



G & A ENGINEERING S.R.L.

COMPANY PROFILE

HEADQUARTERS

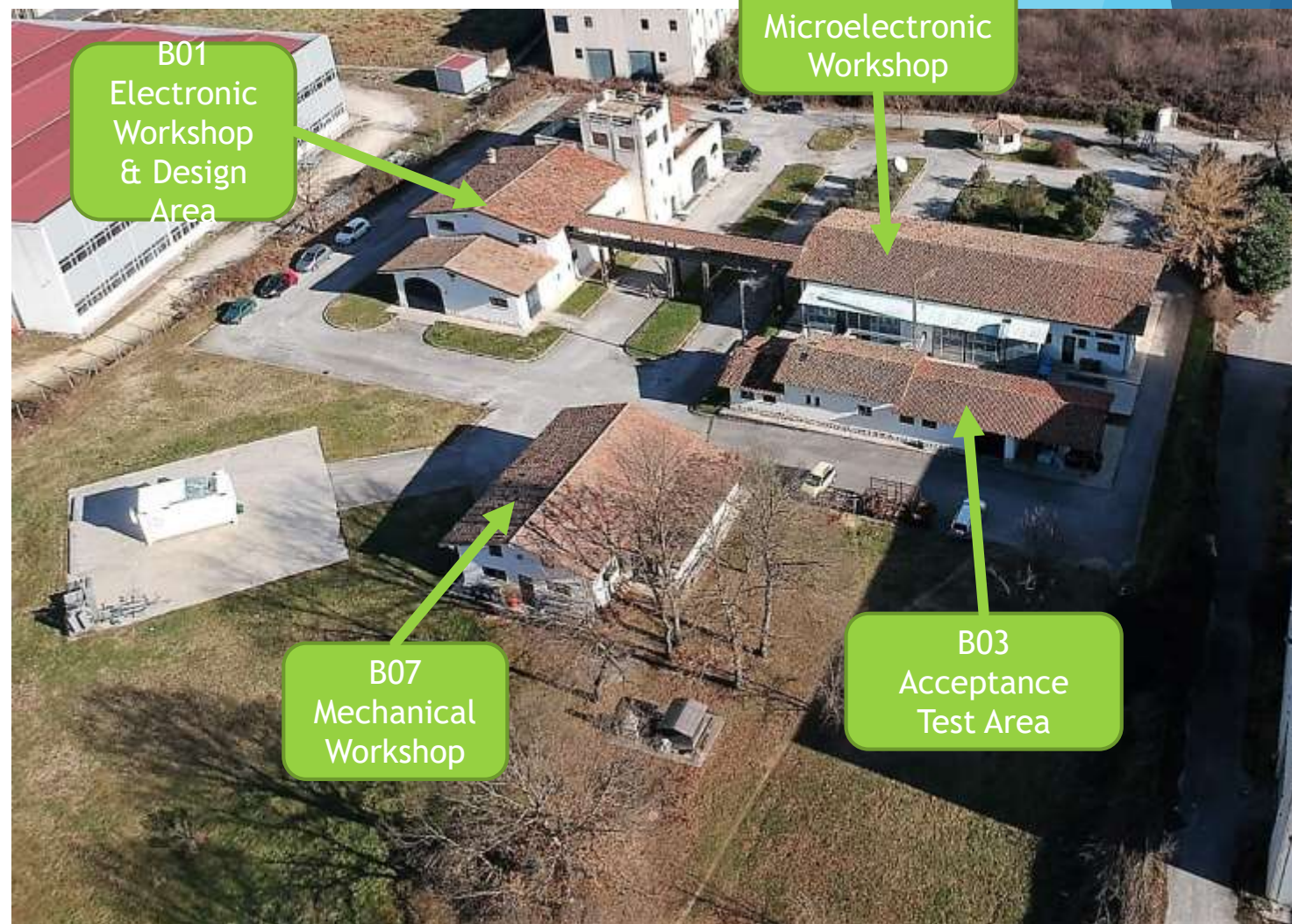
- ▶ INNOVATIVE SME
- ▶ RESEARCH LAB
- ▶ RESEARCH CENTER



PMI INNOVATIVA
i registroimprese.it



G & A Engineering



CERTIFICATIONS



G & A Engineering

- ISO 9001:2015
- ISO 14001:2015
- SA 8000:2015



SA 8000

BUREAU VERITAS
Certification



ISO 9001
ISO 14001

BUREAU VERITAS
Certification



BACKGROUND



G & A Engineering

Working from over 45 years in space, military and professional electronics.

FIELDS:

Space, Military, Medical, Automotive, Industrial



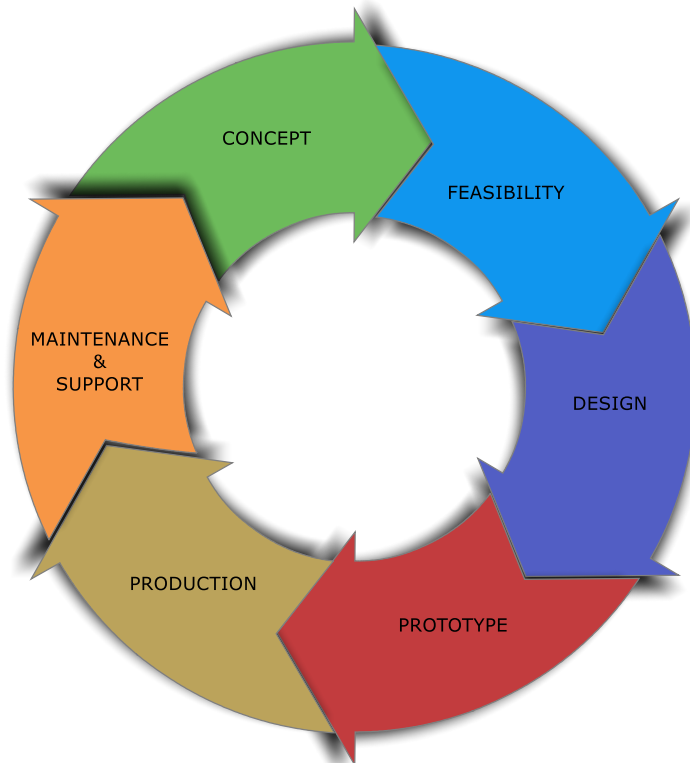
OFFERING



G & A Engineering

RESEARCH – cooperation with the Scientific Community

INDUSTRY – cooperation with Primary Industries



All phases of the Life Cycle
of a Product

STANDARD

- ECSS Specs
- MIL Specs (Avionic, Naval & Terrestrial)
- ISO Specs
- IPC Specs
- IEC Spec



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PATENTS



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ITALIA	RM98A000727	PULSANTE LUMINOSO CON COLORAZIONE VARIABILE ELETTRONICAMENTE
USA	6 210 010	ILLUMINATED PUSHBUTTON WITH COLORS AND BRIGHTNESS ELECTRONICALLY CONTROLLED
ITALIA	RM2002A00382	SISTEMI PER LA MAPPATURA DELLA SENSIBILITA' AI "SEE"
ITALIA	RM2005A000605	BARRA DI DISTRIBUZIONE DI ENERGIA O "BUS BAR" E PROCEDIMENTO PER LA SUA REALIZZAZIONE
ITALIA	RM2006A000101	PERFEZIONAMENTO DI UN DISPOSITIVO REGISTRATORE DI EVENTI PER MEZZI O VEICOLI A MOTORE
ITALIA	RM2006A000055	CASCO PROTETTIVO DOTATO DI MEZZI DI TERMOSTATAZIONE, DI SEGNALAZIONE VISIVA E DI COMUNICAZIONE



LINE OF BUSINESS



G & A Engineering

- Special Equipment
- Cockpit Devices
- Automatic Sterile Hydroponic Equipment for Vegetables Production
- New Cyber-Secure Electronic Devices
- Automatic Production Lines, Technical Plants & Systems for Building Automation
- Products Certification

