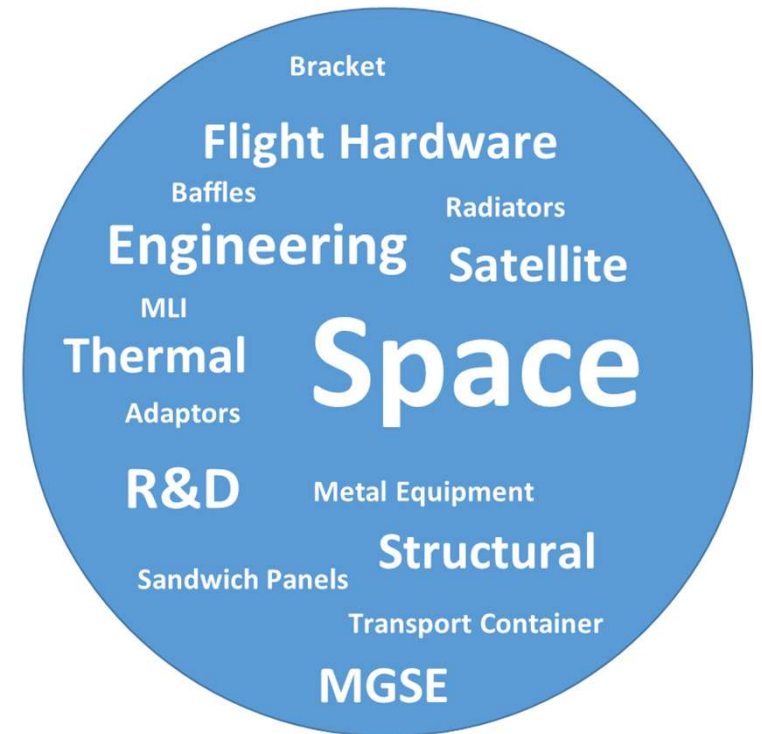


# Admatis

Advanced Materials In Space

## Company introduction



## INTRODUCTION

Admatis was **founded in 2000** by **Hungarian private investors** and specialized in **space engineering** and **production** with strong **material science** background.

Our **core value** is our **competency** in **design, development, production** and **verification** of **space hardware** and their **support equipment**.

The company is an **SME** with about **40 employees**. Admatis is located in **Miskolc** and considered as a **prime in Hungary**.

## CERTIFICATES

- **AS / EN 9100:** Quality Management Systems – Requirements for Aviation, Space and Defense Organizations
- **ISO 9001:** Quality Management
- **Central Contractor Registration (CCR)** registration with the Department of Defense (DoD)
- **NATO Commercial and Government Entity (NCAGE)** code
- **European Space Agency (ESA)** cost audit



## OUR MOTTO

*„Whether you believe you can do a thing or not, you’re right”*

*Henry Ford*

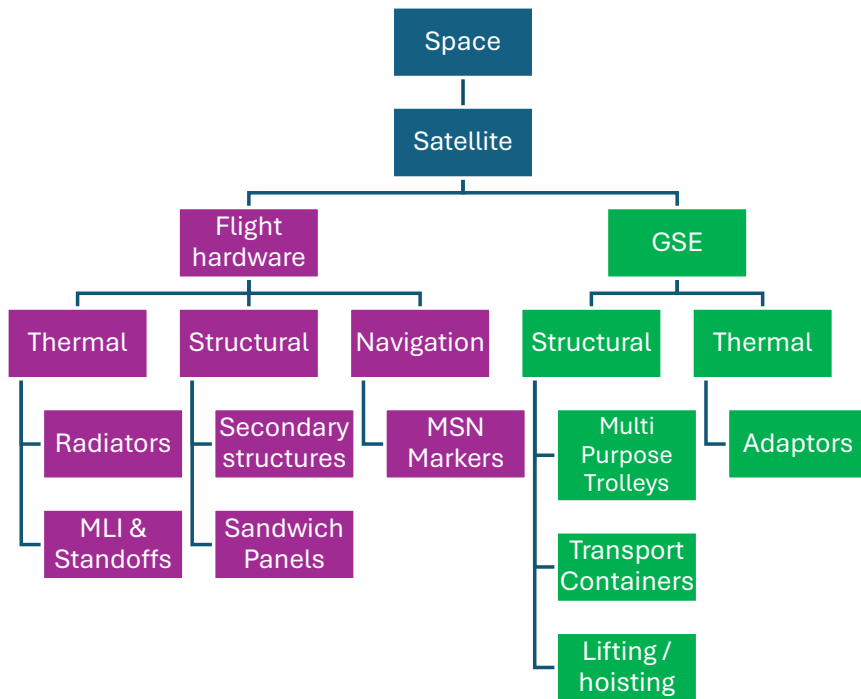
**We believe we can do it.**





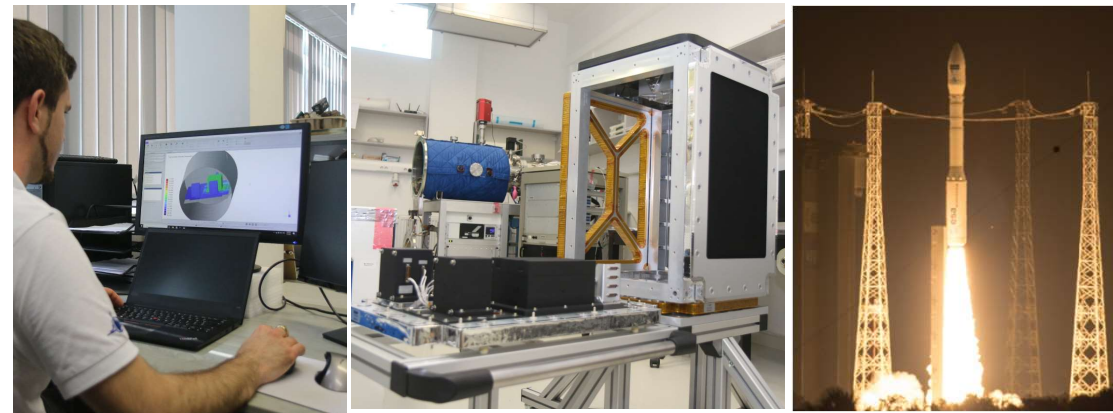
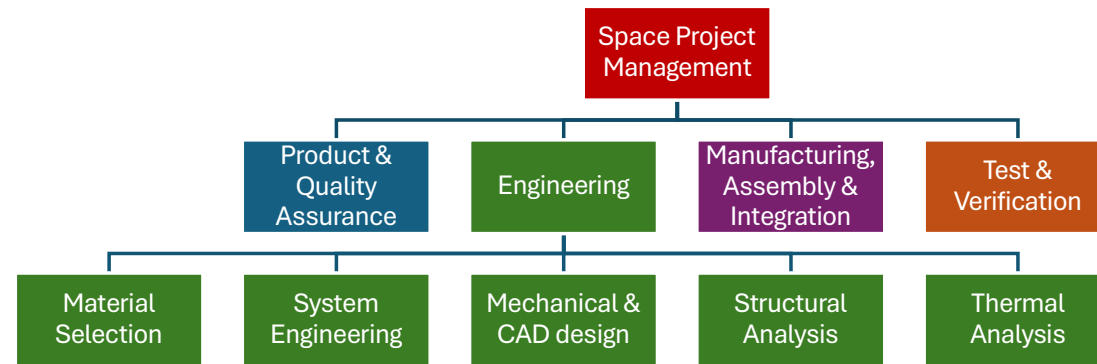
## OUR FOCUS

Admatis is working only in the **space segment** specialized in **structural-thermal hardware** and their **GSE**.



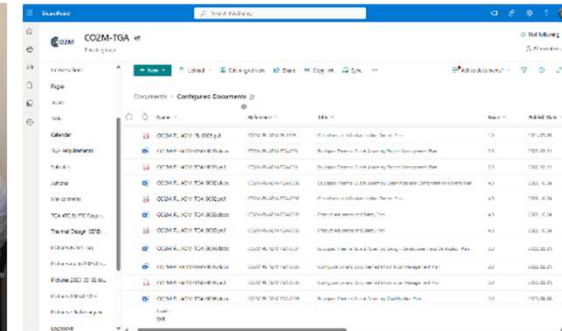
## FROM CONCEPT...TO FLY

We support our customers with long-term collaboration in **development, design, production** and **test** of **space products** from the conceptual phase till integration and launch.



