of treated parts.
- Design and manufacturing of MLI (multi-layer stacking).
- Thickness measurements of dry coatings on ferrous, non-ferrous and non-metallic substrates.
- Salt spray testing.
- Adhesion tests.
- Measurement of thermo-optical properties.

FEATURES

- Air treatment that guarantees a 100 K type environment, with a quantity of 100,000 particles per cubic foot of air (Fed-std-209E Standard) and with controlled temperature and humidity (Temperature: 22 ± 3 °C, relative humidity: 55 ± 10 %), complying with the ISO 8 standard (ISO14644 standard) of the "European Cooperation for Space Standardization" (ECSS).
- 3 internal rooms with independent environmental control: a room type 100K with temperature, humidity and particle control for preparation activities; a room with temperature and humidity control, equipped with a suction front for painting activities; and another room type 100K with a wide range of temperature and relative humidity control, for customized curing of paints.

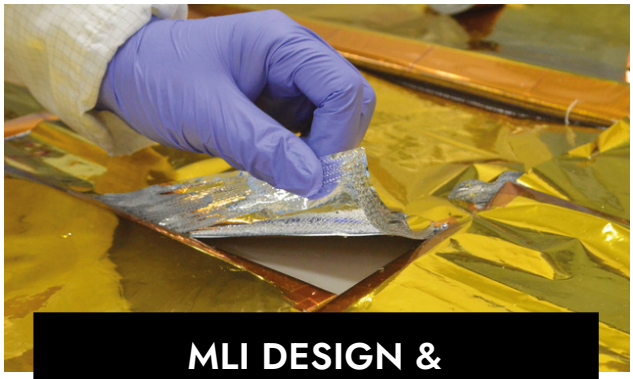
- Specific equipment for the preparation and treatment of high performance coatings: deionizer for obtaining high purity water (18 Megaohm), ball mill for grinding solid compounds, controlled paint storage system (safety cabinets and freezer), spraying equipment with HVLP technology, airbrushes for rework and adjustments, 3D printer for prototyping and manufacturing of process support devices.

EQUIPMENT AND CAPABILITIES

THERMAL-CONTROL COATING APPLICATION

CURING ROOM

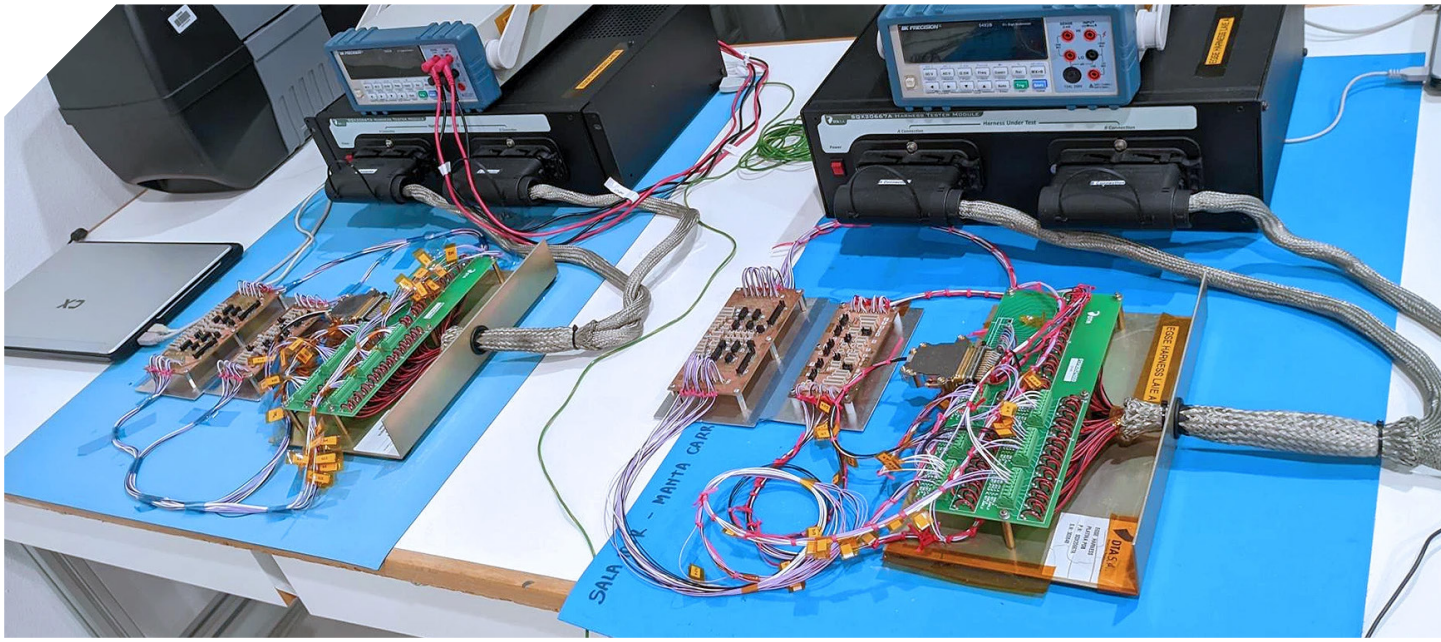
MEASUREMENT OF THERMOPTIC PROPERTIES



MLI DESIGN & MANUFACTURING

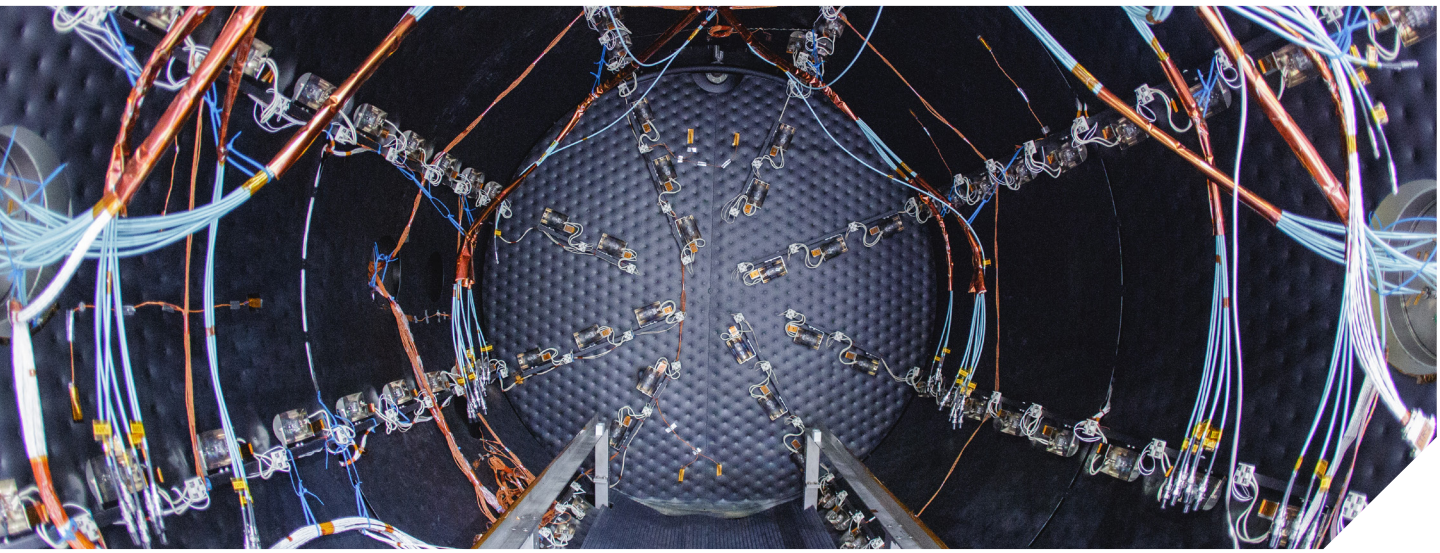
PREPARATION ROOM

RF TESTING FACILITY



Performance Testing	Functional Test	**Radio Frequency Test (<50ghz)** Noise figure measurement False measurement Pulsed radiofrequency signal test Characterization of active/ passive devices (filters, amplifiers, others) Environmental characterization test
Debug, Nonconformities	Calibrations	
MIL-1553 V&V	Grounding, Bonding and Insulation Tests	

INTEGRATION AND THERMAL TESTING SERVICES



In this laboratory, thermal and humidity tests are performed under vacuum or ambient conditions (atmospheric pressure). These tests make it possible to simulate the extreme conditions of the service environment of the assemblies or their components, in order to characterize their behavior or to guarantee their operation.

Thermal vacuum tests are part of the environmental tests that satellites must comply with in order to meet mission requirements and are therefore of utmost importance in the manufacturing cycle of any space part or component. Chambers that simulate space environment conditions, called thermo vacuum chambers, are used.

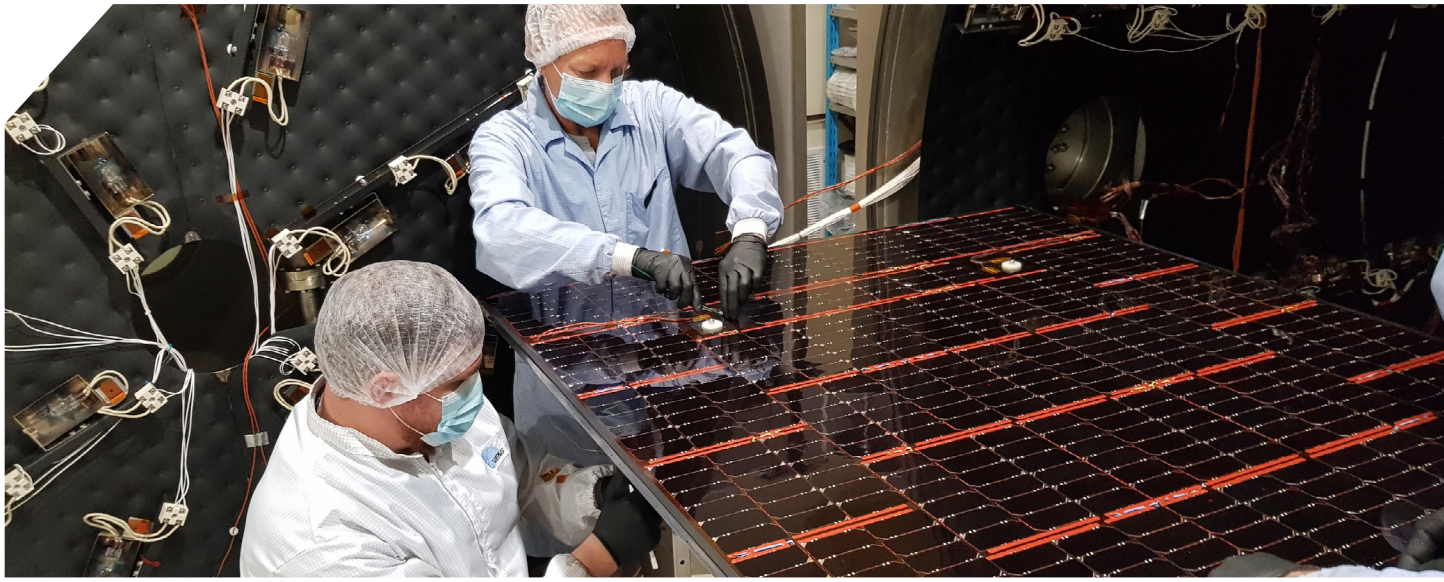
The tests performed on the ground consist of placing the satellite or part of it inside these chambers under high vacuum conditions and exposing them to different thermal conditions. The satellite has to be prepared to withstand abrupt temperature changes without altering its performance.

