



**AEROSPAZIO TECNOLOGIE s.r.l.**

**Test Facilities and Diagnostics for Electric Propulsion**

***EPIC WORKSHOP 2023, Naples, Italy, 9-12 May***



# Company Group

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## Aerospazio Tecnologie srl

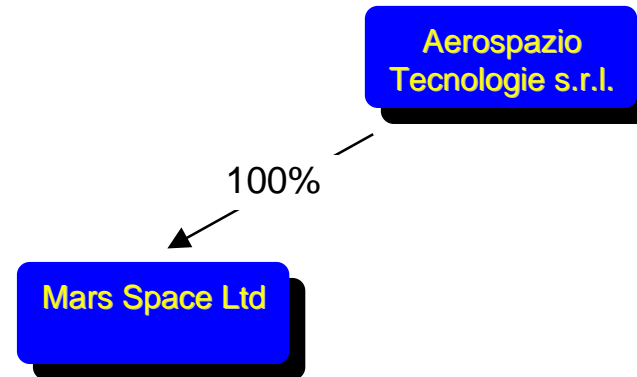
[www.aerospazio.com](http://www.aerospazio.com)

53040 Rapolano Terme, Italy

## Mars Space Ltd

[www.mars-space.co.uk](http://www.mars-space.co.uk)

SO14 5FF Southampton, United Kingdom



## Certificates

ISO 9001:2015 Quality Management System

ISO 14001:2015 Environmental Management System

ISO 45001:2018 Occupational Health and Safety Management System

## Branch Office – 57017 Guasticce, Livorno

- Lab. & offices 1° Strada n.5, Interporto A. Vespucci

### Major products:

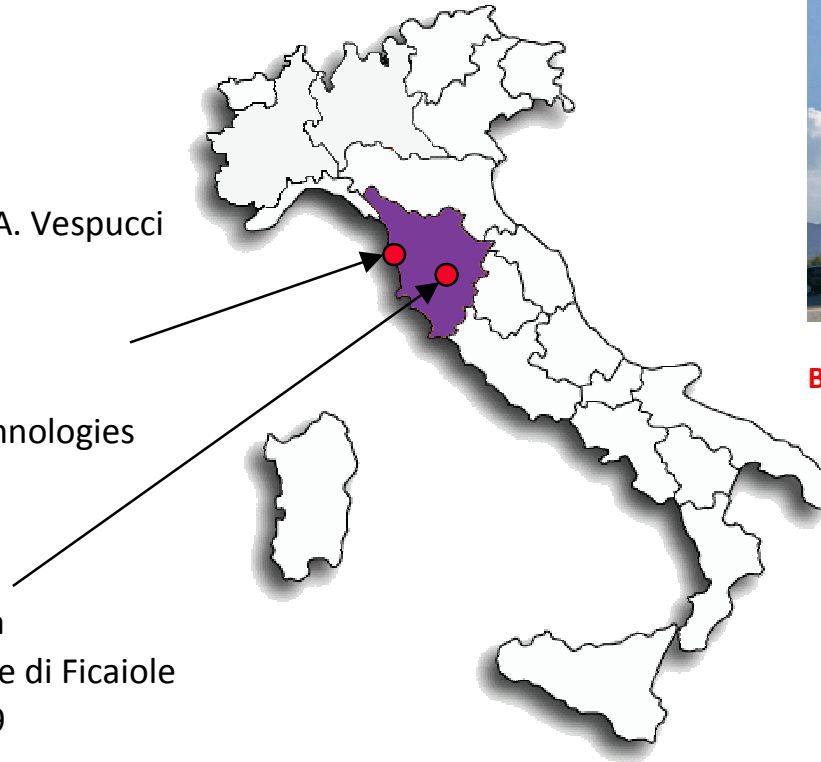
- Photonics & laser telecoms
- Electronics & power supplies
- Electric propulsion diagnostics and technologies

## Main site - 53040 Rapolano Terme, Siena

- Laboratory 1                    Strada Comunale di Ficaiole
- Laboratory 2                    Via dei Tessili 99
- Laboratory 3                    Via dei Tessili 5
- Laboratory 4                    Via dei Mobiliari