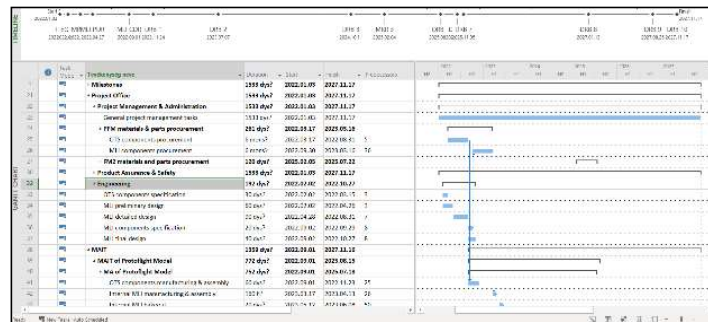
## SPACE PROJECT MANAGEMENT

Admatis is experienced in **planning** and **executing** of **built-to-spec** and **built-to-print type** space projects. Success is ensured by the **commitment** of **team members** and well-defined **task management** system.



## PRODUCT & QUALITY ASSURANCE

Our **stringent quality policy** and **failure-proof thinking** in every part of a project ensure the **high quality** of our products while also compliant with the requirements of ECSS standards.

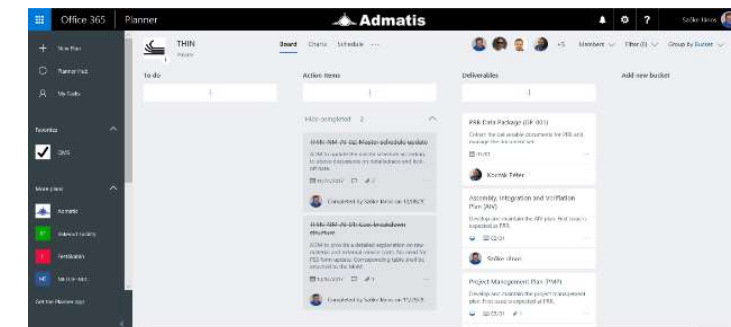


## DOCUMENTATION

One of our strengths is our **documentation system** built **according** to the well-known **ECSS rules**.

### Software tools:

- MS Project
- MS Planner & SharePoint
- MS Office (Word, Excel, PowerPoint, Visio)
- ECOS



## BUILDING SPECIFICATIONS

We offer **system engineering services** even in the conceptual phase of projects by **building requirements specifications** and performing **concept trade-offs** based on traditional and **state-of-the art** technologies.

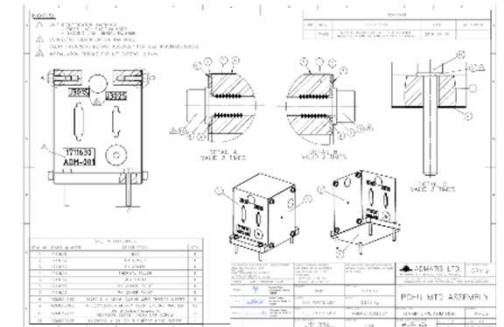
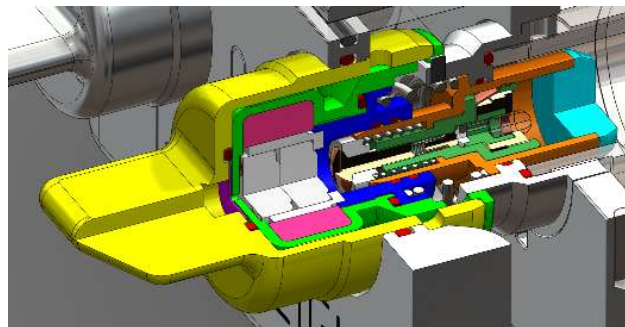
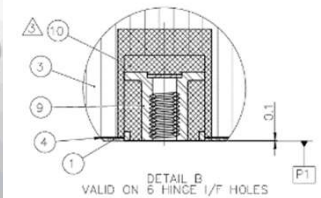
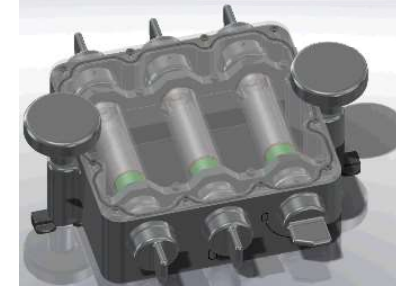
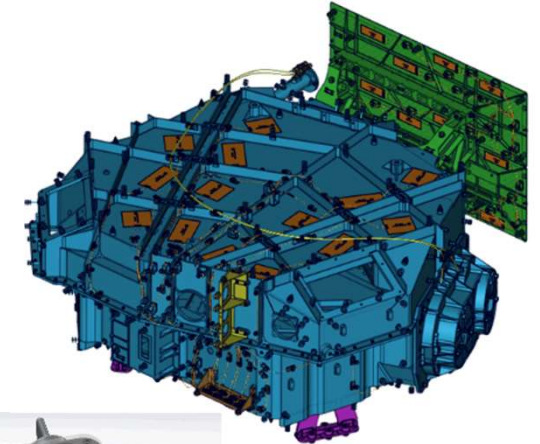
## MECHANICAL & CAD DESIGN

Our design activities starts with the **selection of the best materials** and **mechanical parts** for the given purpose based on our strong **material science background**.

We provide **3D CAD modelling** of **complex systems** which ends up in 2D manufacturing and assembly drawings.

### Software tools:

- SolidWorks,
- SolidWorks sheet metal,
- SolidWorks routing,
- eDrawings



## STRUCTURAL ANALYSIS

Admatis has long heritage on **structural analysis** of complex systems including **building** of structural **FEM**, **modal**-, **thermo-elastic**-, **quasistatic**-, **random**- and **sinusoidal analysis**.

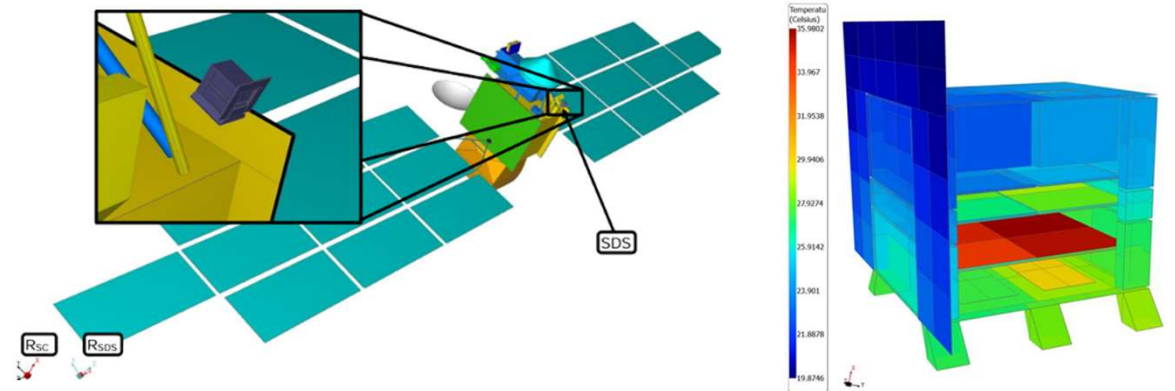
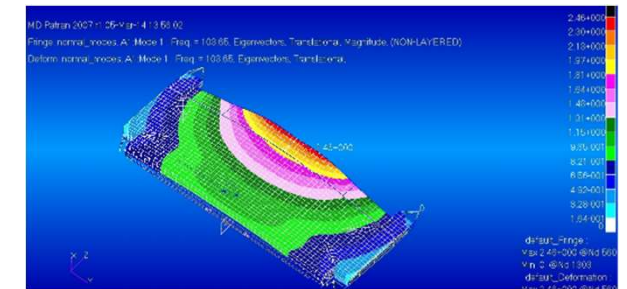
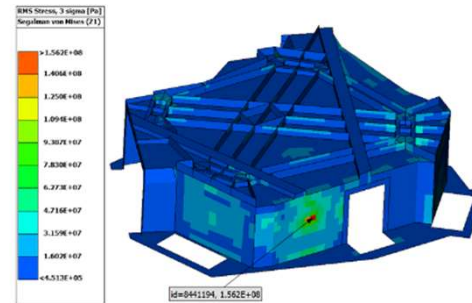
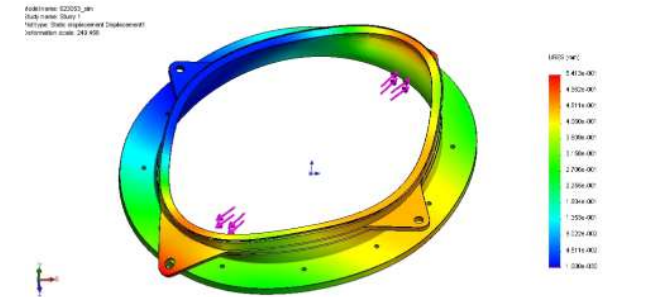
**Acoustic analysis** can also be performed by subcontracting it to one of our partners.