COMPETENCES



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- Analog and Digital Electronic and Microelectronic
- Mechanic and Micromechanic
- Electro-mechanic, vacuum , hydraulic, pneumatic...
- Software & Firmware
- Design, Engineering, Industrialization & Manufacturing

TECHNOLOGIES



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We use the most advanced techniques and technologies, like:

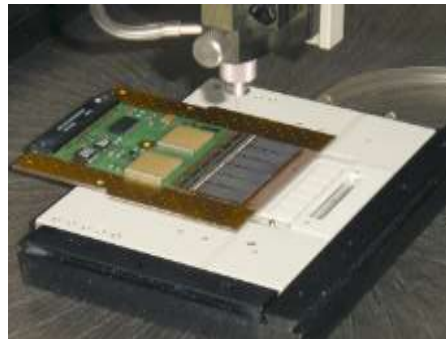
- Multi Chip Module (MCM), Chip-On-Board (COB)
- Surface Mount Technology (SMT), True Hole (TH)
- FPGA, DSP, ASIC, μ controllers, μ processors
- Rigid and Flexible Substrates

WORKSHOP



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- ▶ CAE, CAD and CAM tools both for Manufacturing, Metrology & Control
- ▶ Electronic, Microelectronic, Mechanic workshops



MICROELECTRONIC WORKSHOP



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CLEAN ROOMS

ISO 14644-1	FED STD-209E		AREA
Class 4	10	M2,5	12 sqm
Class 6	1000	M4,5	85 sqm
Class 7	10.000	M5,5	28sqm
Class 8	100.000	M6,5	17 sqm
Class 9	>100.000		278 sqm

Operating Range
T = 18°C to 24°C
RH = 40% to 60%

Std Work Specs
T = 21°C ± 1°C
RH = 50% ± 5%



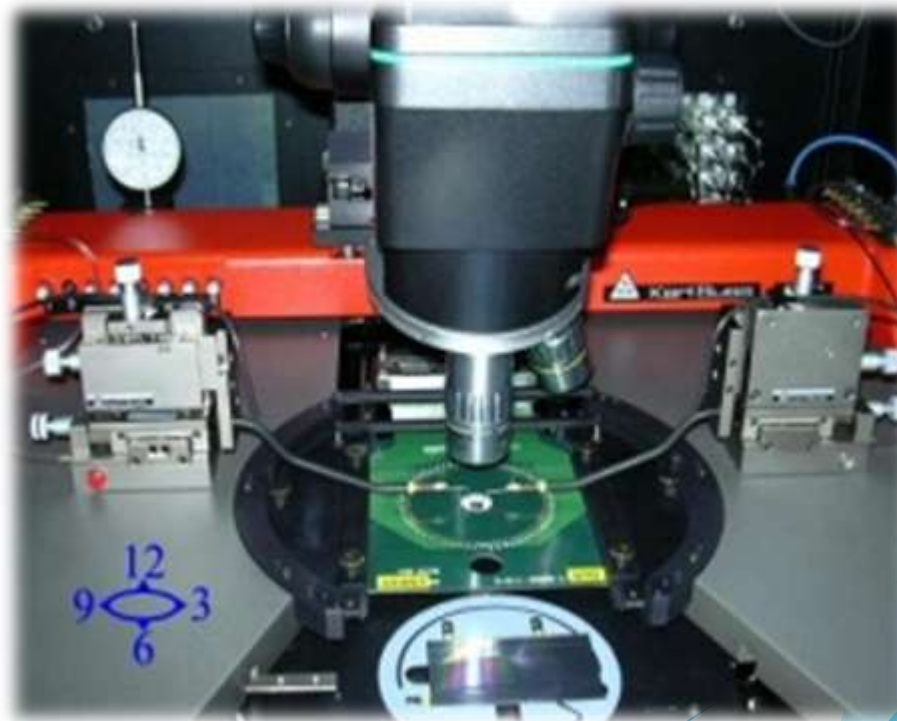
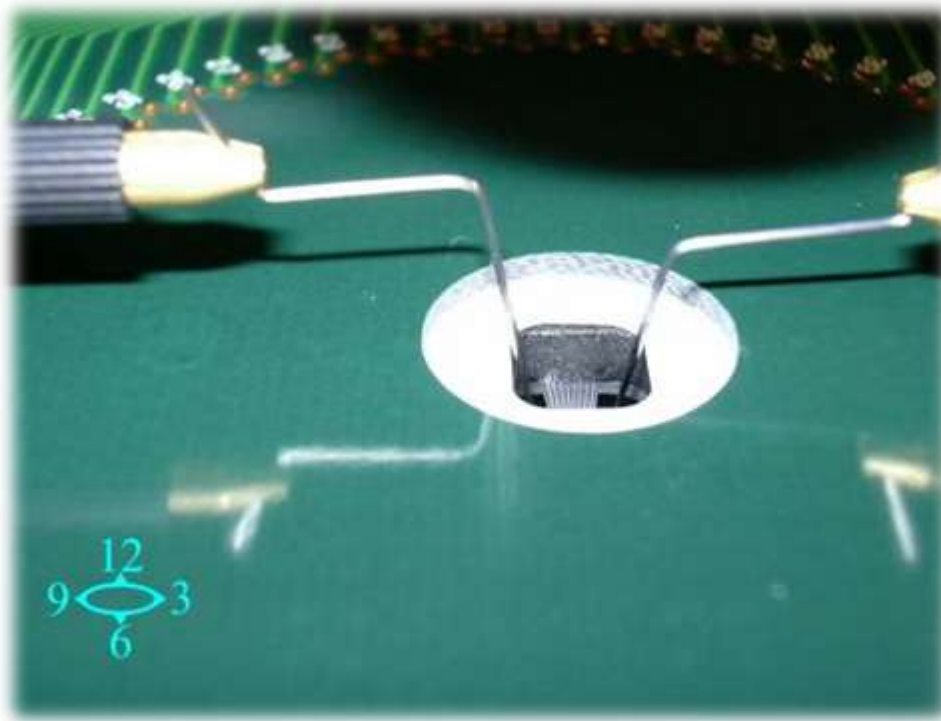
Particles Counter for real-time monitoring of Contamination, Pressure, Temperature, Humidity.

DIE TEST & PROGRAM



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Naked silicon chips (DIE) can be tested and programmed when out of the foundry, after dicing.