In addition, this laboratory integrates thermal components, such as temperature sensors, thermostats or heaters, which are responsible for controlling that the different elements of the satellite do not operate outside the critical ranges expected in flight.

TESTS // SERVICES

Thermo-vacuum tests	**Environmental thermal cycling tests**	**Thermal shock test**
Moisture testing	Integration of active thermal control elements	Bakeout (decontamination bakeouts)
Numerical simulation to predict the behavior of the devices under test	Engineering consultancy for test definition and planning	Calibration of temperature sensors

Design of thermal MGSEs (mechanical support equipment) and thermal setups (equipment to set specific test conditions)



FEATURES

- Air treatment ensuring a 100K type environment, with a particle count of 100,000 particles per cubic foot of air (Fed-std-209E standard) and with controlled temperature and humidity (Temperature: 22 ± 3 °C relative humidity: 55 ± 10 %), complying with ISO 8 (ISO14644 standard) of the "European Cooperation for Space Standardization" (ECSS). (ECSS).

- 2 internal rooms with independent environmental control: both rooms type 100K with temperature, humidity and particle control for preparation and integration activities.

- 3 thermo-vacuum chambers of different sizes adaptable to each device to be tested, with an operating range between -190°C and 130°C, controlled with halogen lamps or resistors for heating and liquid nitrogen for cooling; reaching a vacuum level in the order of $1x10^{-6}$ mbar in any of them, with the use of a 3-stage pumping system. More than one thousand temperature sensors available for monitoring the tests.

- 2 Environmental chambers for thermal cycling tests with temperature control between -75°C and 180°C and humidity between 5%RH and 98%RH.

- Laboratory equipped with "work islands" around each chamber, which allow performing integration tasks and preparation of tests at the foot of the machine, also having a bridge crane for handling larger loads.

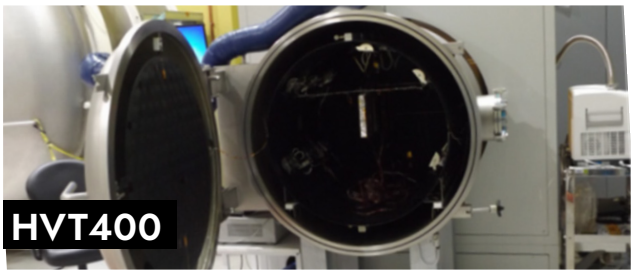
- Control room isolated from the test sector, to monitor the tests with each of the thermo-vacuum and environmental chambers, providing greater comfort to the personnel in the operation and at the same time preventing risks associated with the work.

- Standard equipment for the calibration of temperature sensors, with an operating range between -100°C and 155°C.

- Permanent oxygen level monitoring system throughout the laboratory for the use of liquid and gaseous nitrogen, and a centralized alarm system that warns of a nitrogen leak.

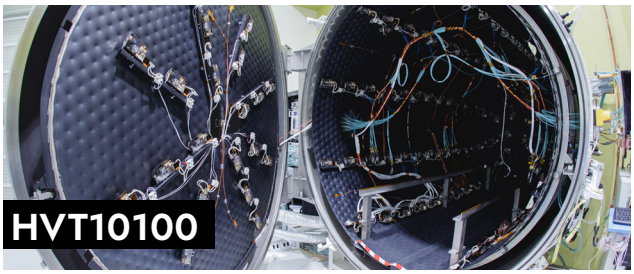
- Controlled stock system for the storage of components and supplies.

EQUIPMENT



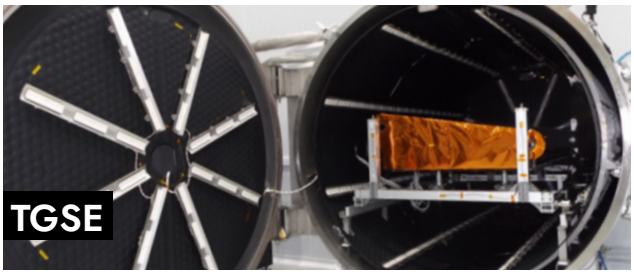
HVT400

USEFUL VOLUME	316 liters
USEFUL MEASUREMENTS	710 mm diameter 800 mm depth
LAST PRESSURE	1x10-6mbar
TEMPERATURE RANGE	-190°C / 130°C
MAX. WEIGHT (DUT)	40 kg



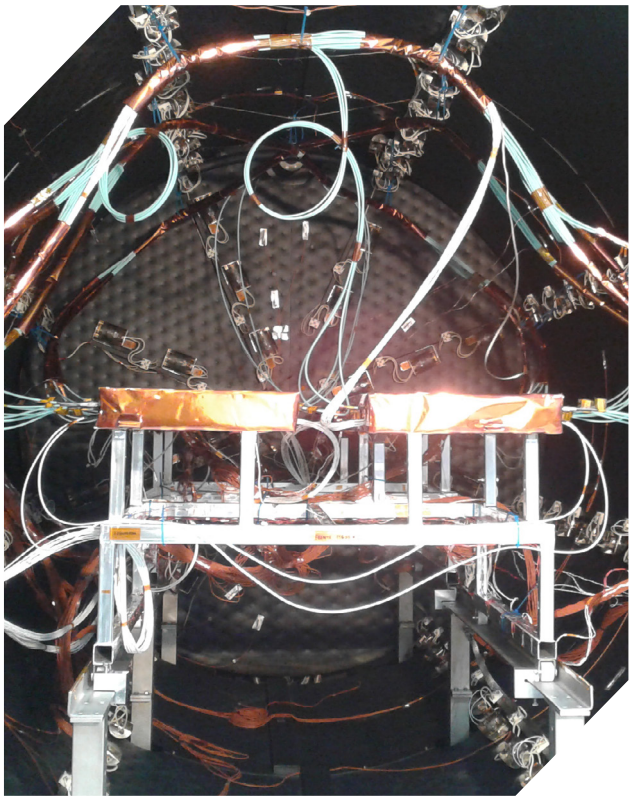
HVT10100

USEFUL VOLUME	9500 liters
USEFUL MEASUREMENTS	2050 mm diameter 3030 mm depth
LAST PRESSURE	1x10-6mbar
TEMPERATURE RANGE	-190°C / 130°C
MAX. WEIGHT (DUT)	200 kg



TGSE

USEFUL VOLUME	31230 liters
USEFUL MEASUREMENTS	2560 mm diameter 5000 mm depth
LAST PRESSURE	1x10-6mbar
TEMPERATURE RANGE	-190°C / 130°C
MAX. WEIGHT (DUT)	500 kg



DY500

USEFUL VOLUME	454 liters
USEFUL MEASUREMENTS	880 mm width 580 mm depth 890 mm high
LAST PRESSURE	-75°C / 180°C
TEMPERATURE RANGE	5% / 98%
MAX. WEIGHT (DUT)	50 kg

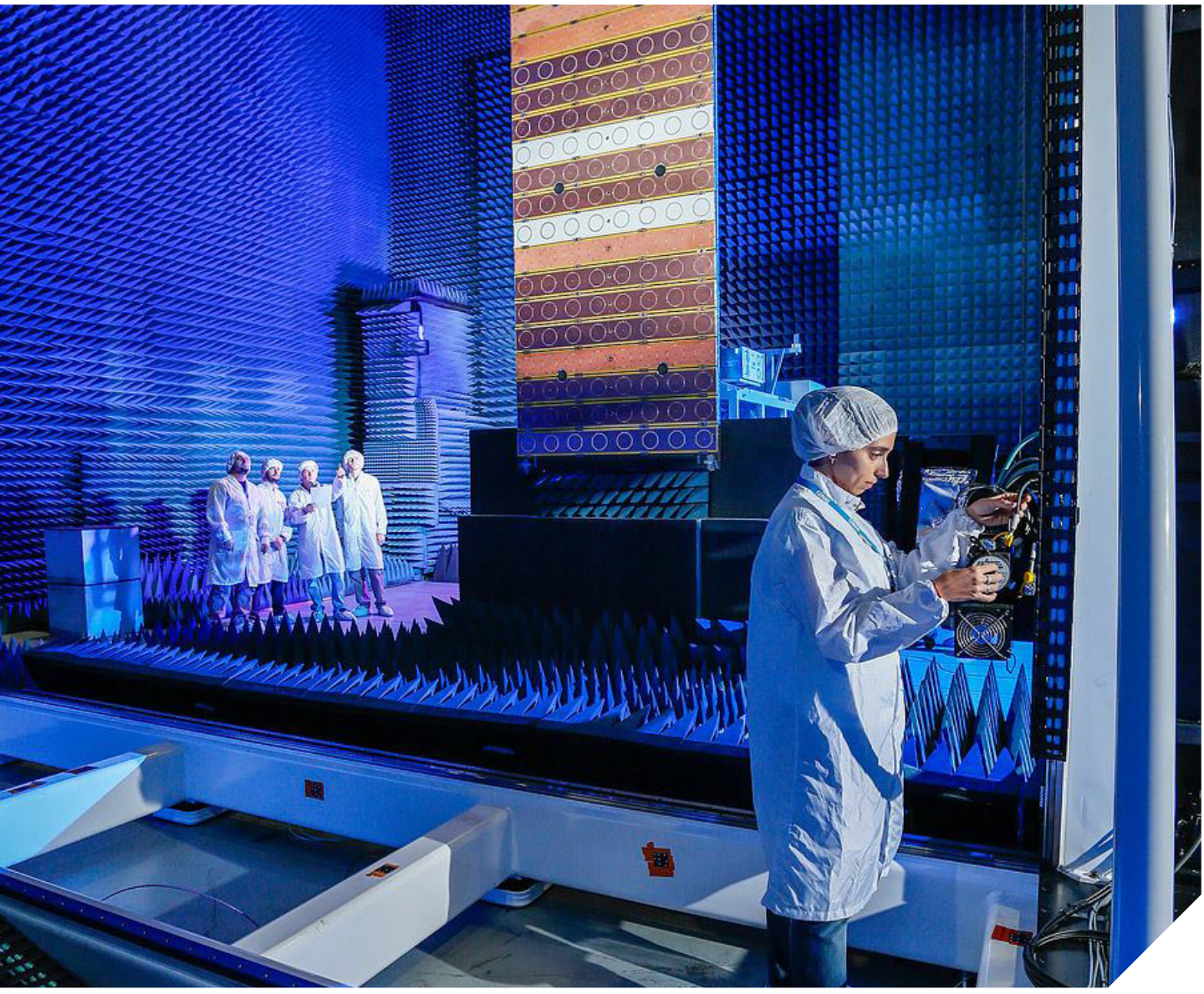
DY1400

USEFUL VOLUME	1368 liters
USEFUL MEASUREMENTS	1000 mm wide 1342 mm deep 1020 mm high
LAST PRESSURE	-75°C / 180°C
TEMPERATURE RANGE	5% / 98%
MAX. WEIGHT (DUT)	50 kg