## THERMAL ANALYSIS

Admatis is experienced in **thermal analysis** of complex systems including **building** of thermal **FEM**.

### Software tools:

- SolidWorks Simulation
- NASTRAN,
- ESATAN,
- THERMICA,
- LabView,
- MatLab



## SECONDARY STRUCTURES

Admatis is well experienced in design, **manufacturing** and **testing structural** parts.

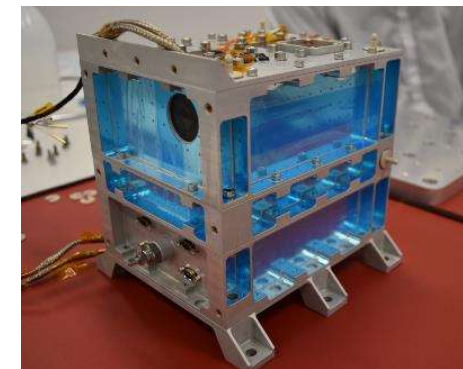
The company developed and delivered specially coated **optical baffles**, **thermal shields**, **brackets** and **isostatic mounts**.

Raw materials of such structures are usually **aluminium** alloys, **titanium** alloys or **stainless steels**.

All **manufacturing technologies** including **machining**, **coating** and **fastening** are developed and **qualified** under flight projects.

### Heritage:

- *Sentinel-2 (launched in 2015)*
- *COMET INTERCEPTOR (completed in 2026)*
- *CO2M (ongoing)*
- *MSR ERO (ongoing)*



## RADIATORS

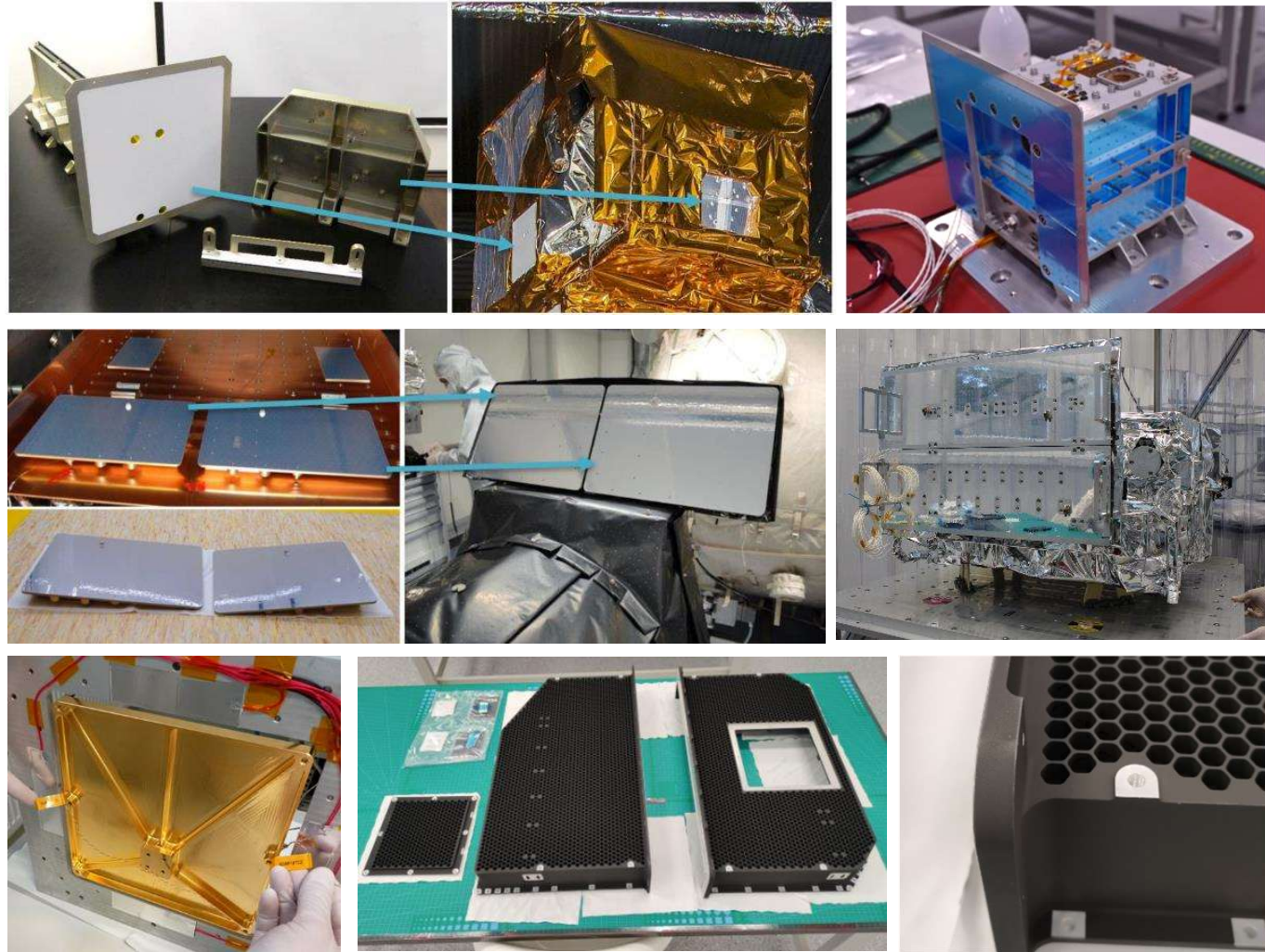
Admatis has more than 10 years of experience developing and testing of **passive instrument-** and **harness radiators**.

Raw material is usually aluminium alloy covered by a variety of special **thermo-optical coatings**.

The company developed radiators coated with **white paint, black paint, second surface mirror** and **gold plating**.

### Heritage:

- Sentinel-2 (launched in 2015)
- CHEOPS (launched in 2009)
- COMET INTERCEPTOR (completed in 2026)
- CO2M (ongoing)
- MSR-ERO (ongoing)
- ARIEL (ongoing)



## MULTI-LAYER INSULATION

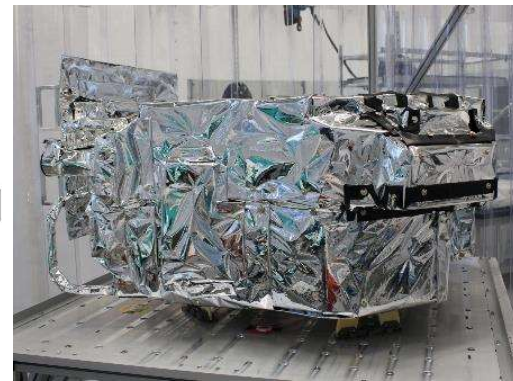
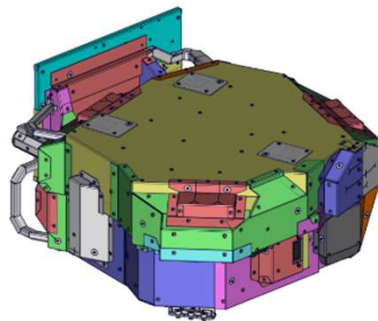
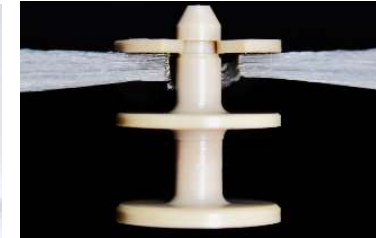
Admatis is becoming increasingly expertized in the MLI field.

Our **development** and **production** include **definition of materials, thermal and mechanical engineering**, layup and layout **design in CAD**, **manufacturing, assembly** and **integration**.