### Major products:

- Electric propulsion testing services
- Electric propulsion diagnostics



**Branch Office Vespucci Building**



**Rapolano Terme Laboratory 1**

## Major products:

- Gridded Ion Thrusters
- Cathodes for electric propulsion
- Ion beam modelling



**Laboratory** ADANAC, Southampton

## Laboratory - SO16 OYP Nursling, Southampton

- Unit B3 Adanac Business Park, Nursling Road

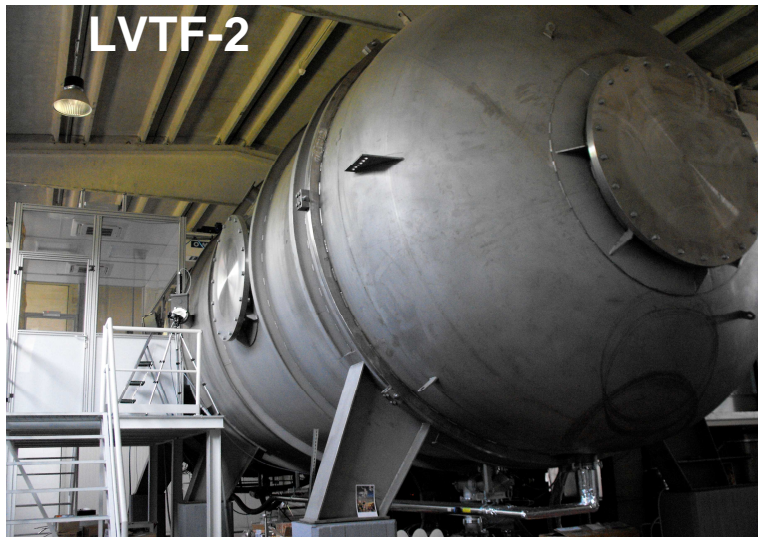


**Offices** Basepoint, Southampton

## Offices – SO14 5FF Southampton

- Unit 63 Business Centre, Andersons Road

# Aerospazio's Large Vacuum Test Facilities



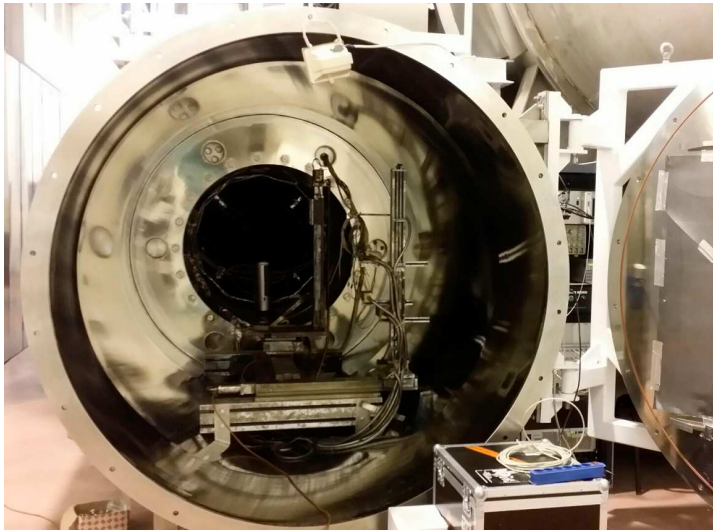
	LVTF-1	LVTF-2	LVTF-3
Size (Ø x L) m	3.8 x 11.4	3.8 x 12.5	3.8 x 12.5
Volume, cu.m.	120	140	140
Max. pump. speed (Xe)	160 kL/s	480 kL/s	240 kL/s