DIE TEST & PROGRAM



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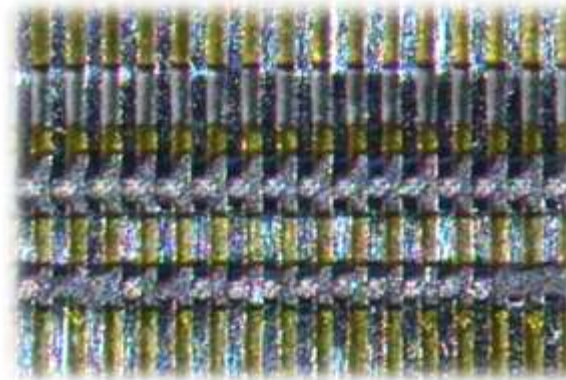
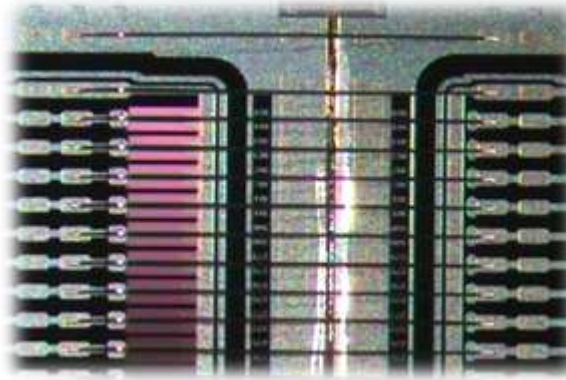
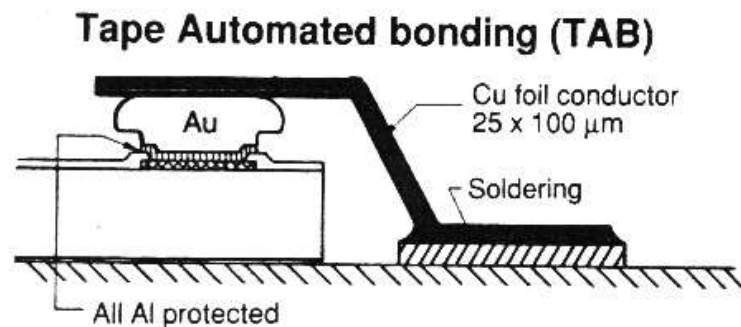
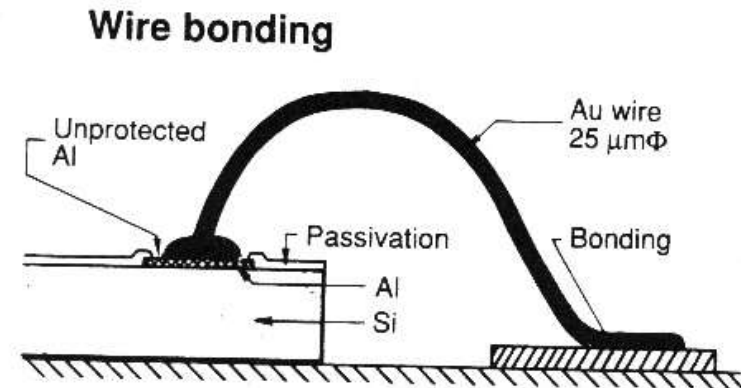
- ▶ Automatic machine for very high precision testing
- ▶ Probe & Probe Card Die Testing & Programming
- ▶ Computerized Alignment & Measure
- ▶ Switching Matrix & Instruments for Testing

WIRE & TAB BONDING



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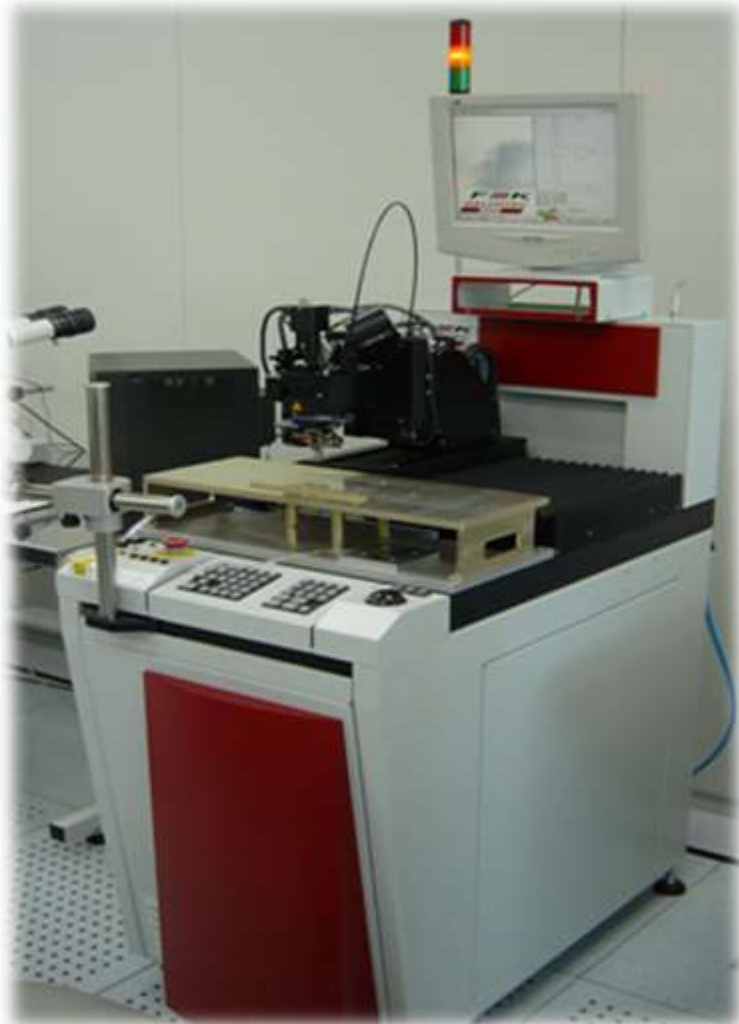
Naked silicon chips (DIE) can be mounted directly on PCBs or other substrate's types.



WIRE & TAB BONDING



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2 Automatic Ultrasonic Bonders:

- Aluminum & Gold, Wedge-Wedge Bonding - TAB Bonding
- Bonding Process Control & Monitoring
- Fixed Table & Rotary Head
- Pull Tester

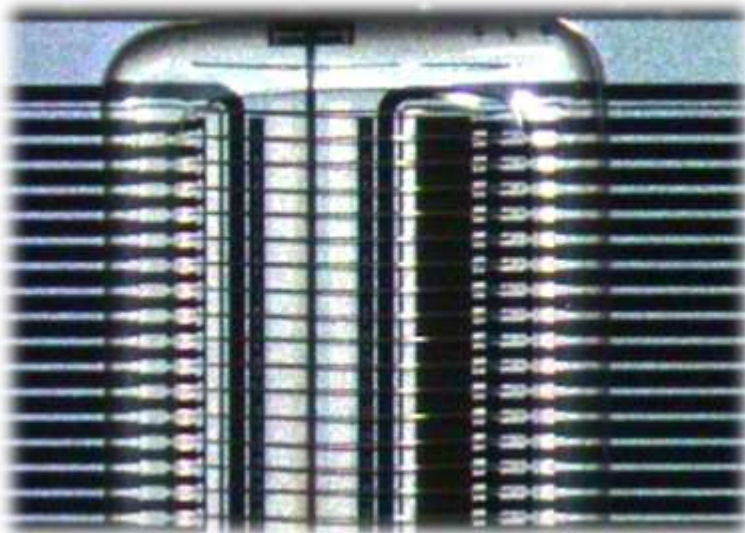


ENCAPSULATION & GLUING



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- ▶ Dispensing: Epoxy resin, Silicon resin...
- ▶ Glob Top
- ▶ Dam & Fill



ENCAPSULATION & GLUING



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Computer Controlled Liquid Dispensers Totally Automatic



Double Volumetric
Pump & Laser Head



Single Volumetric
Pump



3D METROLOGY

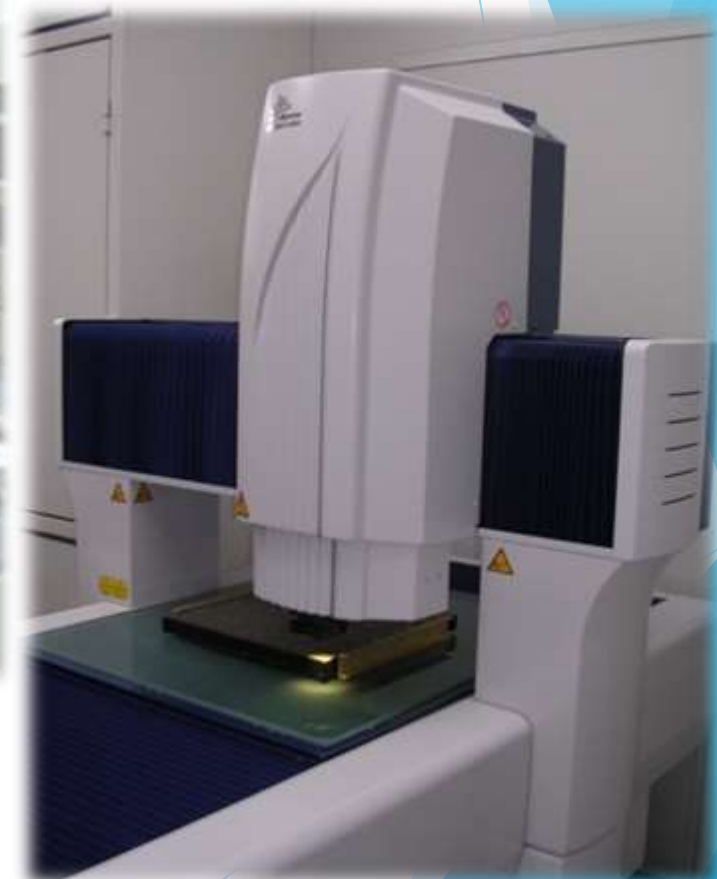


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Measurement field
1205x1205x1005mm,
Res 0.5 μ m, optical
head and toucher