MLI technologies also include the attachment of MLI support devices like **standoffs**, **hook-and-loop fasteners** and **grounding hardware**.

### Heritage:

- COPE R&D (completed in 2021)
- JUICE (launched in 2023)
- COMET INTERCEPTOR (completed in 2026)
- CO2M (ongoing)
- MSR-ERO (ongoing)
- VIGIL-PMI (ongoing)



## HEATERS & SENSORS

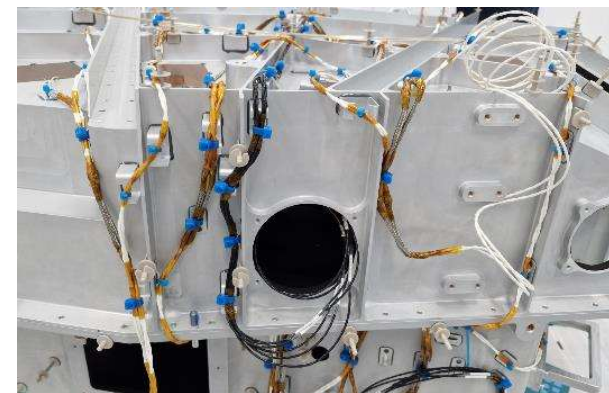
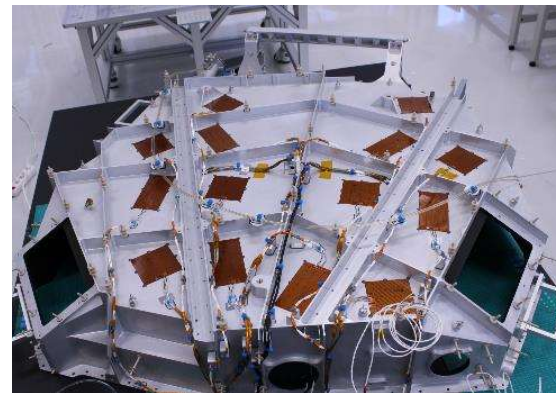
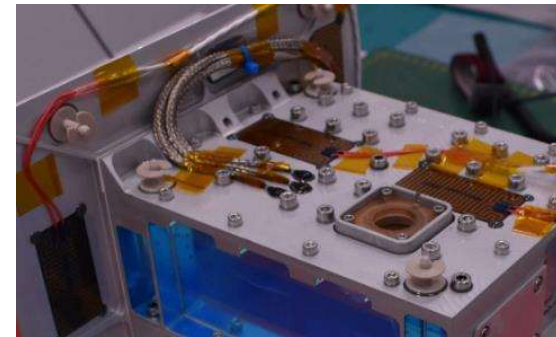
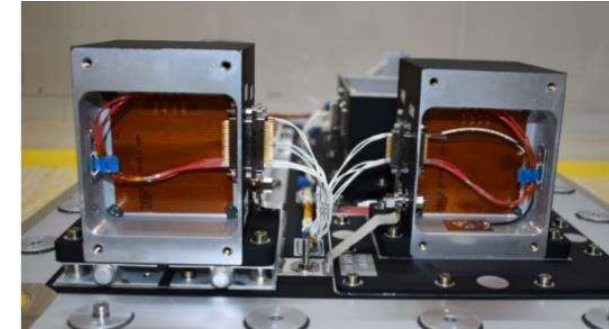
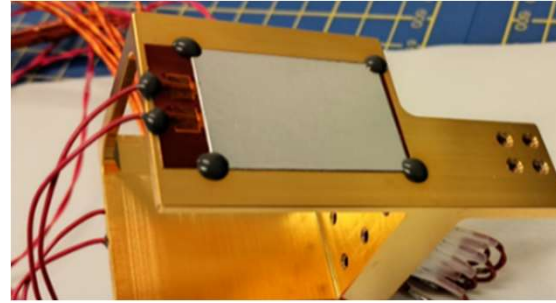
Admatis is experienced in **design** and **definition** of **foil heaters** and **selection** of **qualified thermal sensors** based on the thermal / electrical requirements.

Flight heaters and sensors are **procured from** various **manufacturers** according to corresponding **ESCC specifications**, while **test heaters** and **sensors** are **selected** from **off-the-shelf** products.

**Integration** activities including **gluing**, **wire assembly** and **harness fixation** can be performed by Admatis according to qualified processes.

### Heritage:

- RAMP R&D (completed in 2020)
- COMET INTERCEPTOR (completed in 2026)
- CO2M (ongoing)
- MSR-ERO (ongoing)
- ARIEL (ongoing)



## TROLLEYS AND LIFTING DEVICES

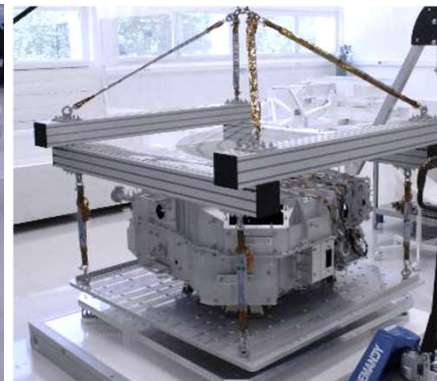
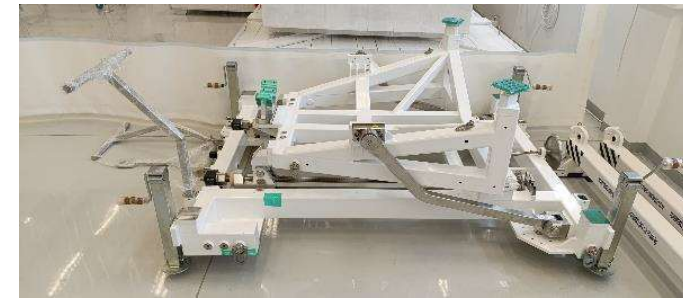
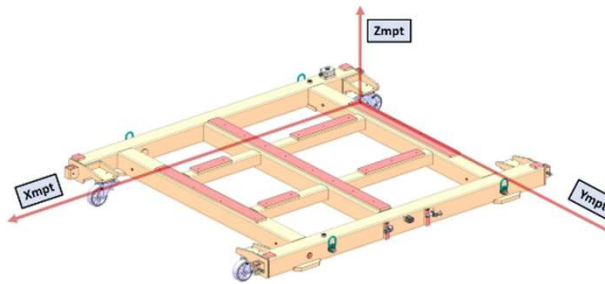
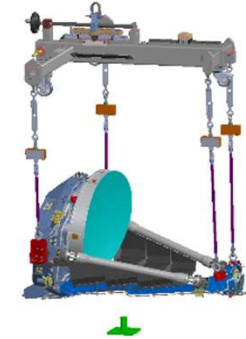
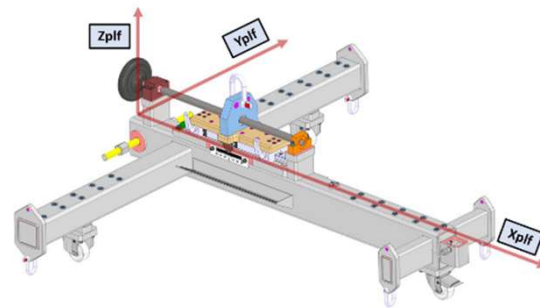
Admatis is expertised in **design** and **manufacturing** of equipment used to **manipulate flight hardware** during **internal AIT** activities and as an **end product**.

Such devices are various **lifting frames**, **transport trolleys** and **rotating equipment**.

**Cleanliness** and **quality level** of GSEs is **the same** as the **hardware** to be manipulated to ensure that **no degradation** is caused by the GSE.

### Heritage:

- CO2M (ongoing)
- ARIEL (ongoing)



## TRANSPORT CONTAINERS

Admatis is capable to **design** and **manufacture** various **transport** and **storage containers** for intermediate and final delivery of equipment and Payloads.

Containers can be equipped with **active thermal control**, **pressure control with gas inlets** and **tracking equipment**.