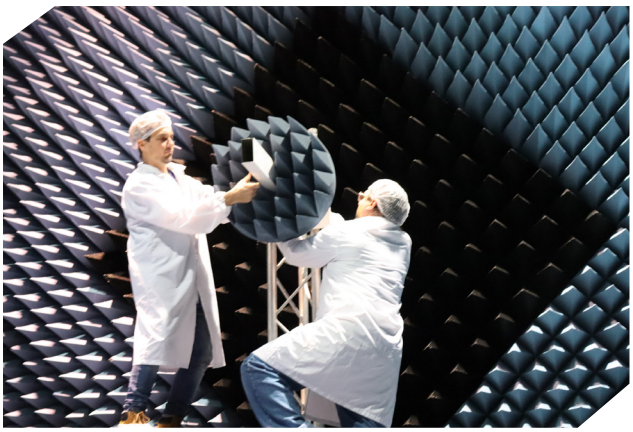
TEMPERATURE CALIBRATOR

OPERATING RANGE -100°C to 155°C

ANTENNA DESIGN AND TESTING SERVICES

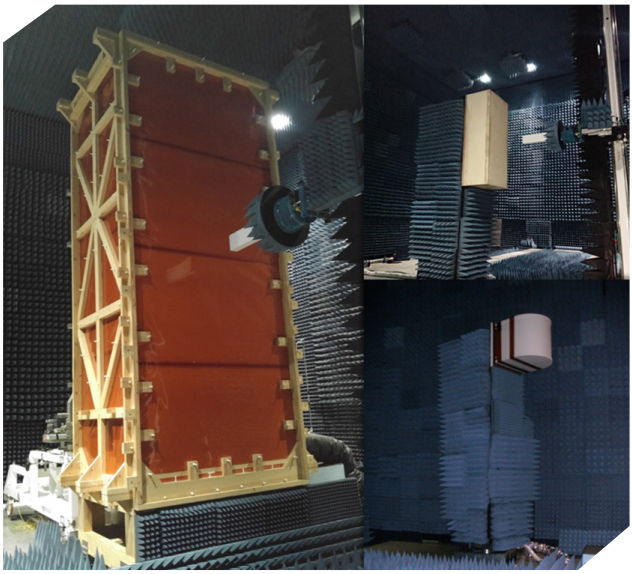


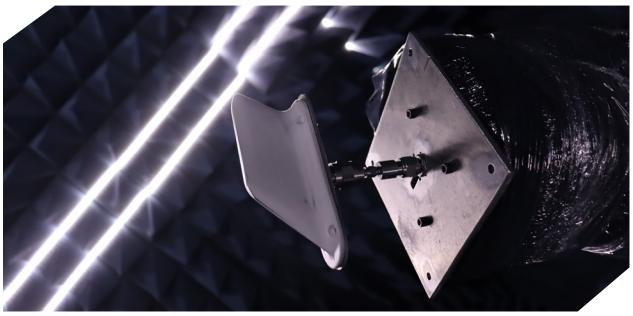
In the Antenna Design and Testing Laboratory facilities, tests related to the functional parameters of the antennas can be performed, such as: radiation properties, S-parameters, power, among others. In addition, the available Anechoic Chambers are also suitable for acoustic tests. In terms of development, design and construction of antennas are available options.



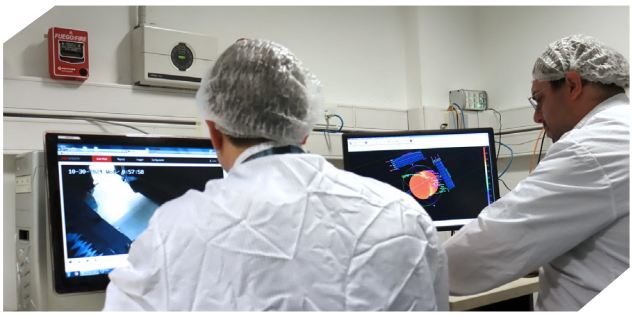
LaMA has 3 Anechoic Chambers of different sizes, equipped with high quality measuring instruments, which allow performing different types of tests according to the requirements requested by the customers. The coordinate systems that can be used are *Planar, Cylindrical and Spherical*.

In addition, it is able to perform tests at different temperatures by inserting the antennas inside the **Cámaras Térmicas** available in the laboratory. In particular, for cylindrical coordinates and small or medium-sized antennas (dimensions up to 1.5 m x 0.5 m x 0.5 m), the thermal measurement range is from -100°C to 100°C; while in the planar system and for large antennas (up to 1.5 m x 3.5 m x 1 m), the same is from -60°C to 70°C.





In the case of **Power Handling** tests, the available frequency range is between 800 MHz and 3 GHz.



Antenna designs and analysis are performed with commercial software using finite element methods applied to electromagnetic structures.

ACTIVITIES // SERVICES

Radiation testing between 300 MHz and 40 GHz	High power testing between 800 MHz and 3 GHz	Radiation tests in spherical configuration: 360° x 360°
Radiation tests in cylindrical configuration: 5.4 m x 360°	Radiation tests in planar configuration: 11 m x 5.4 m	Radiation vs. temperature tests from -100°C to 100°C (maximum range)
S-parameter measurements	Acoustic testing	

FEATURES

- Air treatment system that guarantees an environment with a quantity of 100,000 particles per cubic foot of air (Standard: Fed-std-209E / ISO14644), and with controlled temperature and humidity (Temperature: 22°C ± 3°C, Relative Humidity: 55% ± 10%), complying with the ISO 8 (ISO14644) standard of the European Cooperation for Space Standardization (ECSS).
- Laboratory consisting of 3 ISO 8 class anechoic chambers, designed to absorb all the reflections produced by electromagnetic waves on any of the surfaces (floor, ceiling and side walls). At the same time, they are isolated from the outside, which protects them from any source of external influence. The combination of these two factors means that the rooms emulate space-like conditions.

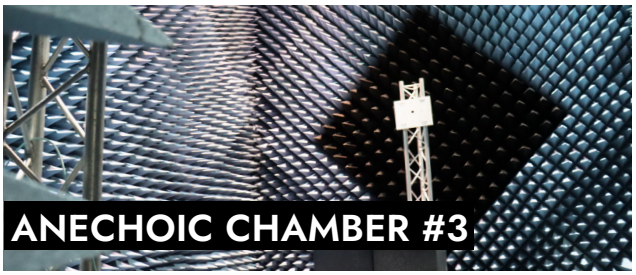
EQUIPMENT

Dimensions: 12.5 m x 13.5 m x 8.5 m (depth x width x height)

It has a Near Field System Inc. (NSI-MI) measurement system, which is composed of angular displacement axes in Azimuth, Pol and Phi, and linear displacement in X, Y, Z.

Dimensions: 4.9 m x 2.6 m x 1.6 m (depth x width x height)

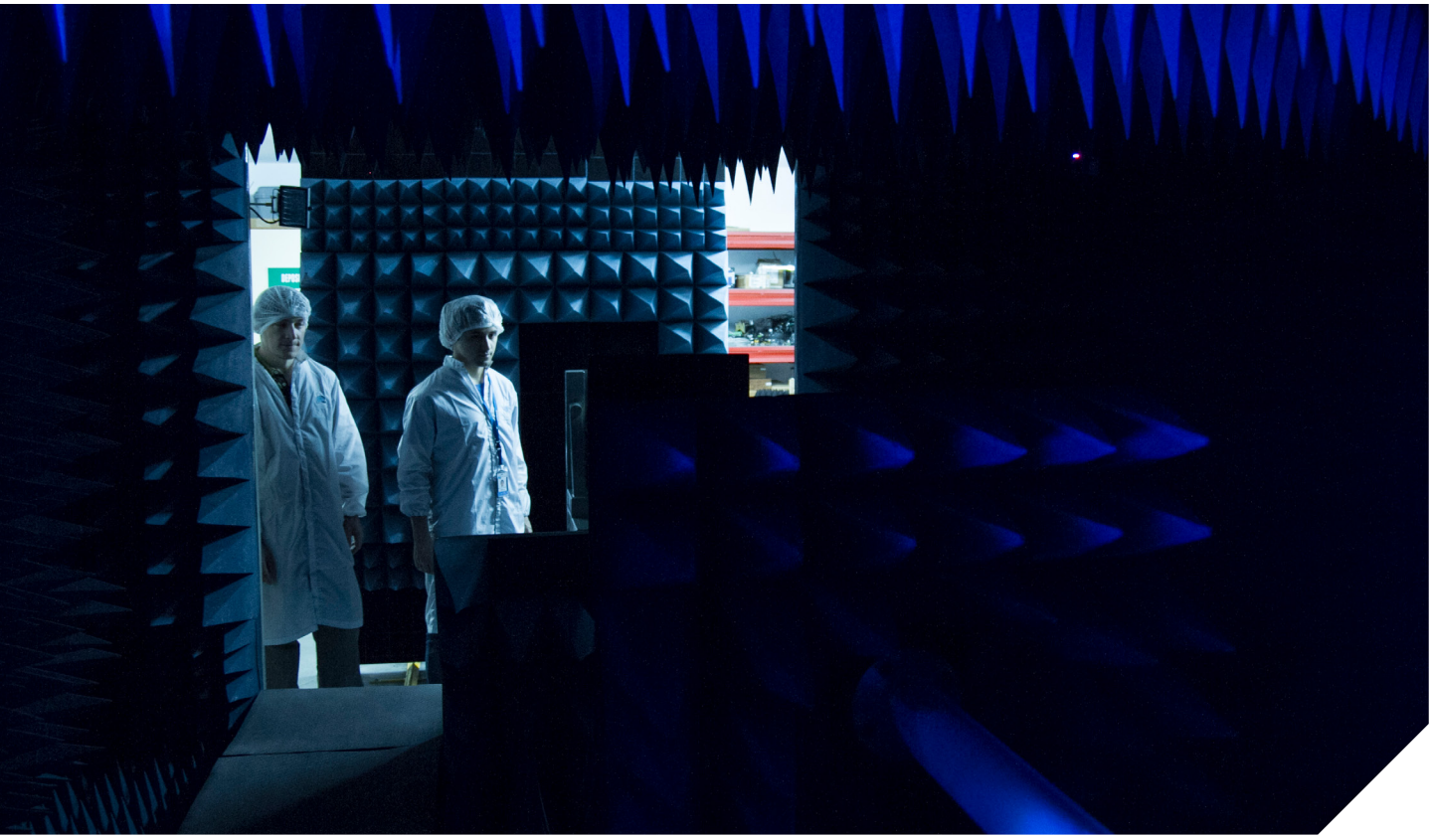
It has a Near Field System Inc. (NSI-MI) measurement system, composed of angular displacement axes, in Azimuth, Pol and Phi.