Measurement field 600x650x250mm,
Res 0.1 μ m, triple optical system



ELECTRONIC WORKSHOP



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ELECTRONIC WORKSHOP



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SMT



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Dispenser (28,000 pt/hr)



Pick-Test-Place (6,000 chip/hr)



Oven (14 zones)

ELECTRONIC WORKSHOP



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TEST



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- Test Instruments
- Multi-Purpose Automatic Test Station
- RF Test Set 'till 26.5GHz
- Thermo-Vacuum Oven
- Climatic Chamber

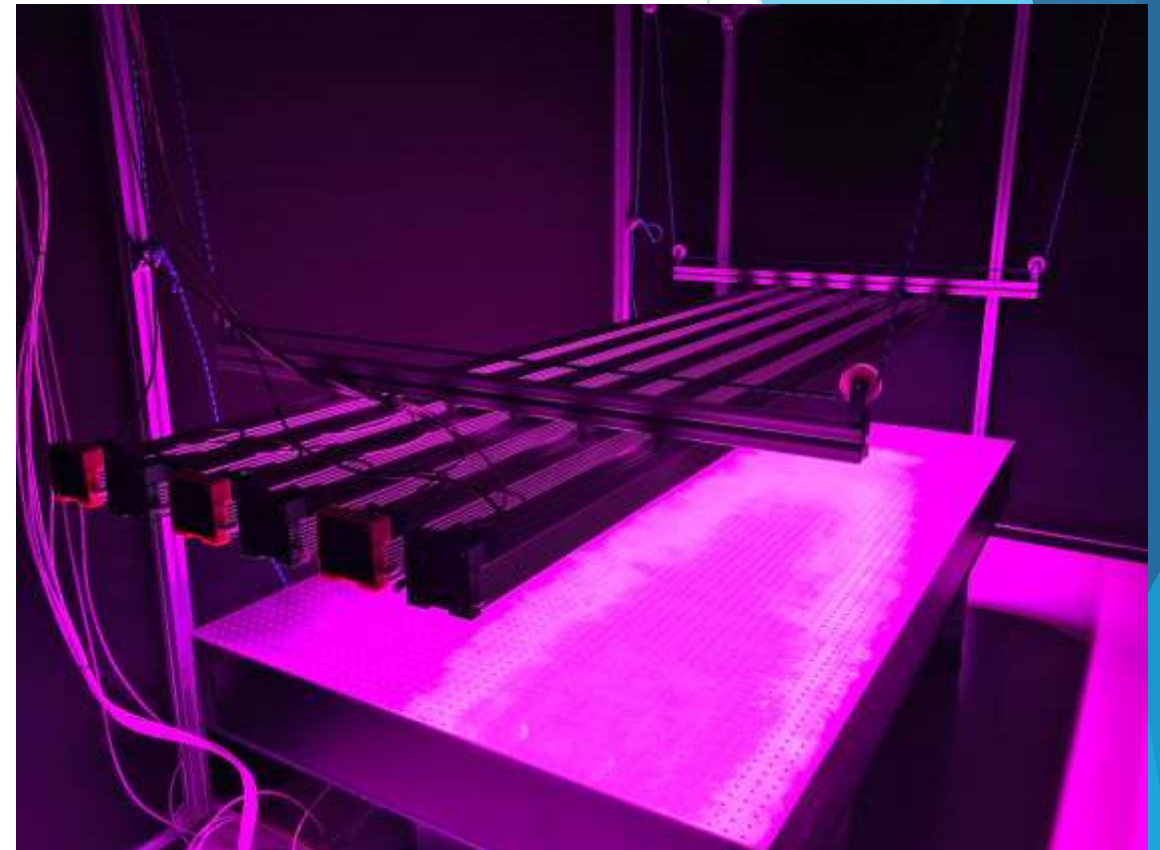


OPTICAL TEST



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- Dark Room for Optical Tests
- Optical Bench
- Optical Spectrometer 200 - 2500 nm

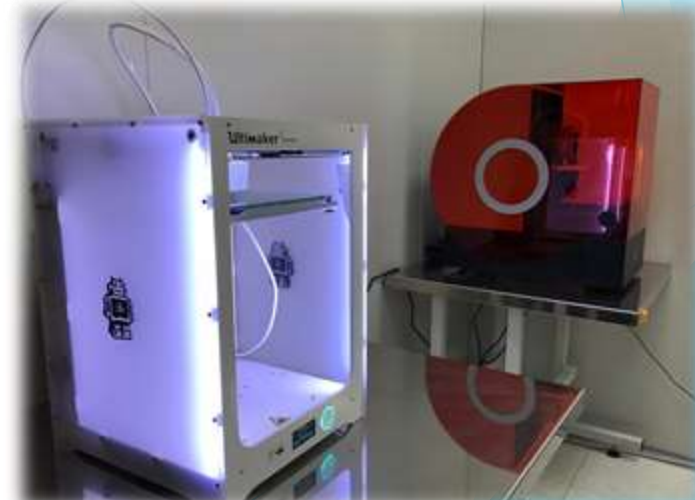


MECHANIC WORKSHOP

- V & H Milling Machines
- Turning Machine
- Welding Stations
- Cutting & Bending Machine
- 3D Printers SLA & FDM



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SECONDARY PLANT



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Exclusively dedicated to HYDROPONIC R&D:

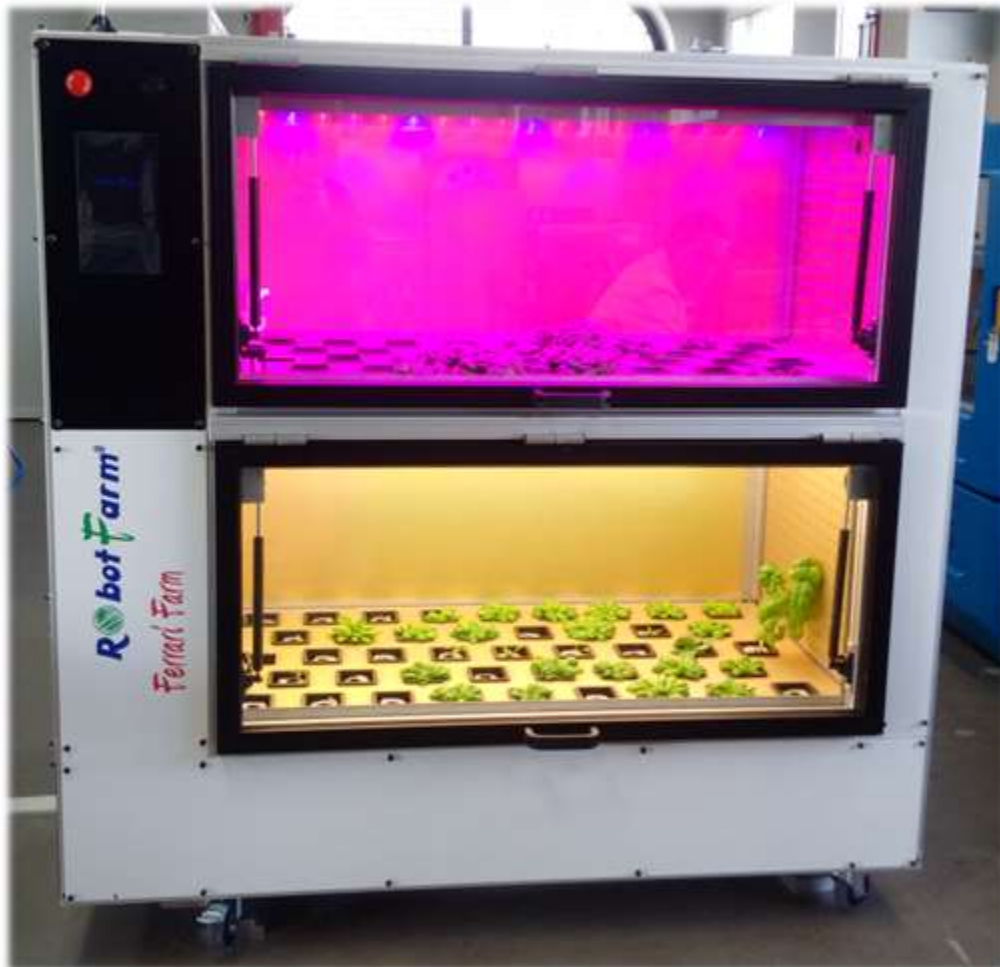
- Glass Greenhouses
- Phytotrons
- Vertical Farm
- Container Farm
- RobotFarm Appliances
- DIY Kit
- Space Farming