### Heritage:

- *SENTINEL-2C (launched in 2017)*
- *CHEOPS (launched in 2019)*
- *STC R&D (completed in 2022)*
- *COMET INTERCEPTOR (completed in 2026)*
- *CO2M (ongoing)*
- *ARIEL (ongoing)*



## TEST EQUIPMENT

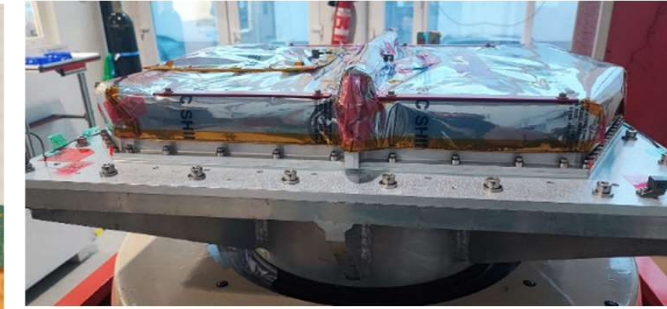
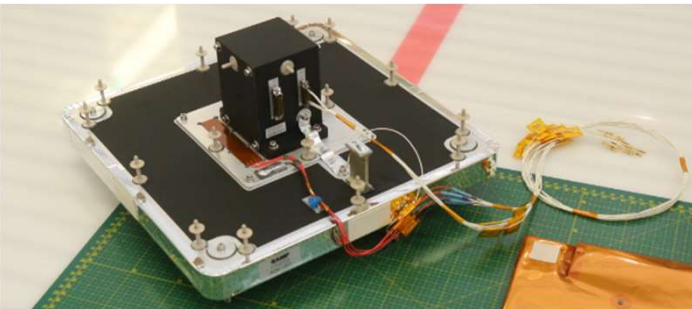
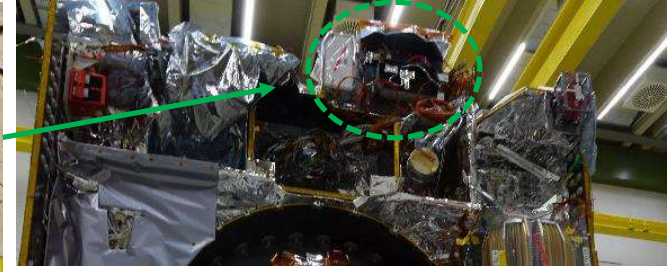
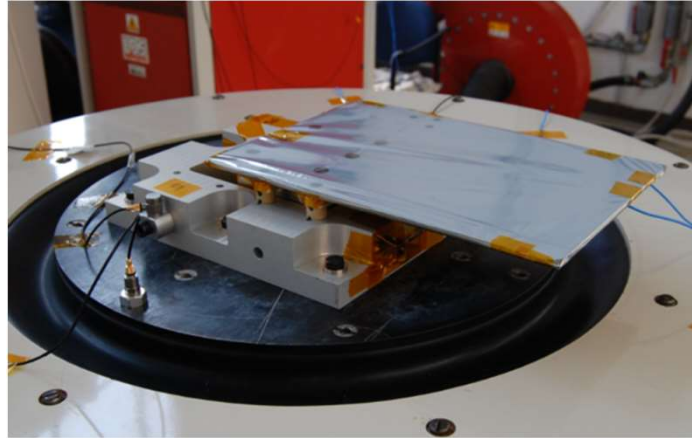
Admatis is expertised in **design** and **manufacturing** of test devices equipment used during **mechanical** and **thermal test** of equipment and Payloads.

**Test adaptors** are used during **vibration test** as an **interface** between **shaker and item under test**.

**Mass-thermal dummies** are used to **simulate** unit or **instrument mass** and **thermal properties** during **test** activities.

### Heritage:

- *SENTINEL-2 (launched in 2015)*
- *CHEOPS (launched in 2019)*
- *JUICE (launched in 2023)*
- *COMET INTERCEPTOR (completed in 2026)*
- *CO2M (ongoing)*
- *MSR-ERO (ongoing)*
- *ARIEL (ongoing)*
- *VARIOUS R&D PROJECTS.*



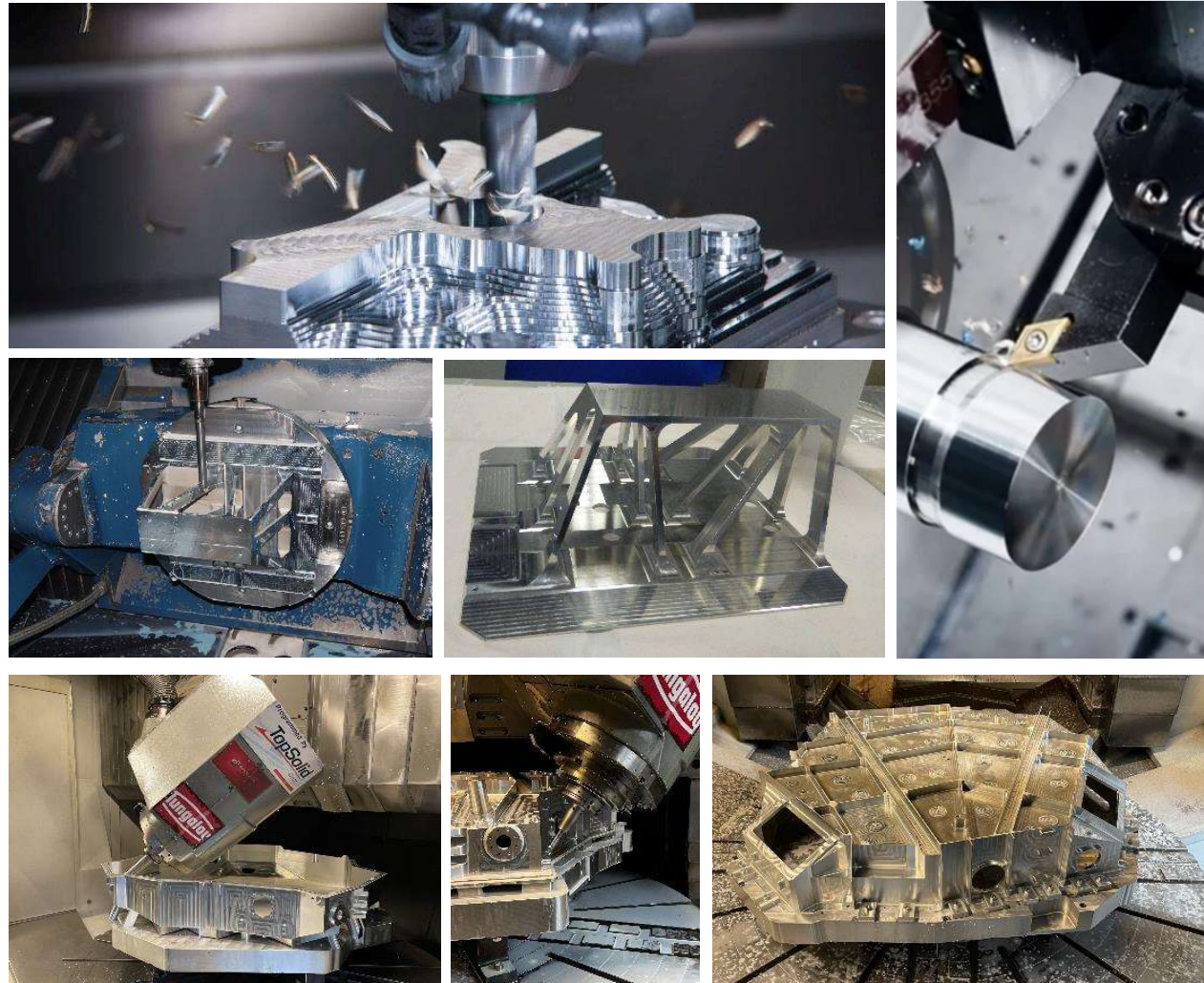
## MACHINING

General fabrication process is **machining** which is **performed together** with **our partners**.

**Machining** technology is **fine-tuned** to achieve the **high quality** and **workmanship** required for **space hardware**.

### General information:

- Universal or CNC turning of cylindrical parts.
- 3, 4 and 5-axis milling of complex shapes.
- Materials: aluminium, titanium, structural steels, stainless steels, Invar, PTFE, PEEK, PI.
- Dimensions up to 6000mm x 4500mm x 1500mm
- Tolerance up to 0.005 mm
- TRL 9 (*Sentinel-2A & 2B & 2C, CHEOPS*)



## CONVERSION COATING

Aluminium surfaces are protected **against corrosion** by **SurTec 650** conversion coating (in replacement to Alodine 1200).

Admatis has **two internal facilities**, one for **small and medium sized parts** (up to 600mm x 300mm) and one for **large parts** (Ø1300 x 300 mm).