Dimensions: 7.23 m x 5.95 m x 7 m (depth x width x height)

It has a **Vector Network Analyzer** that is mainly used in this chamber for antenna calibration (Brand: Agilent, Model: N5245A).

ELECTROMAGNETIC COMPATIBILITY SERVICES



LaCEM performs all electromagnetic compatibility testing, analysis, measurement, evaluation and reporting services in a complete and reliable manner.

Electromagnetic compatibility testing (EMC) is essential to ensure that electronic devices and systems can operate correctly in an electromagnetic environment and avoid unwanted interference that may affect their operation or that of other nearby devices. These tests are governed and regulated under strict standards such as IEC (International Electrotechnical Commission), for the industrial and scientific part, MIL-STD (military standard) for the aerospace part, etc.

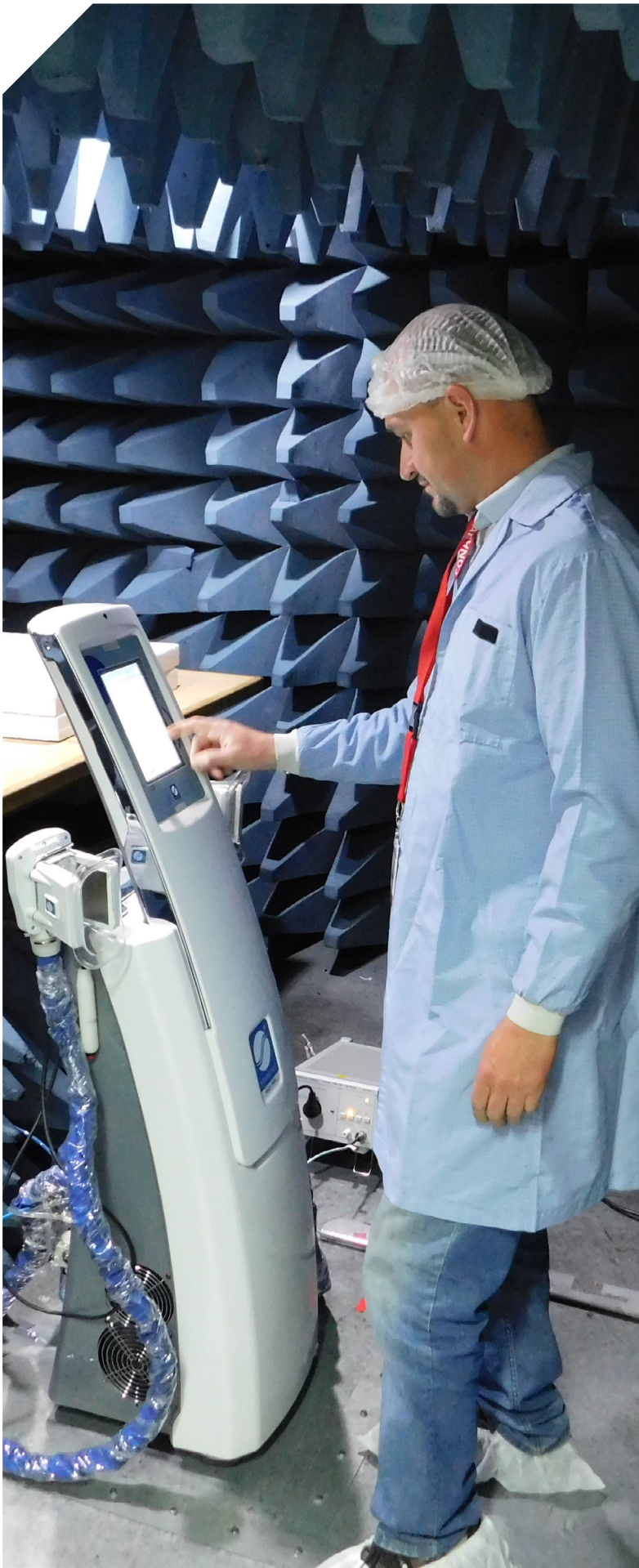
TESTS

Emission test (conducted and radiated)
This test is performed to measure the amount of electromagnetic energy that a device emits. The amount of energy is measured at different frequencies to ensure that it does not exceed the limits set by regulatory agencies.

Immunity test (conducted and radiated)
This test is performed to measure the ability of a device to resist the effects of electromagnetic interference from its environment. The device is subjected to a variety of interference conditions, such as radio waves, magnetic fields and electrical transients to measure its resistance.

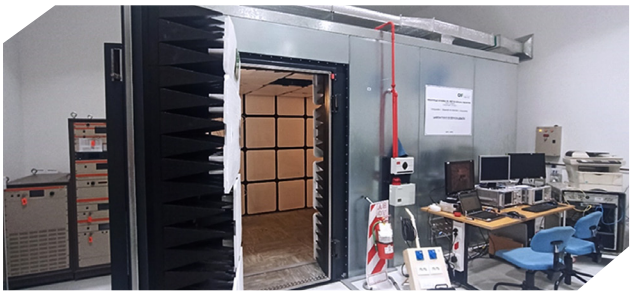
Electrostatic discharge test
This test is performed to measure the ability of a device to withstand electrostatic discharge (ESD) and prevent failure or damage. The device is subjected to high voltage discharges to verify its resistance capability.

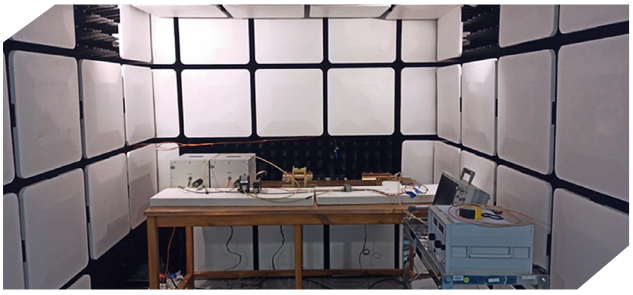
In addition, pre-compliance tests are performed, providing assistance and advice to industries that manufacture equipment with electronic systems, in order to guide them in the solution of design and development problems through tests, to comply with the required standards and thus be able to market the products they manufacture.



EQUIPMENT

The laboratory consists of two semi-anechoic chambers. One of the chambers is located in a class 100,000 room, with a frequency range from 9KHz to 18GHz, with amplitudes up to 200V/m. The other chamber is 1m for subsystems, with a frequency range from 10K to 18Ghz with field amplitudes up to 100V/m.





SERVICES

Emissions conducted	Conducted susceptibility	Radiated emissions
Radiated susceptibility	Grounding	Bonding
Isolation	ESD	Inrush (In voltage and current)
BCI	Spurious	Safety
	Thermography control	

WE OFFER TESTING FOR THE FOLLOWING STANDARDS

IEC

MILITARY MIL-STD TESTING SERVICES

DO-160

UNE NormalizaciónEspañola

ISO

EUROPEAN NORM EN

PRECISION METROLOGY SERVICES

Spatial quality precision metrology service and solutions, with the ability to measure and align complex parts/structures under the highest quality standards.

FARO LASE TRACKER VANTAGE

It is an extremely accurate, portable coordinate measuring machine that enables you to build products, optimize processes, and deliver solutions by measuring quickly, simply and precisely.

Distance measurement performance

Resolution
0,5µm

Precision (MPE)
16µm + 0,8µm/m

Angular measurement performance

Angle precision (MPE)
20µm + 5µm/m

Precision Level Accuracy
±2 arc sec

GEODETIC SYSTEMS V-STARS M PHOTOGRAMMETRY

V-STARS M employs multiple cameras and operates as a portable optical coordinate measurement machine (CMM) to provide 3D coordinate measurement in real-time, in both stable and unstable environments, at a rate of up to 10 points per second. V-STARS M employs two or more custom-built digital cameras, presently either INCA4 or DynaMO high-speed, high resolution cameras, to make accurate, real-time measurements of static or dynamic objects, through use of wireless operated tactile probes, retro-refective targets or projected PRO-SPOT points.

INCA4

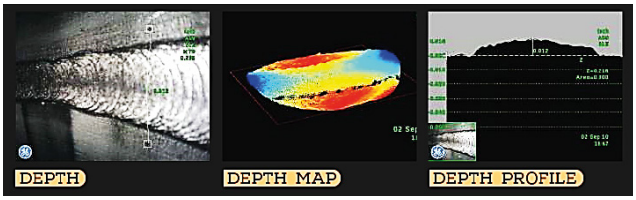
Accuracy
9µm+9µm/m o 1:90.000

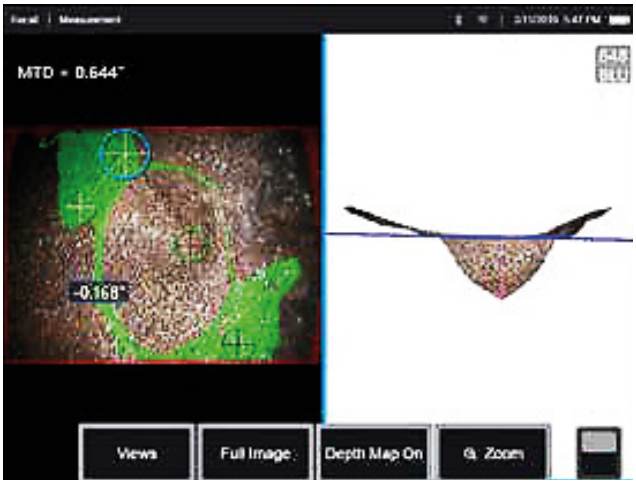
Dynamo D5

Accuracy
14µm+14 µm/m or 1:60.000

PRO-SPOT

Point density
600 to 23.000 pts





MENTOR VISUAL IQ

These videoscopes allow mapping, measuring and analyzing 3D indications and improving probability of detection (POD) by verifying the job in real time. Mentor Visual iQ provides the processing power to operate 3D phase measurement and 3D stereo measurement with point cloud analysis.

Diameter Probe

4.0 mm (0.16"), 6.1 mm (0.24"),

8.4 mm (0.33)

Image Sensor

1/6" Color Super HAD™ CCD camera

(6.1) 1/10" (4.0 mm)

Pixel Count

440,000 pixels


Leica

AERONAUTICAL MECHANICAL ENGINEERING

The Aeronautical Mechanical Engineering team of VENG has extensive experience linked to the flow of MAIT (Manufacturing, Assembly, Integration and Testing) of space systems, based on the main standards of this industry, such as NASA and ESA. Notwithstanding the specificity of these disciplines, it has been possible to transfer this knowledge to other sectors, such as general industry, aeronautics and nuclear.