**ESA Programmes:** Bepicolombo  
 Small-GEO  
 Electra  
 NEOSAT  
 MSR-ERO



# Aerospazio's Medium Vacuum Test Facilities

**MVTF-1E**



**MVTF-2**



**MVTF-3 & 4**

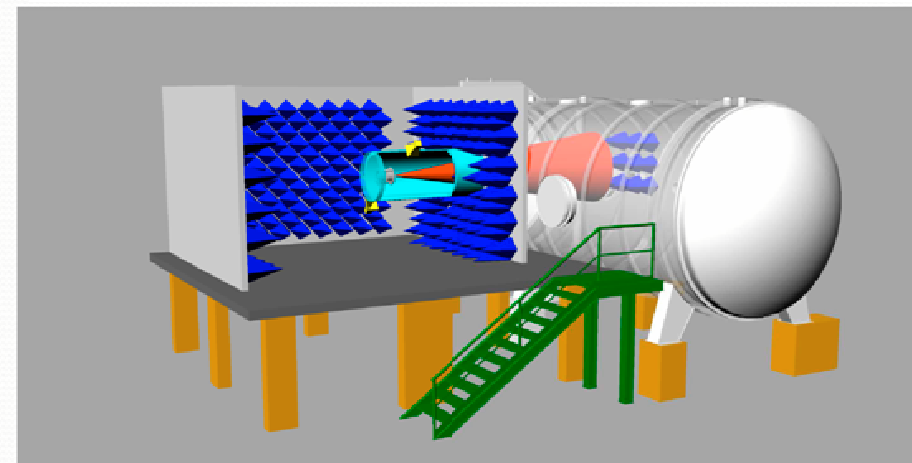
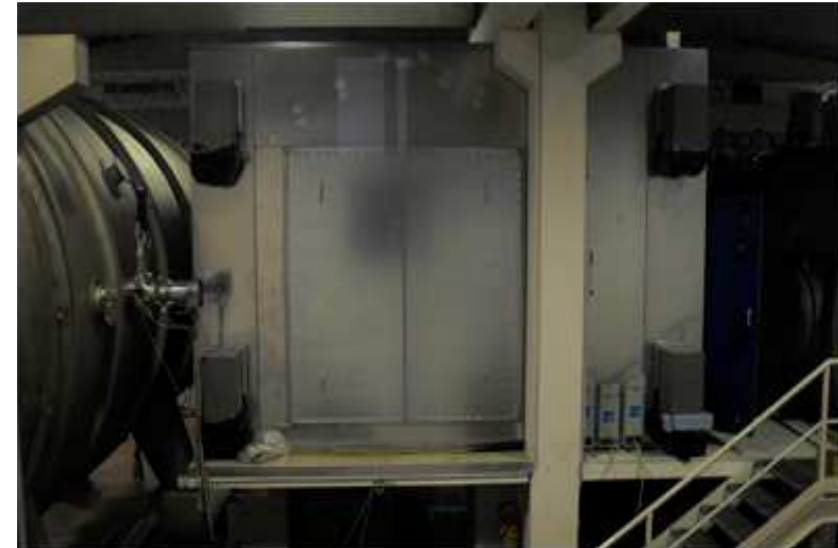
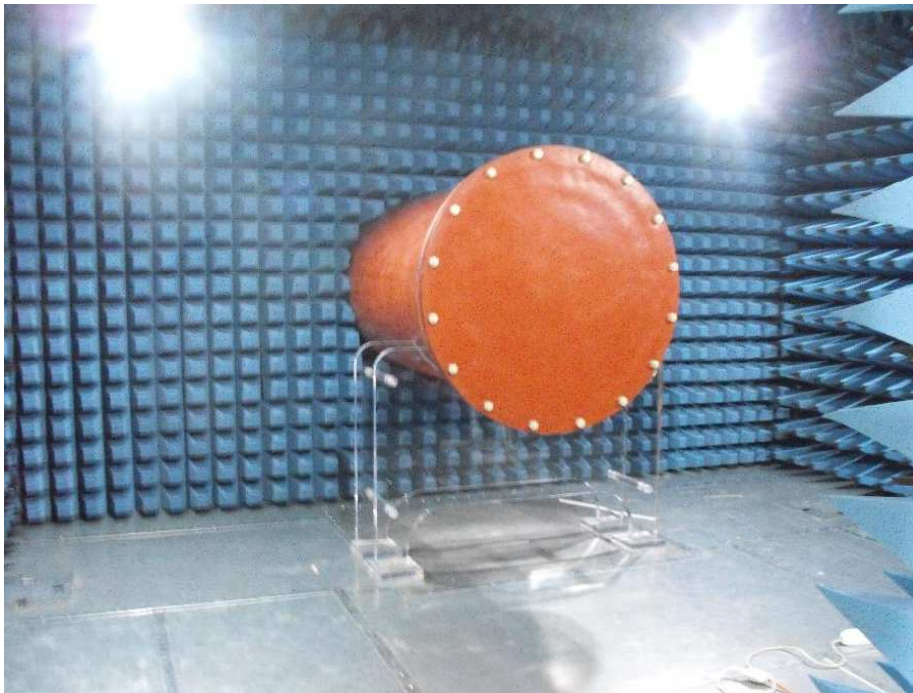
## Spectroscopy Test Facility