ROBOTFARM



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Fully Automated Hydroponic
Cultivation Machine:

NO DAILY CHECK

NO EXPERTIZE

FULL CONTROL

To cultivate everywhere!

ROBOTFARM



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ROBOTFARM



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RobotFarm

ROBOTFARM



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ROBOTLAMP



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- ✓ New Generation Horticulture LED Lamp
- ✓ Multi-Spectral Light
- ✓ Command & Control for each single Wavelength
- ✓ Fully Dimmable Independently for Each Color
- ✓ Air & Liquid Thermal Dissipation
- ✓ Selectable Water Temperature
- ✓ 1.000 PAR @ 200 mm
- ✓ NO Thermal Load in the Cultivation Area



ROBOTLAMP



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- ✓ Optimized distribution of the LED matrix
- ✓ Two point regulation of the light uniformity
- ✓ Thermal balance of the cooling liquid in series configuration
- ✓ AC - DC low voltage power supply
- ✓ Full remote monitor and control
- ✓ 1m and 3m versions



ROBOTLAMP



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HYDROPONIC RESEARCH ACTIVITIES



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IBIS Group Member

Member of the working group instituted by the Italian Space Agency concerning bio-regenerative systems.



RESEARCH PROJECTS



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CHEF Project

Design & Development of a Vertical Farm using an ISO 20 shelter, sterile, ISO 8 Class, for hydroponic “Clean” cultivations.

Co-financed by Regione Lazio.

Scientific Partner: ENEA SSPT-BIOAG



RESEARCH PROJECTS

CHEF Project



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RESEARCH PROJECTS

CHEF Project



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RESEARCH PROJECTS



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MIG Project

Design & Development of a Clean Room Vertical Farm for military purposes, to cultivate in extreme environments.

Co-financed by the Italian Defense.



RESEARCH PROJECTS



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IDROZAFF

Design & Development of a Clean Room Vertical Farm in container to produce Medical-Grade Zafferano, for Retinal Maculopathy.

Co-financed by MIUR, Italian Ministry of University and Research

Scientific Partner: ENEA-SSPT-BIOAG



Italian national agency for new technologies,
energy and sustainable economic development



RESEARCH PROJECTS



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CYBER-TRAINER

With Leonardo S.p.A. & co-financed by Regione Abruzzo.

Design and Manufacturing of New-Generation
Automotive Architecture “Cyber-Secure By Design”.

RESEARCH PROJECTS



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RAFAEL (Risk Analysis and Forecast for critical infrastructure in the ApenninEs dorsaL regions)

PON MIUR Project – Specialization Area “Smart Secure and Inclusive Communities”.

ATI among 18 partner.

Our task is design and manufacturing of new generation sensors in partnership with CREO – Centro Ricerca Elettro-Ottico

MEMBERSHIP



G & A Engineering

- Board of Abruzzi ICT & Aerospace Group
- Board of Associazione “Piana del Cavaliere”
- Board of Consorzio Ulisse

SPACE HERITAGE



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AMS 02 Experiment

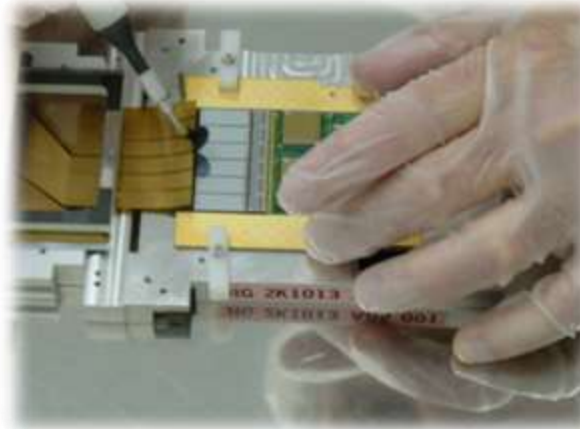
Silicon Detectors manufacturing.
A Million bond without 1 failure!

GLAST or Fermi Experiment

Silicon Detectors & Towers
manufacturing.

CMS Experiment

More than 1500 opto-hybrids to
interconnect the LHC @ CERN.



SPACE HERITAGE



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Gran Sasso Ladders

Particle detectors made of glass for the INFN.

GEA SAT 01

Microsatellite co-financed by the Italian MAP.

SMART

Solid-state μ -Thruster for space application, co-financed by ASI.



SPACE HERITAGE

EST – Electronic Space Test

ENEIDE Mission in 2005.

LAZIO–Sirad, e-NOSE & HBM

ENEIDE Mission: Industrialization,
manufacturing & documentation.

TILE Second Generation

Optical link at 2,5 GB for new generation
antennas, co-financed by ASI.



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SPACE HERITAGE



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APE – Astronaut Personal Eye

Small vehicle with 1 axis control, co-financed by ASI. STS-134 Mission.



MAP – Multi Asics Pixel Imager

Single photon counting sensor, co-financed by ASI.

ETRUSCO-2

Thermo-vacuum chamber with fine motion for space simulations, co-financed by ASI.



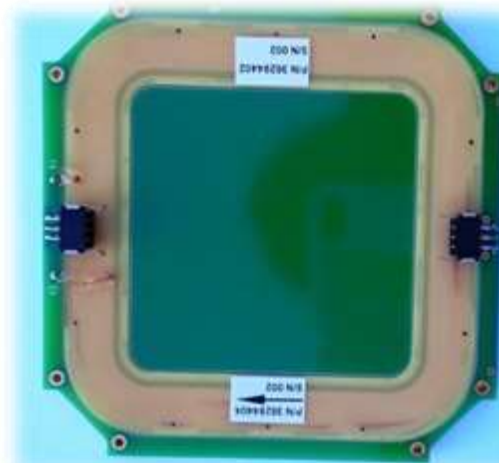
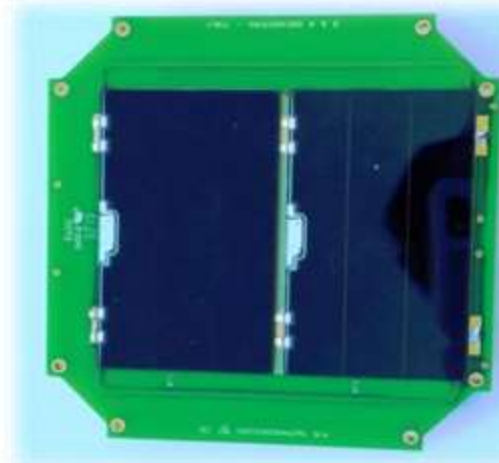
SPACE HERITAGE



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TIGRISAT

3U cubesat: mechanical structure with selective surface treatment and pcb with solar cells on one side and coils for attitude control on the other side, integrated into the substrate.