For **extra-large** sized hardware (above 1500mm), **brush-on technology** can be implemented.

### General information:

- Alloys: 1xxx, 2xxx, 5xxx, 6xxx and 7xxx series.
- Color: pale / dark grey
- Coating mass: 0.1...0.5 g/m<sup>2</sup>
- Process: manual, immersion or brush-on
- Selective coating is possible.
- Compliant with ECSS-Q-ST-70-14 and PREN4729
- Passed 168h NSS and 240h humidity test.
- Passed 100 cycles between -100°C / +100°C
- TRL 9 (*Sentinel-2C*)



## PAINTING

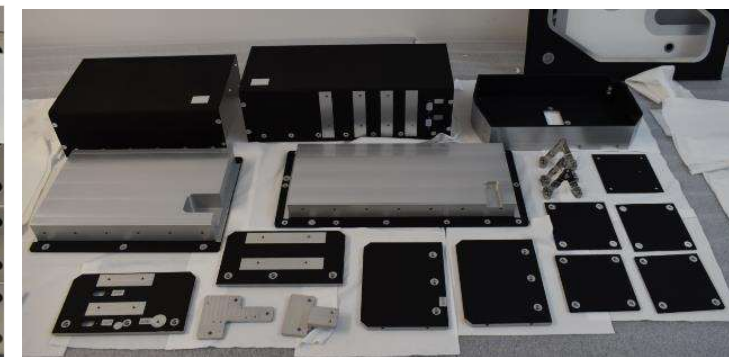
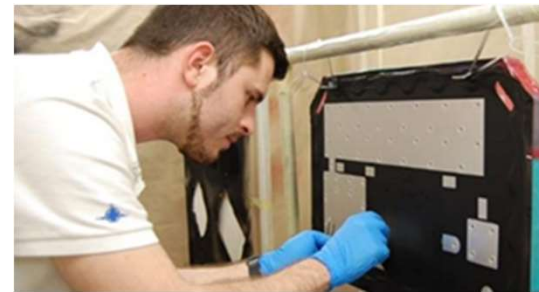
To help **regulate heat transfer**, surfaces can be **covered by thermo-optical coatings**.

Admatis has an **internal painting booth** inside an **ISO 8** cleanroom linked to a **preparation room** for preparatory and **masking-demasking** activities.

Coatings **can also be outsourced** to our partners are also available to apply **paint** and **inorganic coatings (PEO/MAO)**.

### General information:

- Hardware size: max. 2m<sup>2</sup>
- Paint systems: MAP PU1, MAP SG121FD, MAP PUK, Aeroglaze Z306, AQ PUK under qualification
- Process: manual, not automatic
- Selective coating is possible by masking
- Best painting quality can be achieved few hours after our SurTec 650 coating.
- Passed 240h humidity test.
- Passed 100 cycles between -100°C / +100°C
- TRL5 to TRL9 (*Sentinel-2A & 2B and 2C*)



## MLI MANUFACTURING

Manufacturing and assembly technologies used for MLI blankets are **performed in ISO 8 cleanrooms**.

**Cutting** is performed by **CNC machine**, while the **assembly processes** (pinning, taping, gluing) are performed **manually**.

### General information:

- Blanket size: max. 3m x 2m
- Covers: VDA coated Kapton or Black Kapton.
- Reflectors: VDA coated PET or Kapton
- Fasteners: PEEK tag pins,
- Grounding: aluminium foils, rivets, removable fasteners
- MLI installation: standoffs or hook-and-loop fasteners
- Passed 240h humidity test.
- Passed 100 cycles between -70°C / +150°C
- TRL5 to TRL9 (*JUICE*)



## CLEANING & PACKAGING

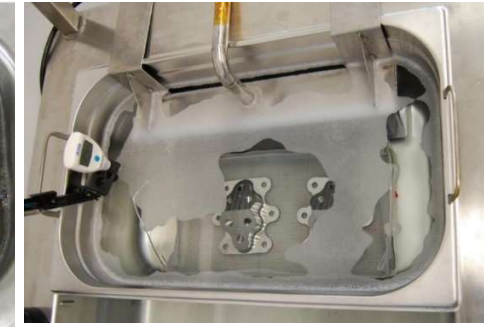
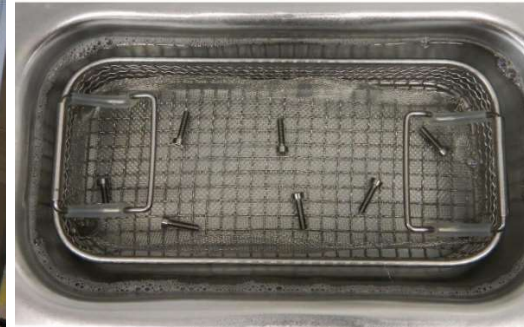
Cleaning and packaging activities are performed in **ISO 8 cleanrooms** or in **ISO 5 clean bench** depending on the cleanliness requirement.

Various process is available including **ultrasonic cleaning, flushing, brushing** and **wiping** with **analytical grade solvents**.

Items are placed in **double ESD bags** including the corresponding **desiccants** and **humidity / temperature indicators**.

### General information:

- Materials: IPA, acetone, N<sub>2</sub> gas, clean wipe
- Packaging: PE bag, metal-in ESD bag
- Cleanliness can be reached:
  - Molecular: <math>5 \times 10^{-8}</math> g/cm<sup>2</sup>
  - Particle: <math>< 50</math>ppm
- TRL9 (*Sentinel-2A & 2B & 2C, CHEOPS, JUICE*)



## NON-DESTRUCTIVE INSPECTIONS

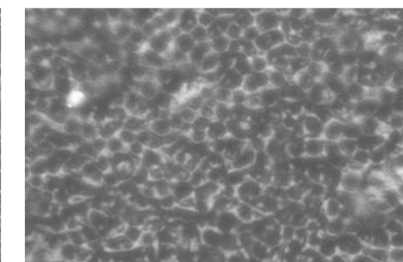
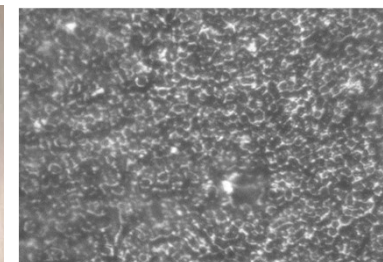
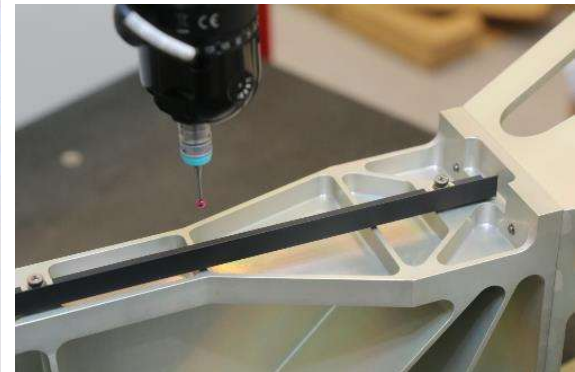
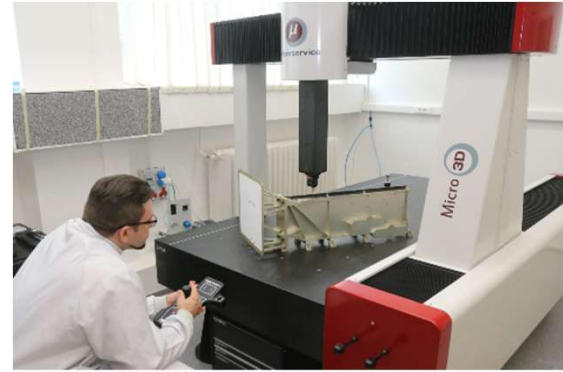
**Dimensional measurement** is performed using standard **linear tools** like **calipers** and **micrometers** and **special gauges**.

**3D measurement** is performed by an articulated **measurement arm** (1.8m volume) and a **bridge CMM**.

Surface quality is checked by portable **surface roughness tester**.

Detailed **visual inspection** is possible with **optical microscope**.