**MVTF-5 test facility, 1.3 x 2.53 m ( $\varnothing$  x L), 15.000 l/s pumping speed on Xe  
Tunable high power highly coherent diode lasers, 834 nm for Xe, 730 nm for Kr  
Time averaged and time resolved LIF on Xe and Kr  
Wavelength resolved diagnostics for azimuthal plasma instabilities (rotating spokes) on HET**

## EP-EMI Test Facility

The dielectric vacuum chamber is placed in a semi-anechoic room and connected through a gate valve to a large flange of a metallic vacuum chamber (the [LVTF-2](#)).





## Vacuum Test Facilities in the Collesalvetti Branch



**LiVTF-1 size 1.3 x 4 m (Ø x L), 15.000 l/s pumping speed on Xe**

**LiVTF-2 size 1.3 x 3 m (Ø x L), Iodine test facility under refurbishment and upgrade**

**Cathode test facility**

## MSL's Vacuum Test Facilities



**The test facilities Leep-1, Leep-2 and Leep-3 (Ex-QinetiQ) have been relocated to MSL laboratories in Adanac Park for refurbishment and a new setup**

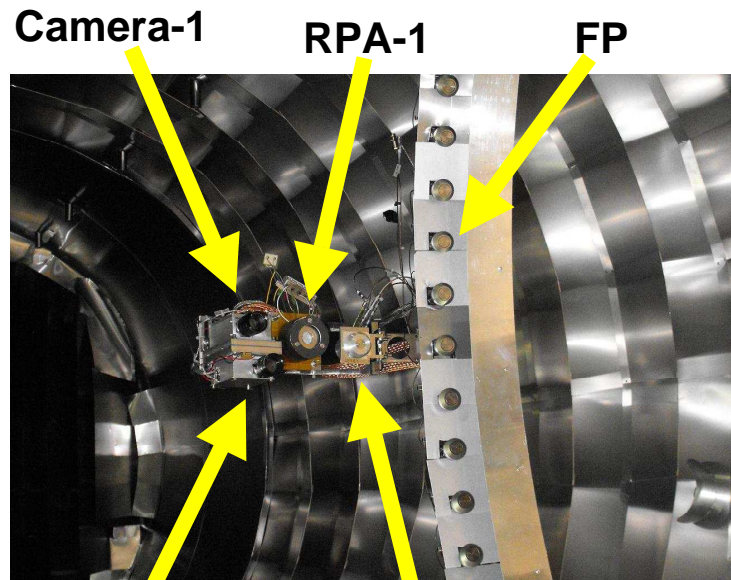
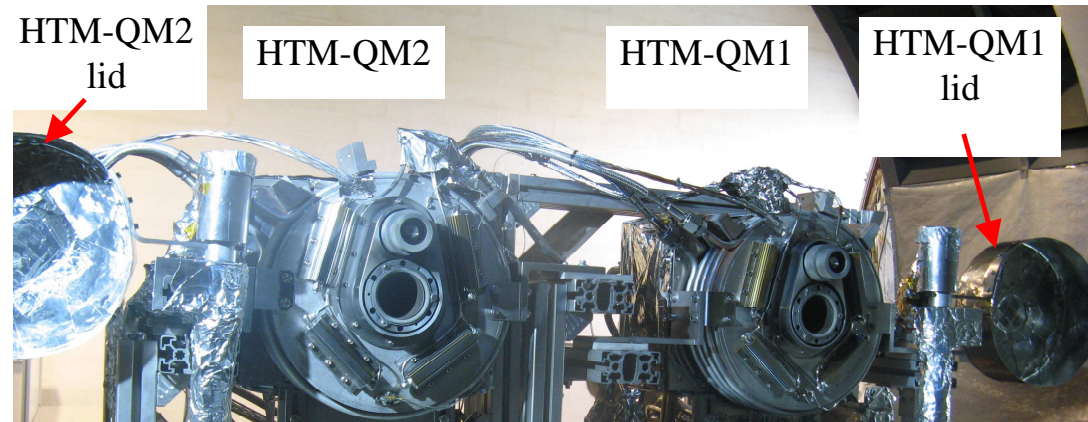