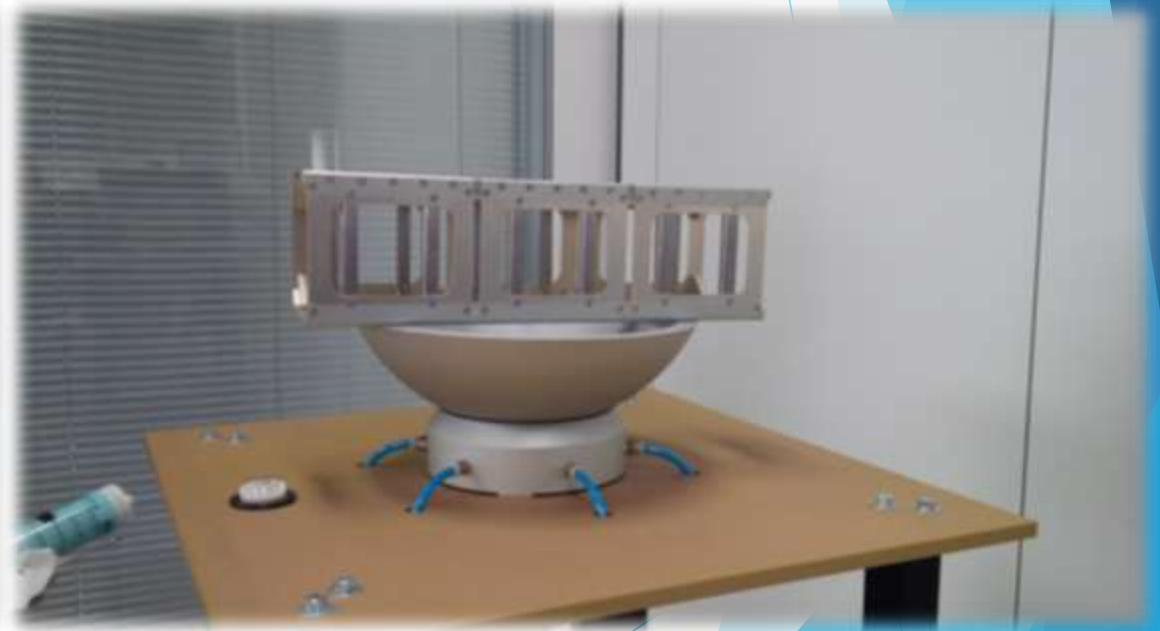


GROUND TEST FACILITIES



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Spherical Bearing Table to Simulate the Gravity Absence for Attitude Control Test, for SIA - Scuola Ingegneria Aerospaziale - La Sapienza Roma

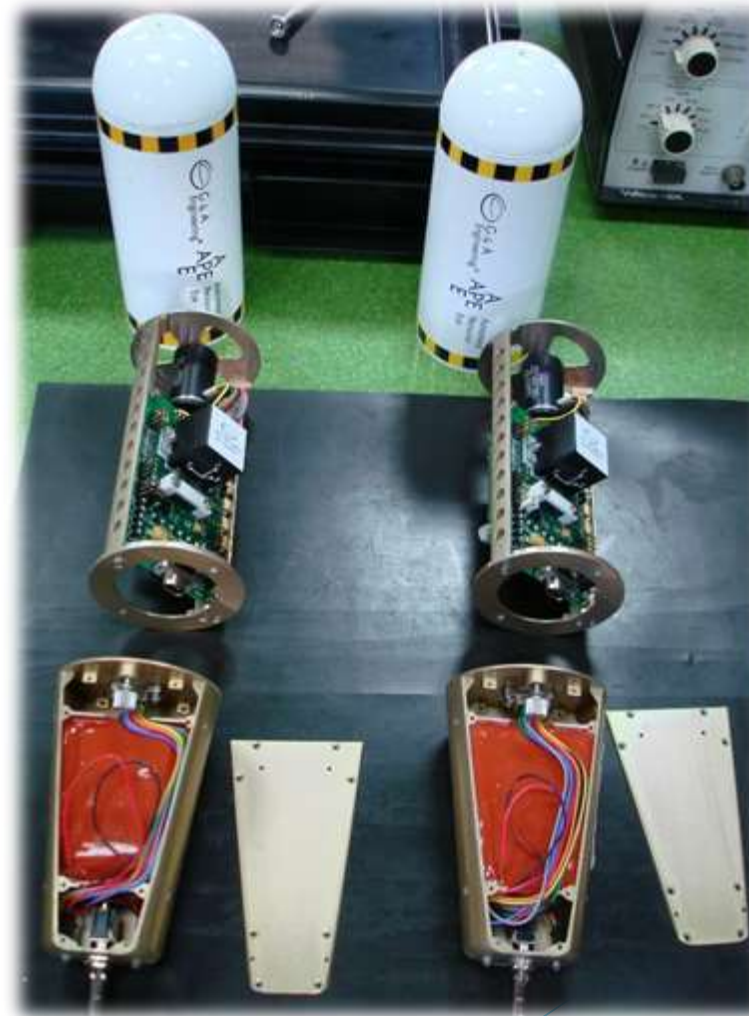


SPACE HERITAGE

BATTERY PACKS



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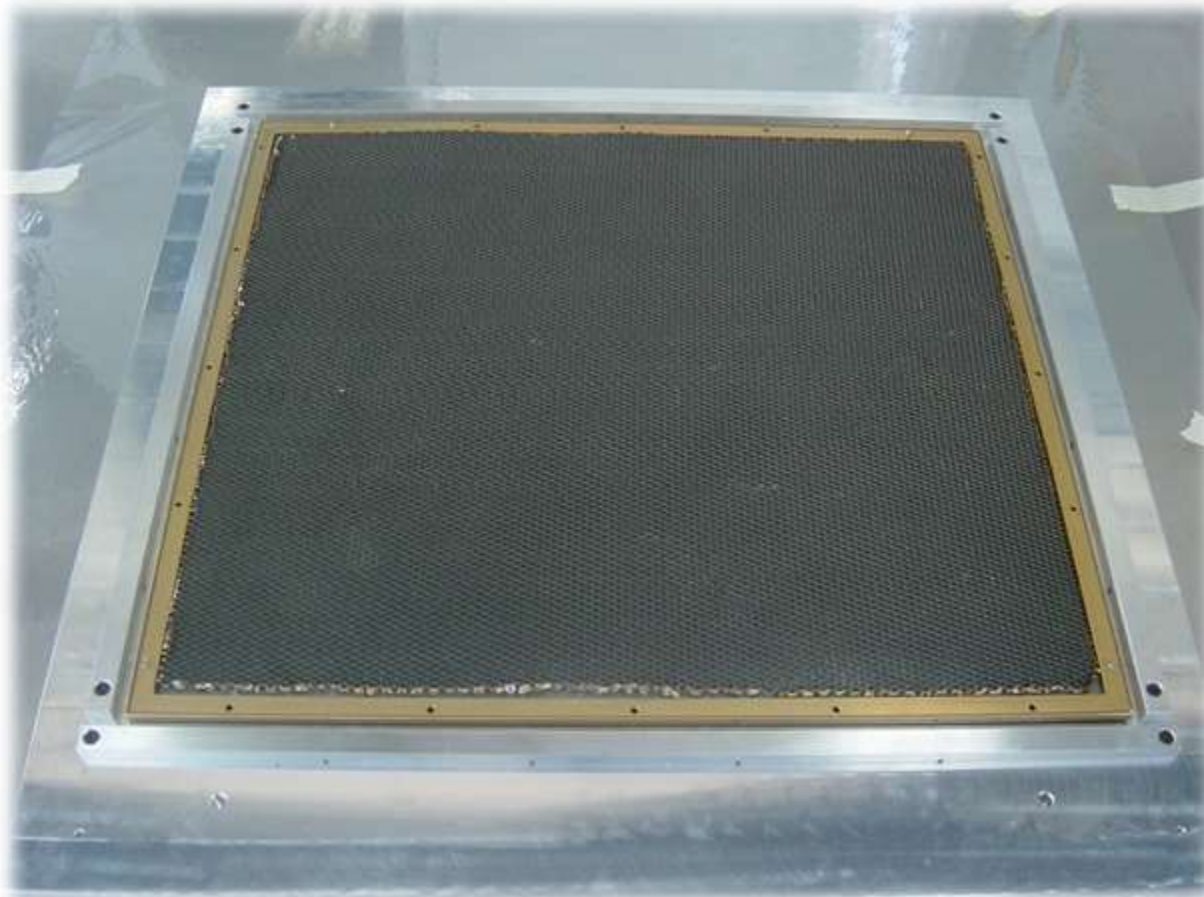