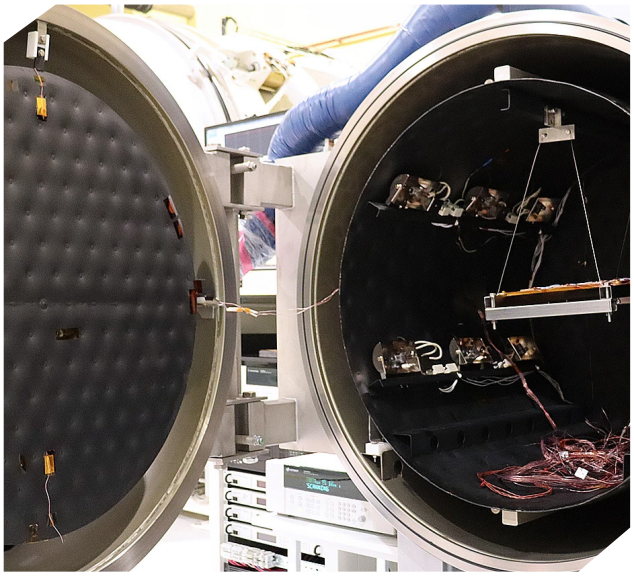
The team has outstanding professionals in the design and analysis of mechanical and thermal specialties; using state-of-the-art tools, such as SolidWorks and Ansys software. In addition, it is highly skilled in the elaboration of test plans, in order to close the verification and validation cycle of the designed systems.

INDUSTRIAS

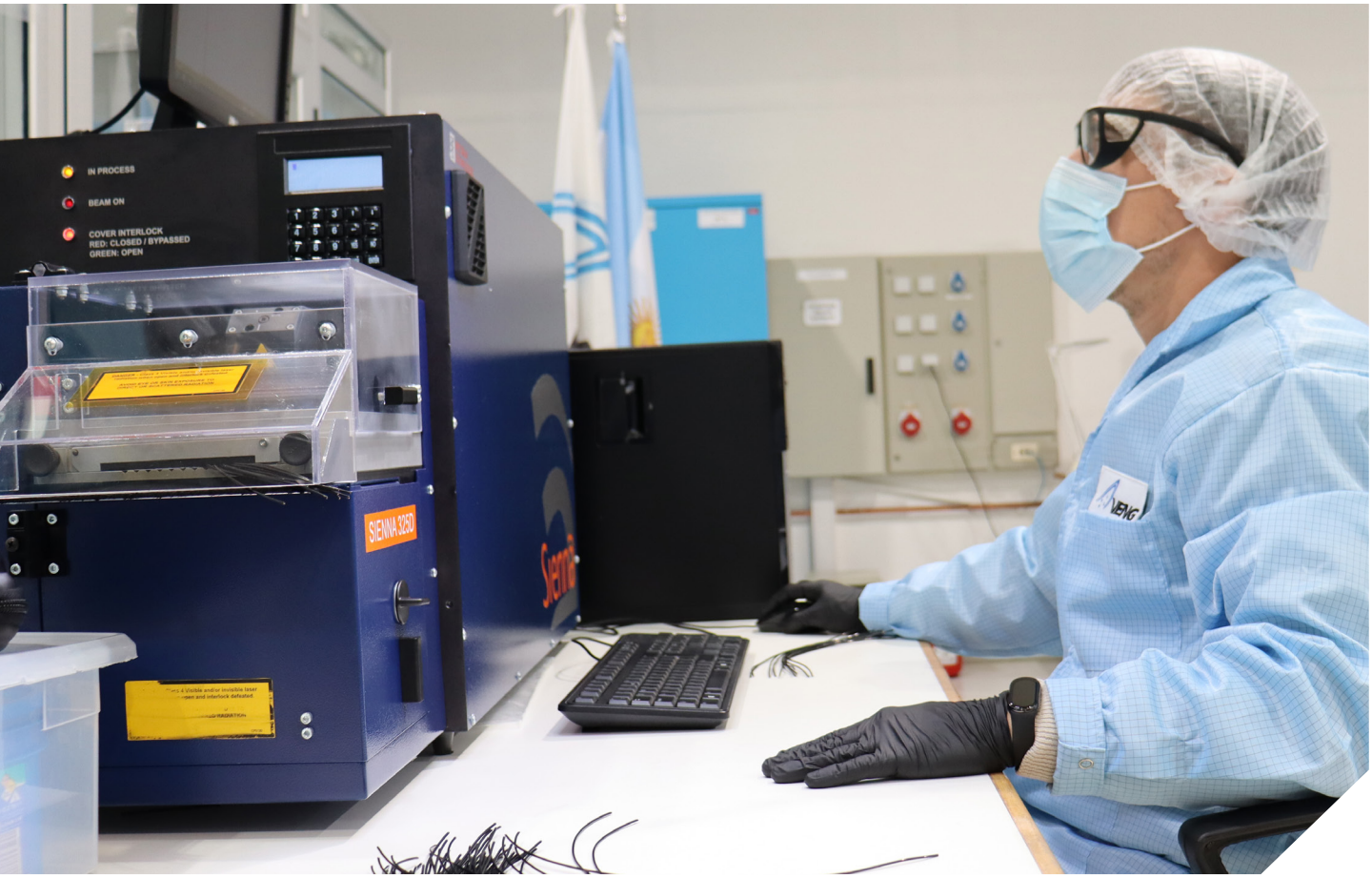
- Aeronautics
- Space
- Oil & Gas
- Nuclear
- General Industry

SERVICES

- Mechanical design of devices and structures associated with different industries.
- Design of thermal control systems for the aerospace industry.
- Thermal and structural analysis through computational simulation.
- Design and implementation of manufacturing, assembly and integration processes for mechanical and thermal subsystems.
- Design of test plans for verification and validation of systems.



ELECTRONICS ENGINEERING



The electronics engineering team has extensive experience in the design of satellite instrument systems and subsystems, with a primary focus on SAR missions, such as the successful SAOCOM missions and the upcoming Sabia-Sea mission. In addition, we have applied our knowledge and experience in a variety of industries, including aeronautics, petroleum and Oil & Gas, as well as projects related to radar, defense and special process automation.

For the management of our designs we adhere to the engineering standards established by ESA and NASA, adapting them to the specific needs of each project. For PCB design, we have engineers certified by IPC standards for space applications, guaranteeing excellence in every detail. We are currently in the process of obtaining ISO 9001 certification, which is expected to be completed by the end of 2024.

As for our tools and technologies, we work with state-of-the-art software, including LabVIEW, Altium, Feko, ANSYS and SolidWorks, among others. In addition, we have multipurpose equipment, such as NI PXI modules, which allow us to carry out functional tests and rapid tests efficiently.

INDUSTRIES

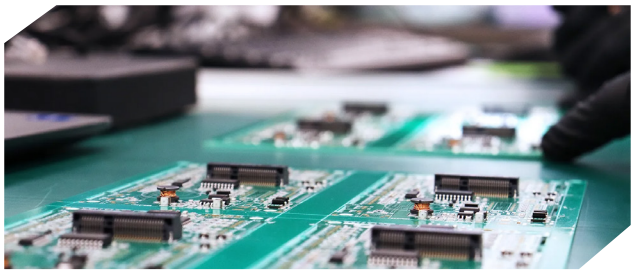
- Aeronautical-Military
- Aerospace
- Oil & Gas
- Defense
- Diverse industries (Automotive, IT, food, agriculture, etc.)

SERVICES

- Analysis, design and implementation of electronic hardware devices with commercial, industrial, military and aerospace quality.
- Specialized design of PCBs for high reliability projects based on IPC standards, for military and/or aerospace applications.
- Analysis, design and implementation of firmware, software and embedded software for digital and high speed applications.
- Analysis, design and implementation of electronic systems for product testing.
- Research of electronic systems for implementation of custom applications.

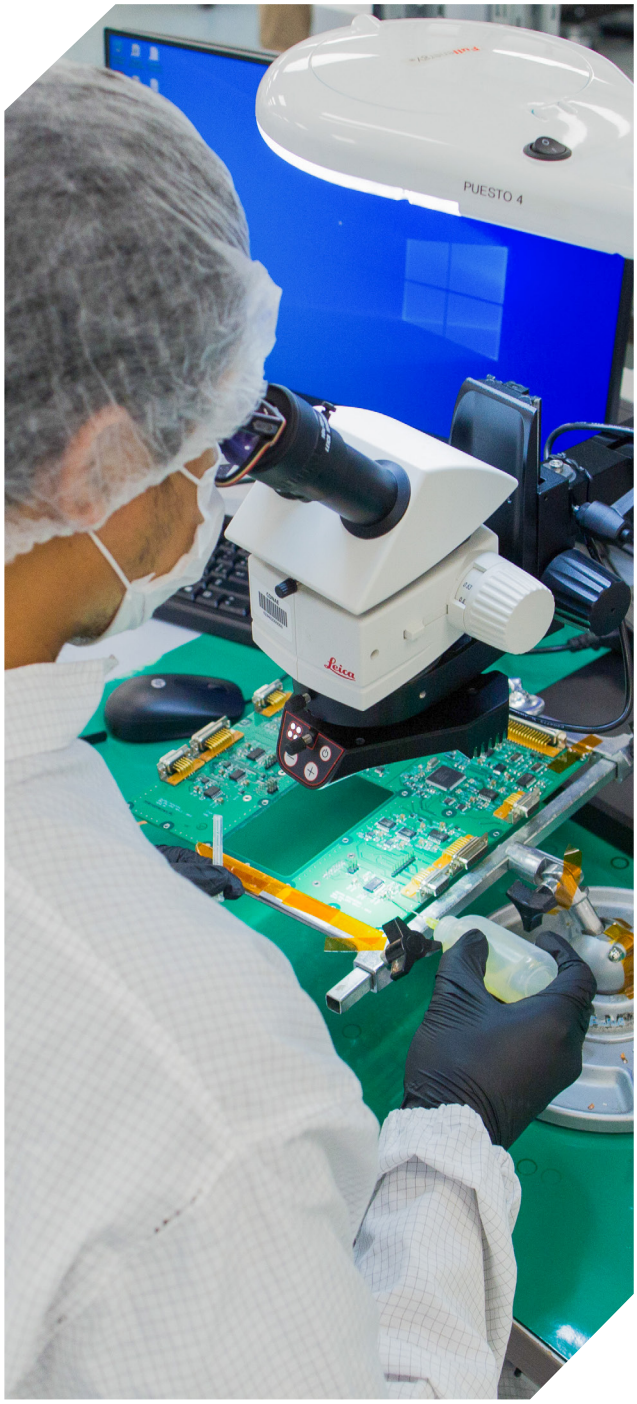
SURFACE-MOUNT TECHNOLOGY (SMT)

We offer a high quality electronic board assembly service, suitable for both industrial and space applications. We are guided by IPC standards, from industrial standards IPC-A-610 and IPC-J-STD-001 to the most stringent space requirements.



We have automated SMT technology and manual soldering technology for both surface mount and insertion, which allows us to adapt to various assembly needs. Each plate is inspected and validated to ensure durability and reliability, meeting the most demanding customer and regulatory requirements.