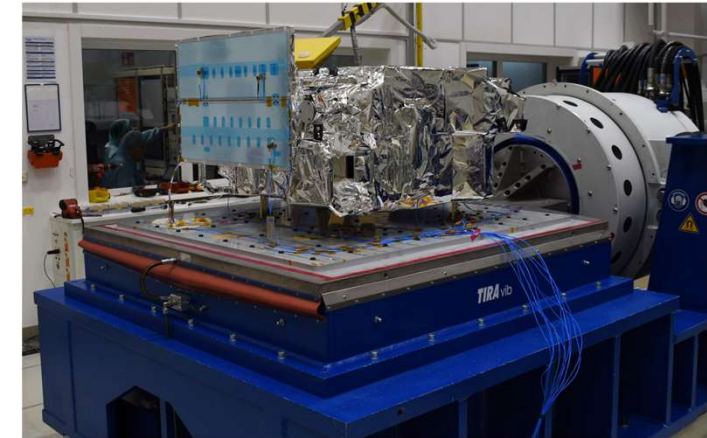
**Air cleanliness measurement** by portable **particle counter**, **hardware cleanliness** measurement under **white** and/or **UV light** with magnification.



## VIBRATION TEST

Admatis is expertised to **perform** and **evaluate vibration test** to verify mechanical analysis results.

An **LDS 35kN shaker** is available at our partner in Hungary equipped with **head expanders** and **slip table**.



## THERMAL TEST

**Bakeout**, thermal balance and **thermal vacuum cycling** can be performed by Admatis to verify thermal behavior.

**Thermal vacuum chamber** is available at **Admatis ISO 8 cleanroom** and at external facilities.



## CLEANROOMS

Admatis has **five cleanrooms** which are the main workspaces for space hardware production and test activities. They are utilized for different activities.

- **Cleanroom A** is an **ISO 8** area with **22m<sup>2</sup>** floor space and used for final cleaning and packaging. Cleanroom is equipped with a **2m<sup>2</sup> ISO 5 Clean Bench**.
- **Cleanrooms B and C** are **ISO 8 areas** with **160m<sup>2</sup>** floor space. These rooms are the headquarters of MLI manufacturing and assembly activities and they can be separated to improve cleanliness if required.
- **Cleanroom D** is an **ISO 8** area with **40m<sup>2</sup>** floor space. It's only accessible from Cleanroom C through an interlock. TVC is operated here and it's planned to upgrade it to ISO 5 facility.
- **Cleanroom L** is the biggest **ISO 8** cleanroom at Admatis site. It is separated into three parts, total floor space is **240 m<sup>2</sup>**. A **semi-ISO 5 Clean Tent** is operated in the innermost area with **15 m<sup>2</sup>**.



## THERMAL VACUUM CHAMBER

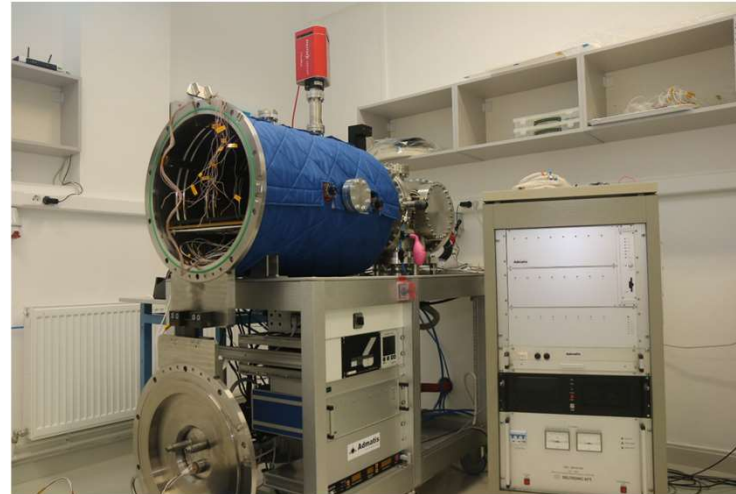
Admatis has a **thermal vacuum chamber (TVC)** operated in **ISO 8 cleanroom**.

TVC is made of **stainless steel** and has a set of **connectors** to perform **measurements** and **powering** of item under test.

TVC is equipped with a **temperature-controlled quartz crystal microbalance (TQCM)** and a **Residual Gas Analyzer (RGA)**.

### General information:

- Available dimensions: 400x670 mm<sup>2</sup>,
- 50x50 mm grid of Ø5 mm holes for sample fixation,
- Heating rate up to 5-6 K/min,
- Operating temperature -70°C to 90°C.
- Up to 48 type K thermocouples



## MLI BASED ON AEROGEL (MBA)

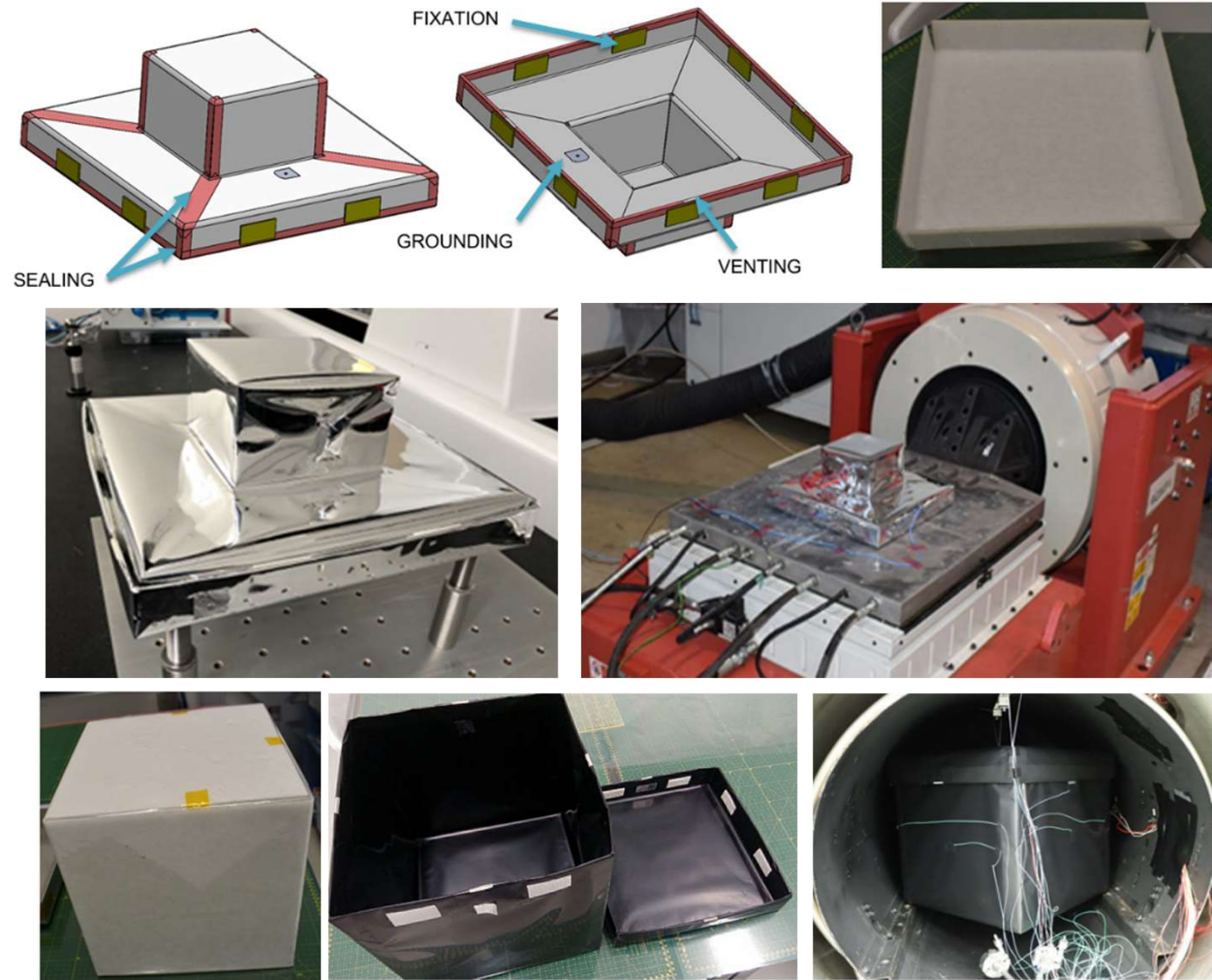
MBA was a joint **technology development** activity of **Admatis** and **Thales Alenia Space** France to develop innovative **thermal insulation** products based on **aerogels**.