# EP Qualification Test Set-up Example

Photos from public documents

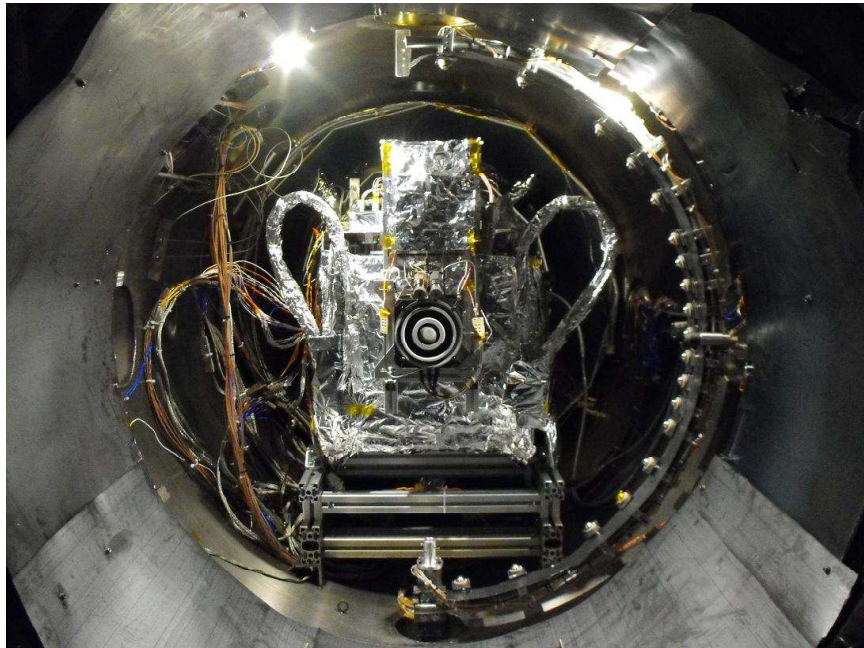
## Thales Electronic Systems GmbH

### HEMP-TIS Qualification Program QM1 & QM2 combined Lifetest

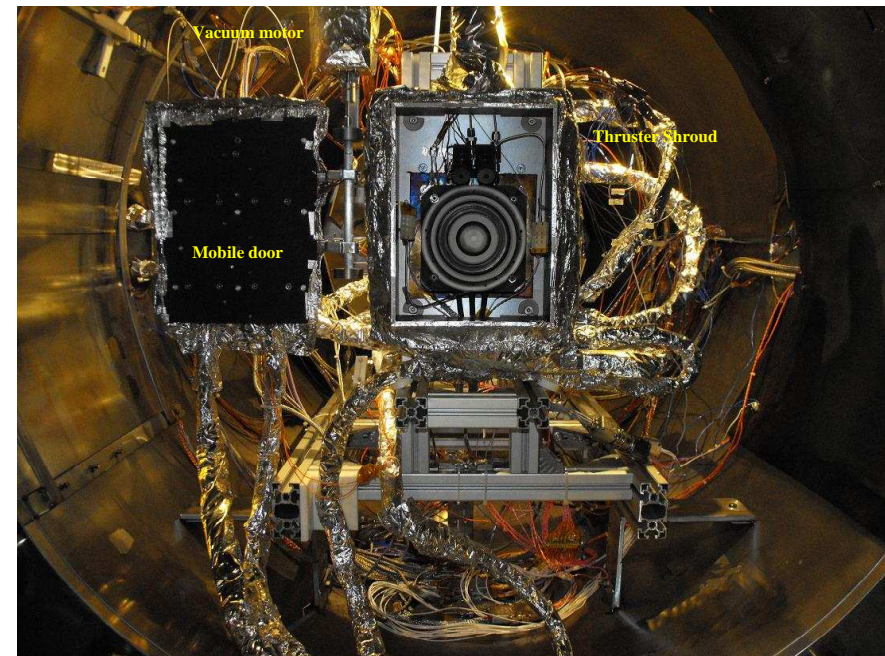