With high quality automated SMT (Surface-Mount Technology), we have the capacity to assemble electronic boards, adapted to the specifications of each customer and ensuring maximum durability and reliability. We use advanced machinery to achieve maximum precision and reliability in each project.



JUKI G TITAN

Equipped with automatic paste dispensing system for uniform and precise application.

PCB SIZE	Min. 50mm x 50mm Max. 510mm x 510 mm
ADJUSTABLE INSOLE FRAME SIZE	Min. 470 x 370mm Max. 737 x 737mm
PUNE HEIGHT	0.4mm to 6mm.

VAC745

Vapor-phase soldering machine with a specialized vacuum system to remove porosities from the solder. This system significantly improves reliability by eliminating air bubbles and ensuring homogeneous heat distribution, ideal for sensitive components and complex assemblies.

JUKI RS-1R

Capable of placing up to 50,000 components per hour, equipped with an adaptable 8-nozzle placement head, allowing fast and accurate assembly of various components.

One LNC-120 multi-nozzle 3D laser alignment system with eight nozzles

PUNE HEIGHT	1mm, 6mm, 12mm, 20mm, 25mm
PCB SIZE	370mm W x 650mm L (Max)

PCB SIZE	600 x 500 mm
DOBLE LAYER	

Leaded and lead-free soldering capability

MANUAL WELDING AND AEROSPACE QUALITY INSPECTIONS

CAPABILITIES

- Electronic Manufacturing Engineering
- PCB design review, for implementation of inspections and workmanship requirements
- Manual SMD Soldering and Insertion

INSPECCIONES

- Visual Inspection
- RX Inspection
- Solderability Test

REFERENCE STANDARDS

- IPC 610, J-STD- 001, IPC 620, IPC 7721/11, IPC A 600
- J-STD-001 Spatial Appendix
-
- ECSS-Q-ST-70-08, ECSS-Q-ST-38, ECSS-Q-ST-70-61

SPECIAL MACHINING

TORNO VERTICAL CNC

LYMCO RAL-12M

DISTANCE BETWEEN ENDS	1250mm
MAXIMUM TURNING DIAMETER	1250mm
MACHINABLE HEIGHT	1500mm
MACHINABLE DIAMETER	1500mm
MAX. WEIGHT	6 Tn
AXIS Z	900mm

LYMCO DV-3000MT

BED DIAMETER	3000mm
CONE	BT 50
PROGRAMMABLE DIVIDING CHUCK	0° — 360°
MAX. MACHINABLE DIAMETER	3400mm
MAX. MACHINABLE HEIGHT	2000mm
MAX. WEIGHT	22.000kg
FIXED TOOL POST	90°
DIVIDING TOOL POST	0° — 90°

HORIZONTAL CNC LATHE

ACRA FEL 6080 CN

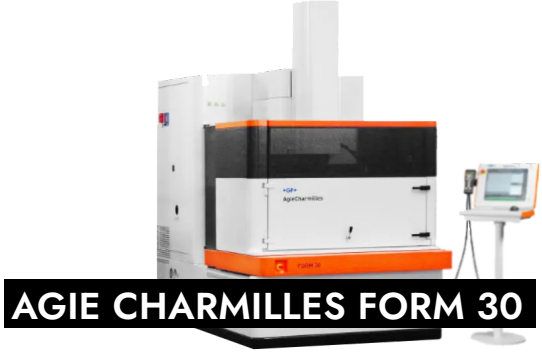
DISTANCE BETWEEN ENDS	2250mm
MAX. Ø ADMISSIBLE ON BEDPLATE	1500mm

WIRE CUT MACHINE

AGIE CHARMILLES CUT 30P

U-V =	+/- 50mm
WORKING VOLUME	1030x800x350mm
MAX WEIGHT	1 Tn.
X AXIS	600mm
Y AXIS	400mm
Z AXIS	350mm

ELECTRO-EROSION MACHINE



AGIE CHARMILLES FORM 30

WORKING VOLUME	1200x800x500mm
MAX. WEIGHT	1 Tn.
MAX ELECTRODE WEIGHT	100 Kg.
X AXIS	600mm
Y AXIS	400mm
Z AXIS	400mm

CNC MILLING CENTER

HAAS VM6

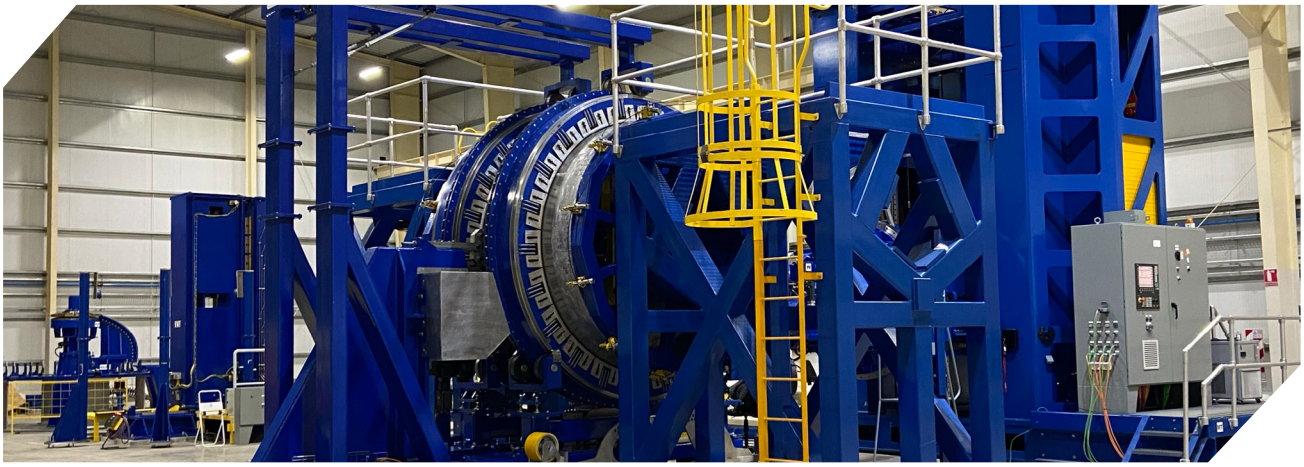
BED DIMENTIONS	L1626mm x 813mm
MAX. HEIGHT	762 y 300 mm
MAX POWER	30 Hp
MAX SPEED	12000 rpm
MAX WEIGHT	1814kg
CONE	BT40

HAAS VF3YT

BED DIMENTIONS	L1372mm x 635mm
MAX. HEIGHT	749mm
MAX POWER	30 Hp
MAX SPEED	8100 rpm
MAX WEIGHT	1588k
CONE	BT40

SPECIAL WELDING: FRICTION STIR WELDING CENTER (FSWC)

A solid-state welding process where a non-consumable tool is used to join two parts without melting the part material. This allows very high joint efficiencies to be achieved in alloys where conventional welding (melting) degrades the mechanical properties by a high percentage. Friction stir welding is therefore widely used in the space, naval and military industries to weld mainly aluminum alloys.



MANUFACTURER	Nova Tech Engineering Inc.
GEOMETRY	Longitudinal, circumferential welds
JOINTS	Stopper, Overlapped
MATERIALS	Aluminum alloys

THICKNESS	2,4 mm – 13 mm
WELDING LENGTH	2600 mm (max)
TOOL RPM	5 rpm – 2000 rpm
MAXIMUM LOAD	53400 N
MAXIMUM TORQUE	450 Nm

AUTOMATIC GTAW WELDING MACHINE // AMI M415

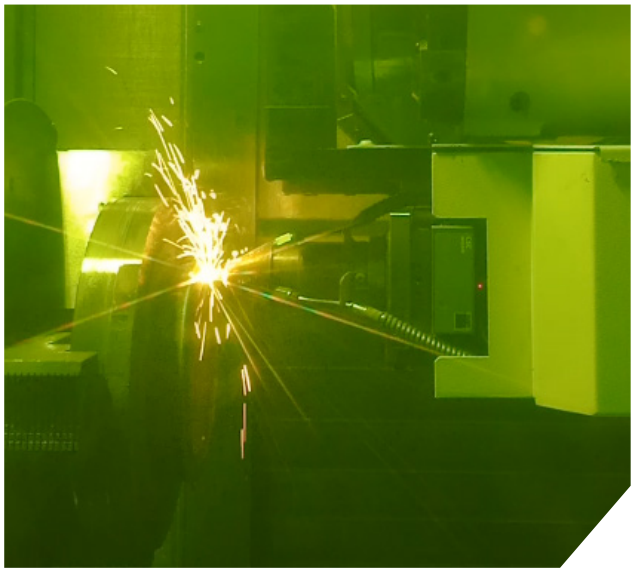
OUTPUT CURRENT RANGE	5A – 400A
CURRENT TYPE	Continuous or Pulsed Direct Polarity
AUTOMATIC ARC CONTROL	5VDC – 25VDC

WELDING HEAD - AMI MODEL 15

CONTRIBUTION FEED RATE	5 – 200rpm
TRANSFER SPEED	0,1 – 20rpm

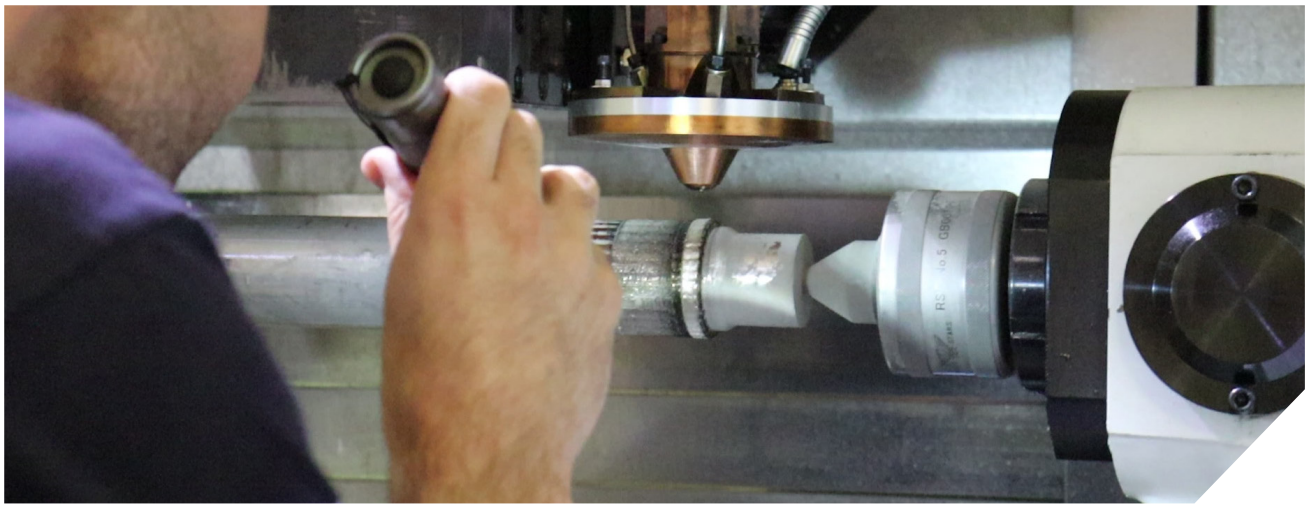
DEVELOPMENT OF ADDITIVE MANUFACTURING PRODUCTS

Additive manufacturing services, ranging from state of the art 3D metal printing (DMD) to electroplating facilities. This state of the art manufacturing service allows as to develop complex metal components with a high manufacturing efficiency.