SPACE HERITAGE

HONEYCOMB SANDWICH PANELS



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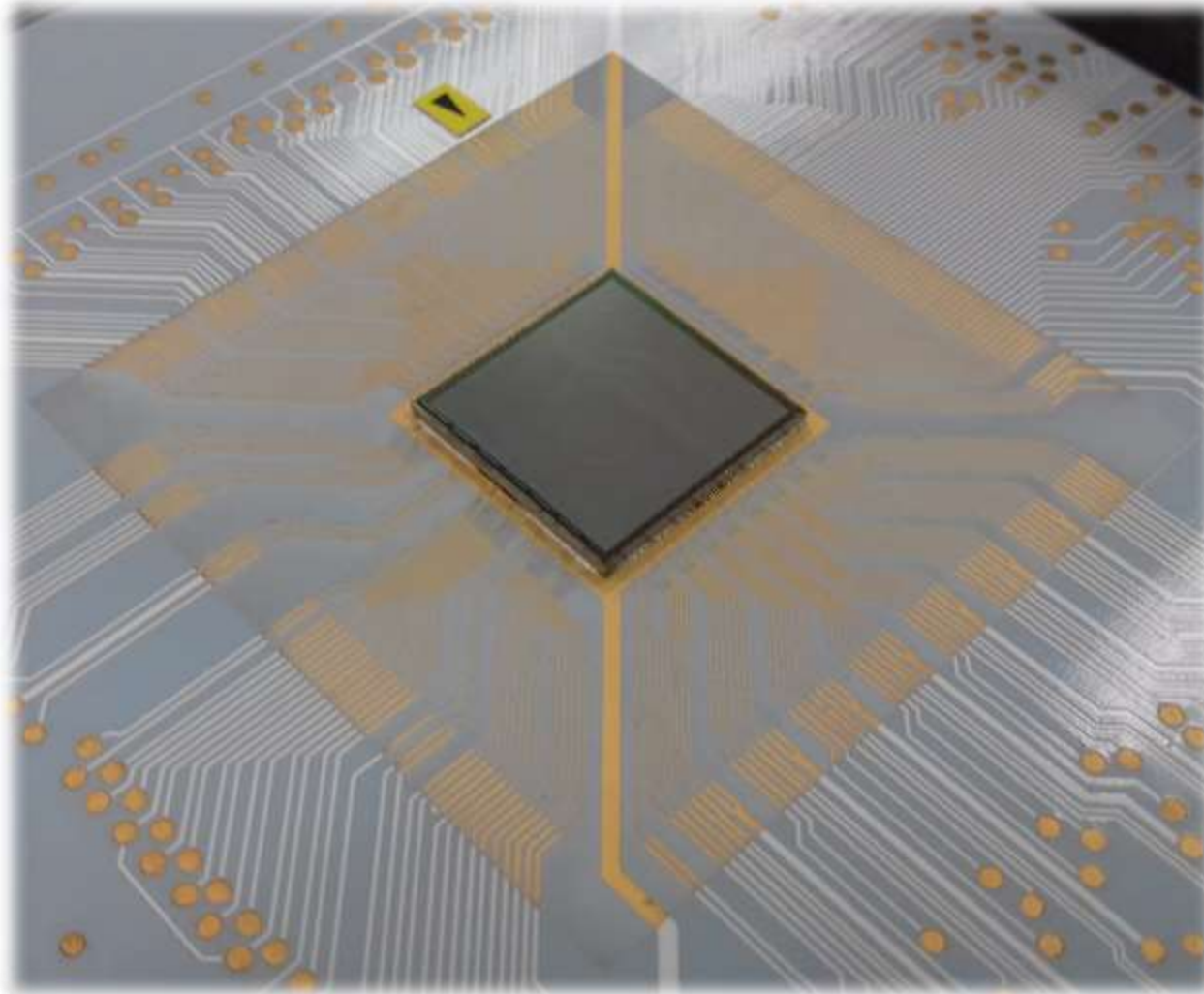


Design and
Manufacturing
of Custom
Honeycomb
Sandwich
Panels

SPACE HERITAGE



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Design and
Manufacturing of
New Generation
Space Detector for
Physics

AWARDS

- CMS Collaboration Gold Award for CMS Experiment
- NASA Certificate of Appreciation for GLAST Experiment
- ESA Team Achievement Award for Eneide Mission
- ASI Acknowledge for the DAMA Mission (STS-134)
- Confindustria L'Aquila achievement for space activities
- Innovalazio Trademark
- Selected as 1 of the 100 Abruzzo's Innovation Stories



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AUTOMOTIVE HERITAGE

INDUSTRIA 2015 – MOBILITÀ SOSTENIBILE

8 m electric, 12 m hybrid bus

AUTOMOTIVE PRODUCTS

Pushbuttons, Cockpit, Switchboards,
Video Encoders, Cameras...

ECU, with distributed intelligence, for
different functions, with CAN bus
connection, wire or with optical link.

Custom Battery Packs



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AUTOMOTIVE HERITAGE

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AUTOMOTIVE HERITAGE

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AUTOMOTIVE HERITAGE

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AUTOMOTIVE HERITAGE

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AUTOMOTIVE BATTERY PACKS



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SPECIAL EQUIPMENT



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SPECIAL EQUIPMENT



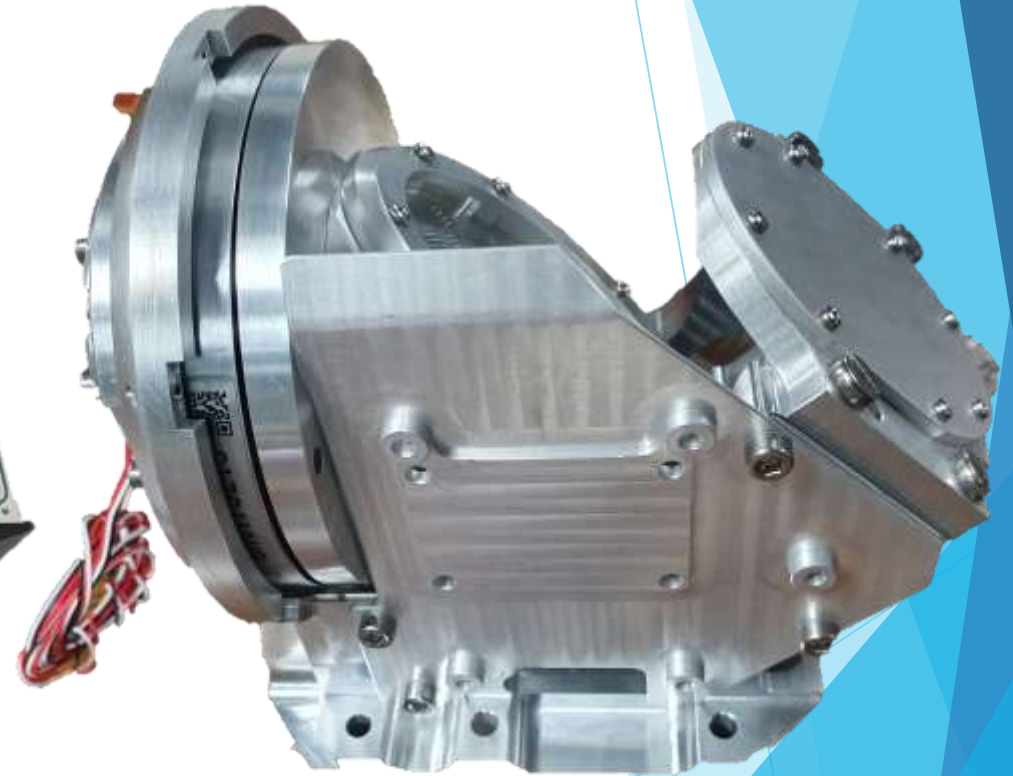
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SPECIAL EQUIPMENT