## Safran PPS®1350E Qualification programme

### Performance Characterisation



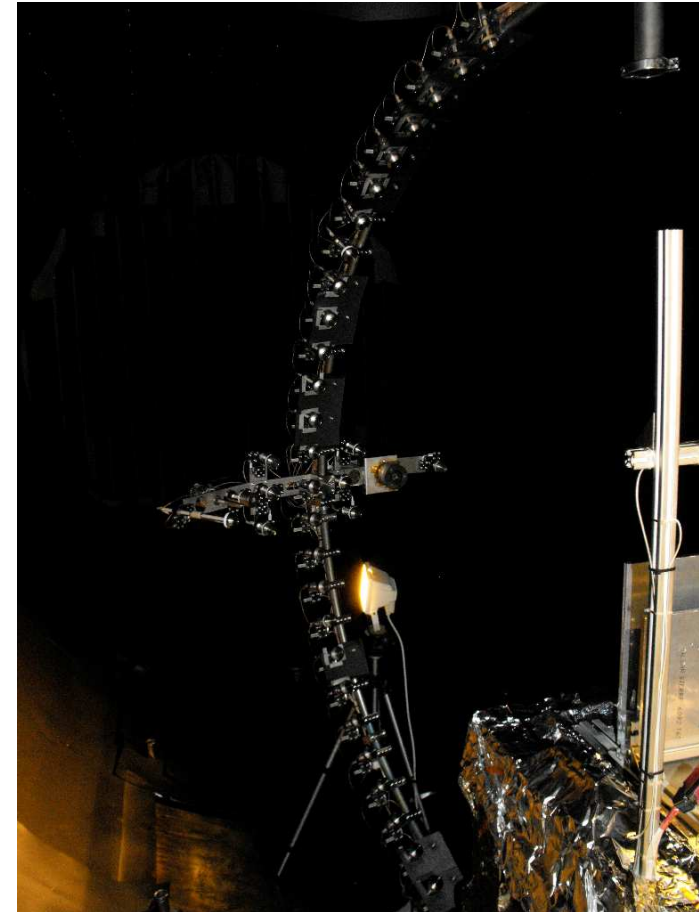
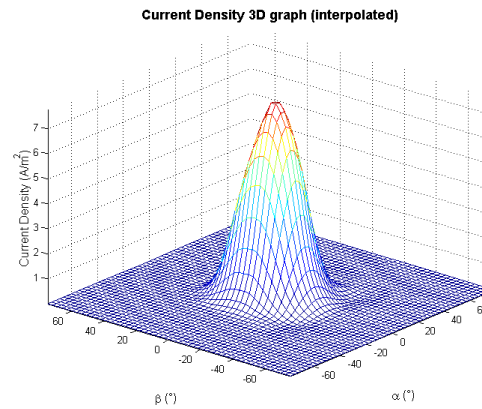
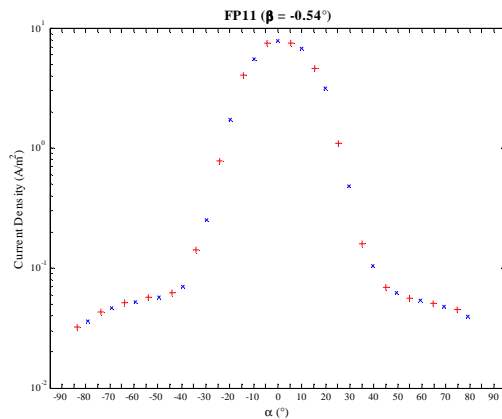
### Thermal Cycling