3D DMD ADDITIVE

MAX. DIAMETER	650 mm
MAX. LENGHT	112 g
STANDARD SPINDLE SPEED	4.200 [3.000] rpm



CARBON FIBER WINDINGS

Design services and winding of composite materials. With the capacity to manufacture large pieces, of about 1500 mm in diameter and 9000 mm in length, with optimal mechanical vs weight performance.

RACKS FOR GAS STORAGE

These RACKS provide a solution to contain and transport 18 to 36 kg of H2 at ambient temperature, storing the gas at a pressure of 400 bar.

SPECIAL HEAT TREATMENTS

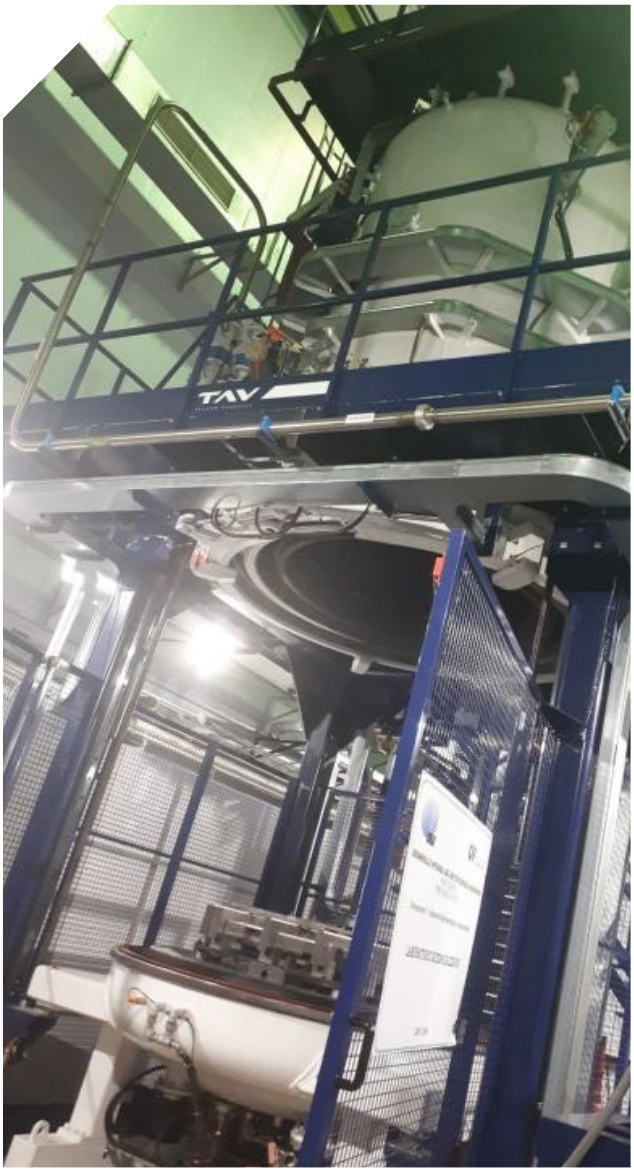
High quality Brazing and Heat Treatment services in controlled atmosphere and high vacuum environment. This service ensures space industry grade quality mechanical properties and surface finish.

SERVICES

Non-conventional welding process. Brazing	High temperature (1370°c) and high vacuum (1×10-⁶mbar) furnace	Work in controlled atmosphere (NG2) or vacuum
Customized temperature profiles for different heat treatments	Process monitoring and post-processing of data	

VERTICAL VACUUM FURNACE

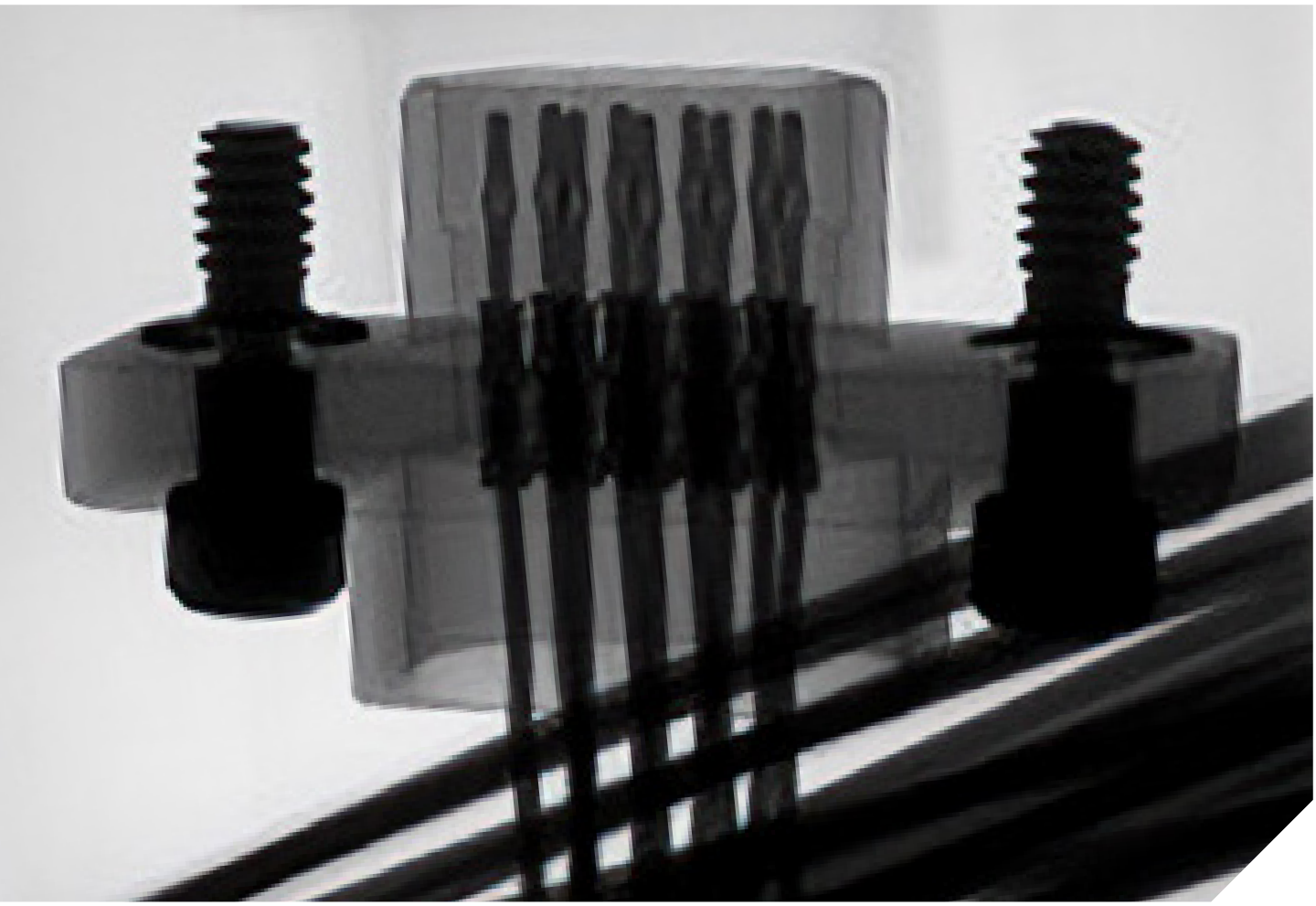
CHAMBER DIAMETER	1200mm
HEIGHT	1500mm
WEIGHT CAPACITY	1500kg
MAX. TEMPERATURE	1370°C
VACUUM PRECISION	±5°C. Vacuum 5 x10-6 mBar
PROTECTIVE GAS SHIELD	N 6,5 Bar
HEATING POWER	260 KW



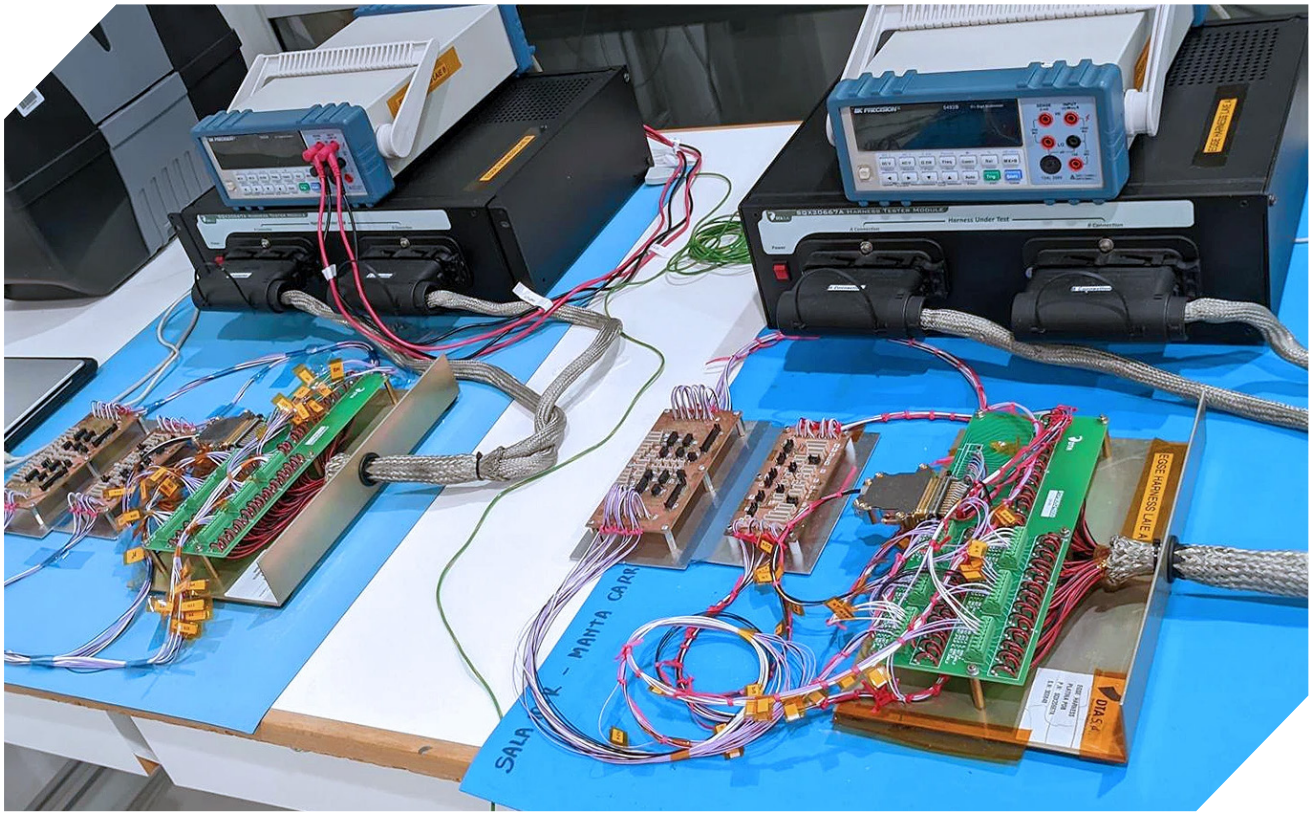
HARNESS

We are a leading company in manufacture of harnesses for Power, Radiofrequency and Control applications. Several of our productions are supplying satellites with excellent results, as we have developed high-quality solutions for projects of national importance, such as SAOCOM and SABIA-Mar from CONAE, as well as for private customers looking for reliable and efficient results.