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SPECIAL EQUIPMENT



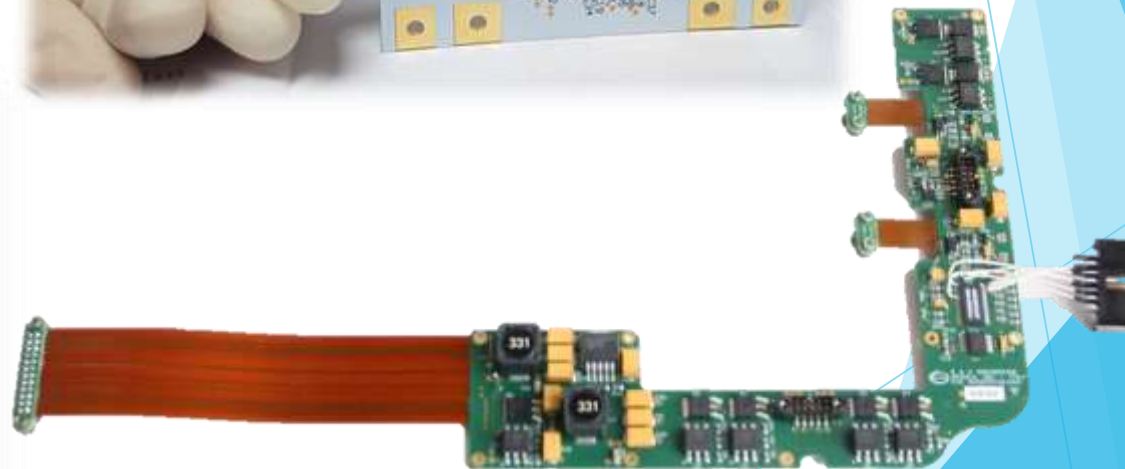
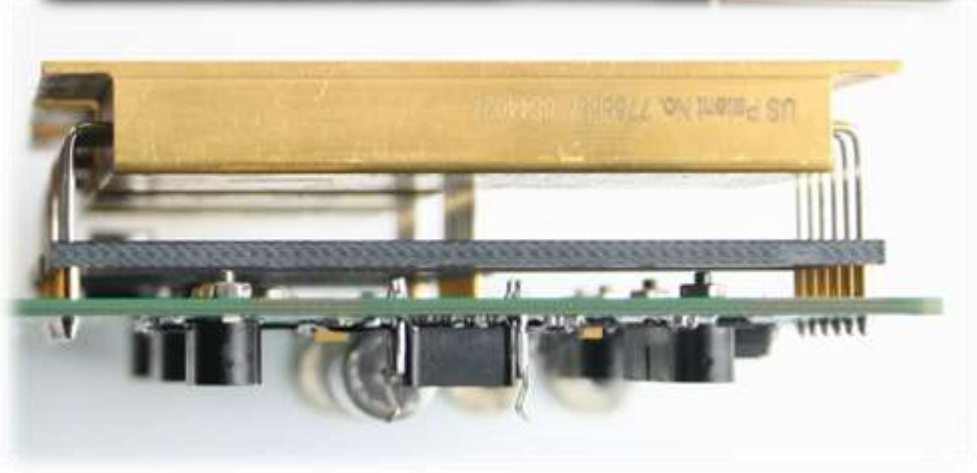
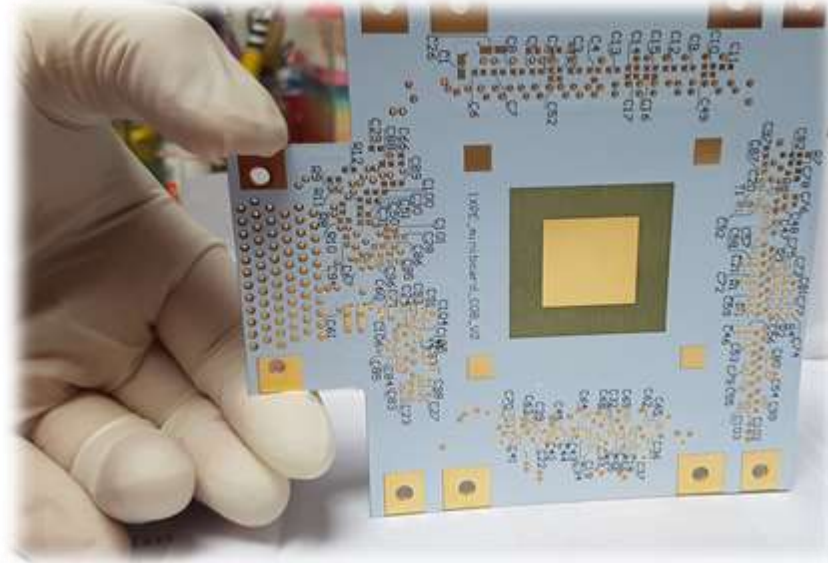
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SPECIAL EQUIPMENT



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CUSTOM CONNECTORS



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PRODUCTS



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- Special Equipment (MIL)
- Custom Machine or Custom Production Lines
- Solid-state pushbutton & indicators GAPSWITCH (MIL, NVIS, Automotive)
- Cockpit & Dashboard (MIL, Automotive...)
- Monitor & Display (MIL, EMI, Sunlight Readable...)
- Rack for Outdoor Applications (MIL)
- Black Box for Event Recording & Crash Reconstruction
- CPU (MIL, Automotive), Video Encoder, Ethernet Switch, IOx unit...

PRODUCTS



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- Trackers (Environmental, Attitude, Personal ...)
- Electrical switchboards (MIL, Automotive, Industrial)
- Video surveillance systems with cameras (Color, IR, Thermal IR...) and recorders
- Command and Control Systems for Fleet Management
- LED Panels & Solar Cells
- Building Automation Systems

PRODUCTS

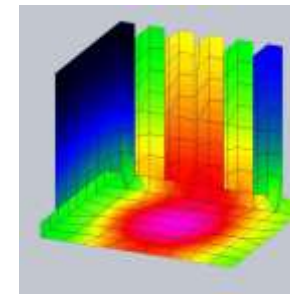
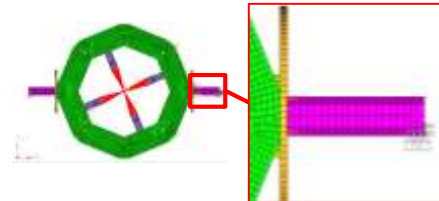
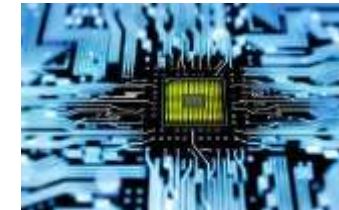


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SERVICES

- 2D & 3D Mechanical Design
- Mechanical Manufacturing
- Custom 3D Printing
- Electronic Design & Manufacturing
- μ -electronic Design & Manufacturing
- Cabling Design & Manufacturing
- Thermal Analysis
- Structural Analysis



G & A Engineering



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