Photos from public documents

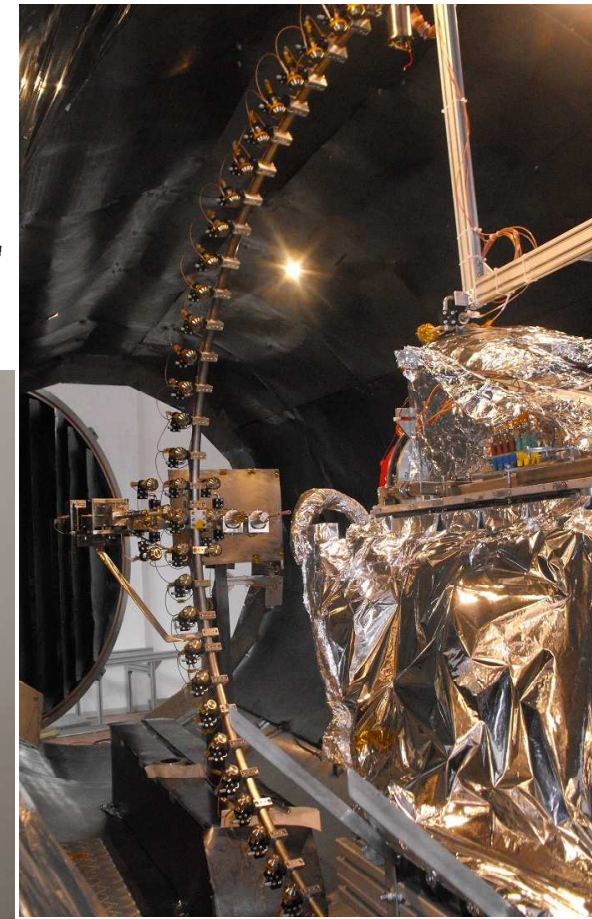
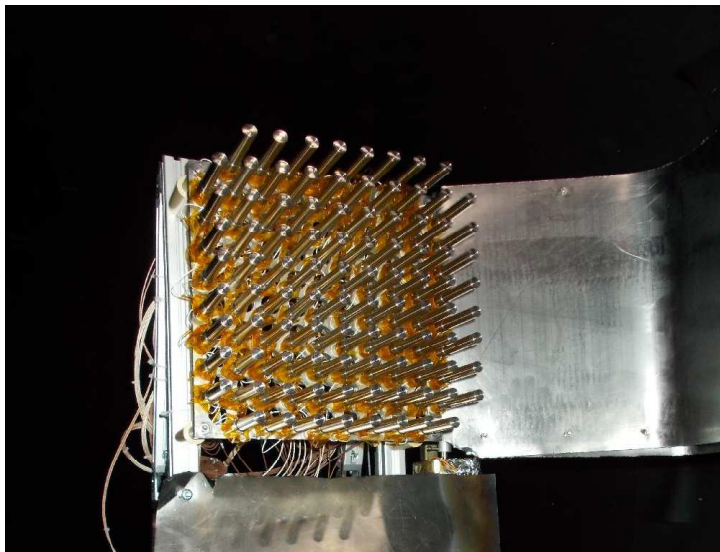
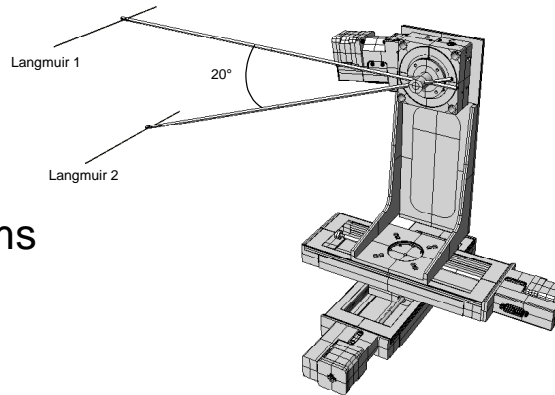
All the main types of intrusive plasma diagnostics tools are available

- Faraday probes
- Langmuir probes
- Emissive probes
- Retarding Potential Analysers
- ExB Probes



# Probe Displacement Systems

- Rotating diagnostic booms
- x-y-z Cartesian systems
- Multi-axis arms
- Multiprobes displacement systems
- Fast acting positioning systems





## Contribution to EPIC Projects

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**GA-730020-HEMPT-NG, Coordinator: Thales-D**

**GA-870336-iFact, Coordinator: AIRBUS-D**

**GA-101004140-HEMPT-NG2, Coordinator: Thales-D**

**GA-101004331-CHEOPS LOW POWER, Coordinator: Safran SSP**

**GA-101004226-CHEOPS MEDIUM POWER, Coordinator: Safran SSP**

**GA-101004349-GIESEPP MP, Coordinator: AGG**

**GA-101082532-CHEOPS-VHP-BB, Coordinator: Safran SSP**

**GA-101081987-ECOPROPU, Coordinator: Safran SED**

**Thank you !**

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# **AEROSPAZIO TECNOLOGIE s.r.l.**

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