Our team of highly trained professionals, working together with the Quality area of the company under ECSS and IPC standards, uses advanced technologies and top-quality materials to guarantee the reliability and efficiency of all our products. We manufacture by welding and crimping, and we have different cable stripping methods: mechanical, thermal and laser, which adapt to all types of cables and sheaths.



We strive to deliver superior quality results to our clients, so we maintain our focus on innovation and continuous improvement, to offer products that meet your expectations.



We also have equipment and processes to carry out pull tests that guarantee the integrity of the batches according to requirements, and we can offer RX images as a complement to the manufacturing reports, including continuity and isolation test using specific EGSEs . Everything can be developed in our ISO 7 or ISO 8 Clean Rooms, as well as we can manage RF test in our Anechoic Chambers.

AERONAUTICS

We are pleased to introduce one of our first innovative products for the aviation industry: the Fatigue Meter, a device similar to the electromechanical types used in the market, but with an advanced electronic design of the latest technology with better features and a more reliable system.

The Fatigue Meter is an autonomous system that aims to register accelerations of the aircraft frame or center of gravity to monitor the structural life consumed during flight.

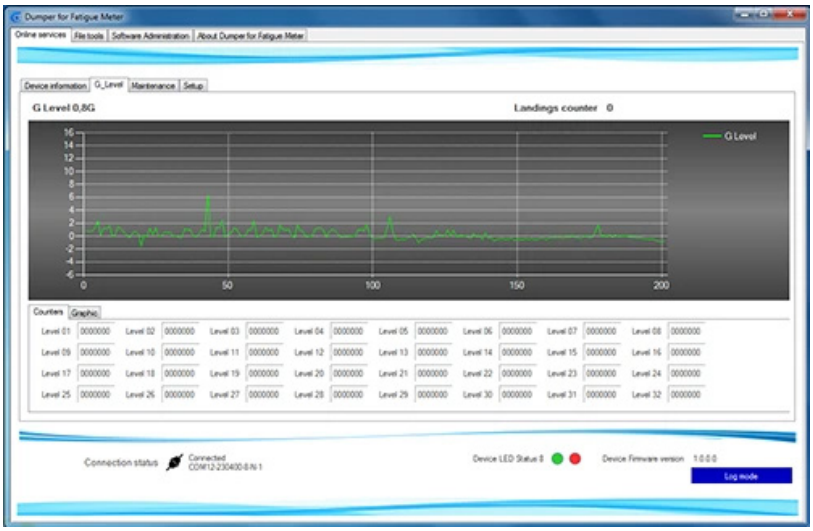
For this, it counts and registers the g values to which the aircraft is subjected, due to the acceleration or deceleration of the flight. Analysis of the 'g's recorded indicates the fatigue load in the structure of the aircraft and the collected data can be used to form realistic statistics and make informed decisions.

MILITARY GRADE CERTIFICATIONS

Enviromental MIL-STD-810H	**EMC/EMI** MIL-STD-461G	**DC Power** MIL-STD-704F
Safety SAE ARP-4761	**Packaging** MIL-STD-2073-1E	**Identification** MIL-STD-130N
	Software DO-178C	

SOFTWARE

- Configure all the parameters of the equipment.
- View all data from current and previous records.
- Verify the functional status of the system and show the following parameters:
  - Sensor reading indicated in G
  - Battery voltage



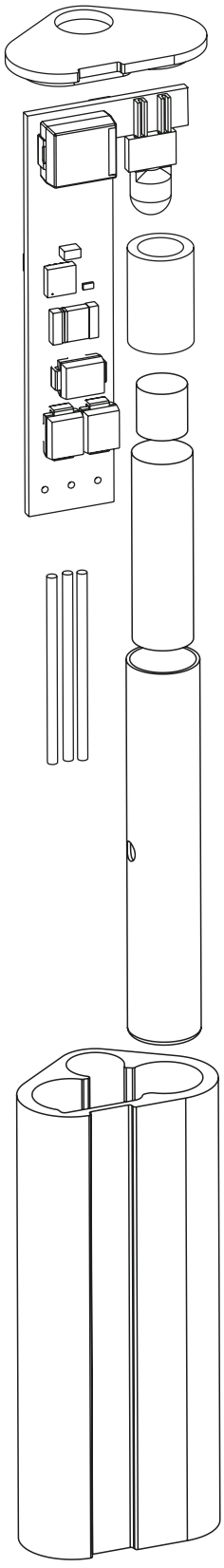
ELECTRONIC DETONATOR FOR THE OIL INDUSTRY

It is intended for perforation applications in conventional and unconventional wells. It is highly versatile as it can be used from 2 ¾" lateral port tandems or any modular gun. VENG's EDS allows for the individual selection of the detonator to be used, with the capability to initiate ETACORD 80 RDX detonating cord.

It was designed and manufactured to work in accordance with API-RP67 recommended practices and falls within the Group 2 electric detonators.

EDS VENG IS BASED ON API-RP67 STANDARD

- A control unit to operate from 1 up to 16 devices that allows the operator to control each device/detonator from a safe distance.
- A communication medium between the control unit and the detonator.
- Detonators with the ability to be connected in Daisy chain and controlled remotely and individually.
- A system verification/testing unit without detonation capability.



ELECTRICAL FEATURES TESTS

- **Radiated Susceptibility (RF-SAFE)**

  Tested at 200V/m in the range of 100MHz to 6GHz. Safe and functional.

- **Direct Current**

  Tested at 220V AC – 50Hz. Safe.

- **ESD**

  Tested under HBM IEC model +/- 25KV; 150pF; 330 Ohm.Safe and functional.

MECHANICAL FEATURES TESTS

Temperature

150°C during 1 hour. Safe and functional.

Tensile strength

31N of traction between the detonator body and the cables.

Fluid inertization

Tested 2min@2bar. Chemical and electronic fluid sensitive.

OPERATIVE FEATURES DESIGN

Power supply voltage

28V+/-4V DC exclusive to VENG Firing Panel.

Primary charge

150mg PbN6

Secondary charge

600mg RDX

Plastic chassis

50mm in length; with integrated holes for detonating cord passage.

Storage

4 year under storage conditions of -40°C to +70°C and RH ≤65% with frequent ventilation.

WORKMANSHIP TRAINING AND COACHING CENTER

We encourage the actors of the electronics industry to use standards and best practices in the operational processes.

We provide knowledge on highly reliable electronic manufacturing processes so that the different industries can apply improvements to their products and services, according to their quality standards.

OUR PROPOSAL

- Unique in South America
- Located at the Teófilo Tabanera Space Center, Córdoba. Close to the city of Córdoba for easy transportation and stay of the participants
- Recertification of IPC standards for CIS operators every two years
- Online classes available
- Ad hoc courses for best practices in the electronics industry with certification from our Workmanship Training Center
- The most important certifications for the electronics industry focused on CIS operators (Certified IPC Specialist)

IPC TRAINER

JUAN FLORES

- Workmanship Training Center Manager
- Responsible for prototyping and low scale production

EXPERIENCE IN THE SPACE INDUSTRY

Responsible for electronic integration and supervision of the CTR subassemblies of the SAOCOM 1A and 1B satellite constellation.
Soldering inspector of SAOCOM electronic boards.

EDUCATION

Electronic Engineering at the National Technological University.
More than 25 years of experience in electronic design and manufacturing.

IPC CERTIFICATIONS

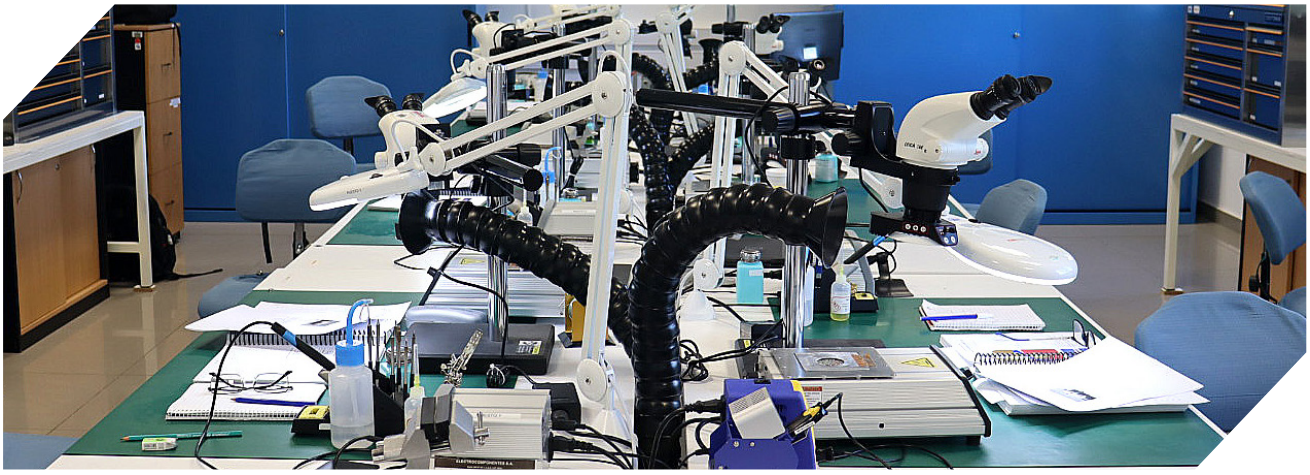
7 IPC certifications that allow him to be an official instructor obtained in Mexico and USA.
He is trained in ESA (European Space Agency) standards.
Extensive international experience in electronics development, manufacturing and supervision.

AVAILABLE IPC CERTIFICATION

IPC-A-610H
Acceptability of electronic assemblies

IPC J-STD-001H
Requirements for soldered electrical and electronic assemblies

IPC/WHMA-A-620D
Requirements and acceptance for cable and wire harness assemblies



COURSES WITH CERTIFICATES DELIVERED BY THE WORKMANSHIP TRAINING CENTER

ANSI/ESD S20.20-2021 Protection of electrical and electronic parts, assemblies and equipment	Welding course with SMT technology + Laboratory practices	Customized Ad-Hoc courses
Welding course with th insertion technologies + Courses laboratory practices	Altium design course focused on SMT manufacturing	

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