Envisioned **self supporting** product expected to **reduce system mass** by **eliminating the need of secondary structures** designed to support the MLI.

A **breadboard** is manufactured from an **aerogel** product and **survived vibration test** sequence, and its **thermal efficiency** is **measured** by **ESA**.

Most of the **key requirements** are **fulfilled** including **self-supporting** and **3D forming** capability.

Existing nonconformances will be addressed in a **follow-up project**. Current product is **proposed to test houses** to **replace** tent-like **test blankets** during thermal testing.



## MARKERS SUPPORTING NAVIGATION (MSN)

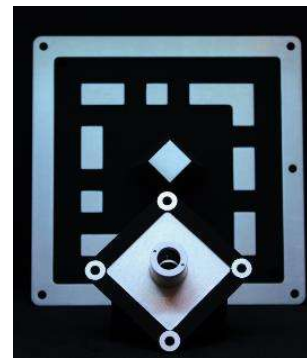
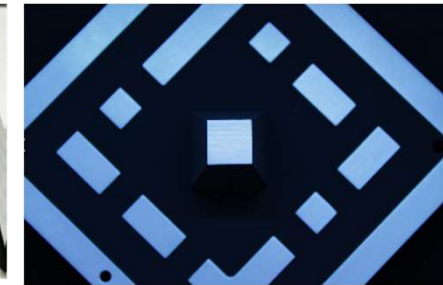
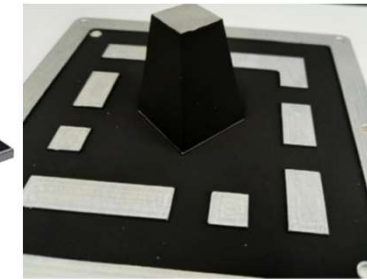
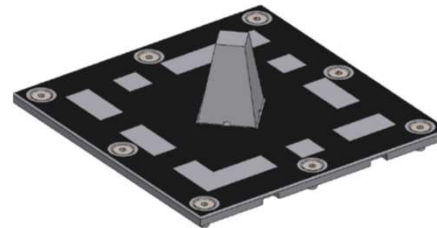
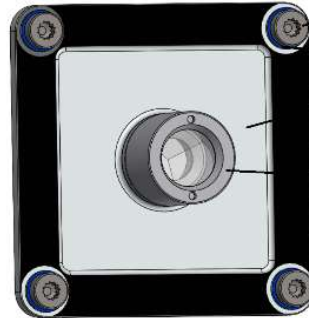
MSN can be used for relative **navigation** and **safe approach** to a spacecraft during **active debris removal or in-orbit servicing** in case the spacecraft is becoming uncontrollable.


**MSN-2DM** can be detected in the **IR** and **VNIR** wavelength ranges from **50m to 5m** distances, and **MSN-3DM** supports the capturing process from **5m**.

Markers are **developed** under an **ESA R&D project portfolio** as part of the **Clean Space programme**. Due to the successful development, first flight models have been delivered to **LUR-1, CRISTAL, LSTM and CO2M** satellites and under manufacturing for **CHIME**.

**Further developments are running (see next slides):**

- Phosphorescent painted Markers,
- GNC test facility,
- Markers for constellations,
- System level leader of international team



Properties	2D Marker 	3D Marker 
Dimensions (L, W, H) [mm]	60x60x16,5	150x150x43
Weight [g]	~29.6	~211.2
Baseplate material	Aluminum	Aluminum
Surface passivation	Conversion Coating	Conversion Coating
Coating	Space qualified paint	Space qualified paint
Central element	Laser retroreflector	Pyramidal element
Fixation	4 pcs MJ4x10 Cheese head screw	5 pcs MJ4x10 Cheese head screw
Navigation support	from 50 m to 5 m	from 5 m to 0 m
Grounding	implemented by the interface screws	implemented by the interface screws

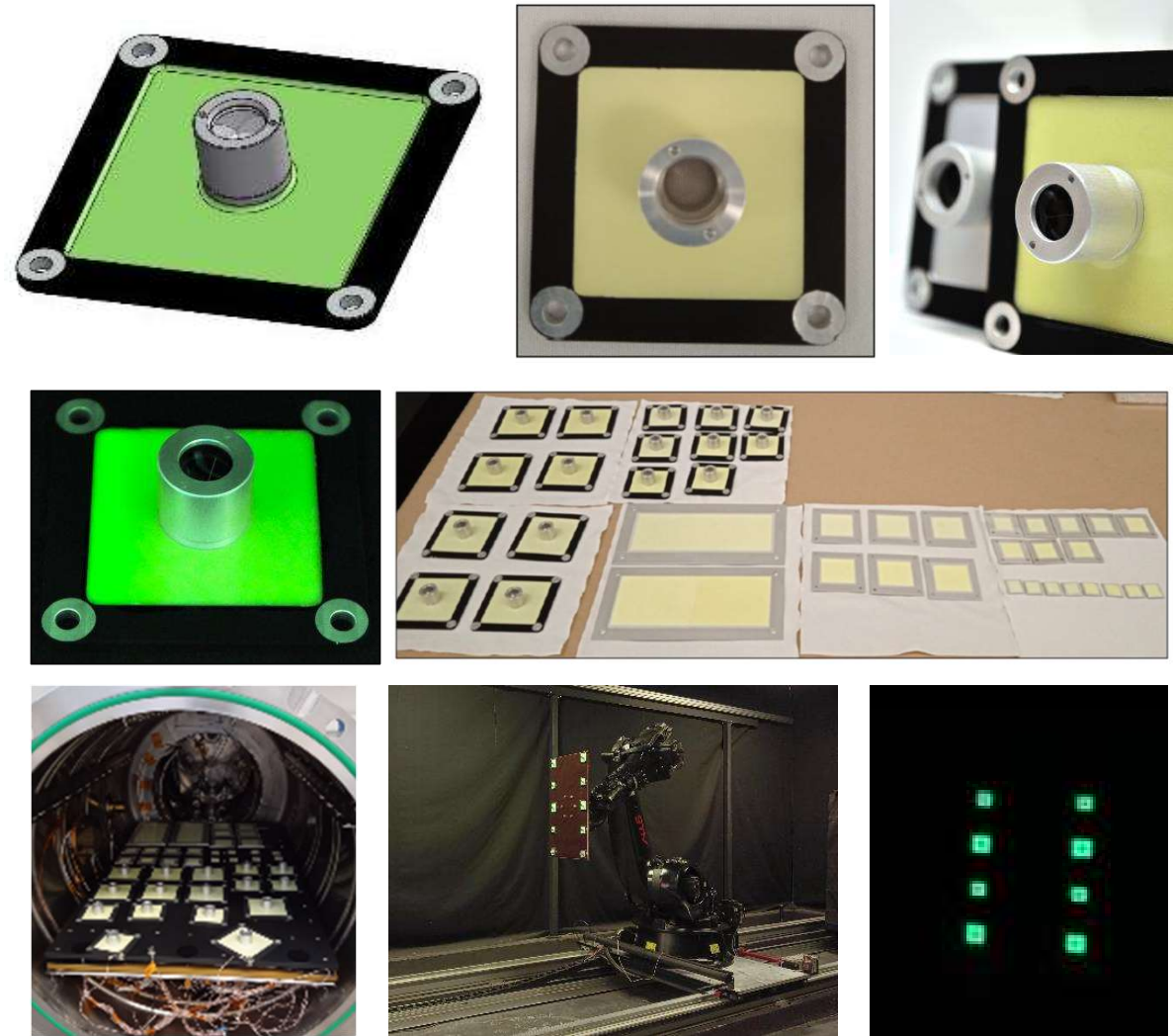
## PHOSPHORESCENT MARKERS (PHM)

**Phosphorescent Markers to Support Navigation (PHM)** aimed for **further development** of the **MSN 2D Markers** using **aging-resistance phosphorescent paint** system to support navigation in different illumination conditions. Project was run under **ESA supervision**.

After a comprehensive trade-off study and painting tests, **2 candidate paint systems** was selected.

A set of **breadboards** and **characterization samples** have been manufactured from the candidate paint systems which were subjected to environmental test campaign including **bakeout, TVC, humidity test, vibration test** before **static and dynamic navigation performance tests** in GMV (Spain) facility.

The technology has a very promising usability for space navigation in the **50m to 5m range**. Products reached **TRL5** at the end of 2025.



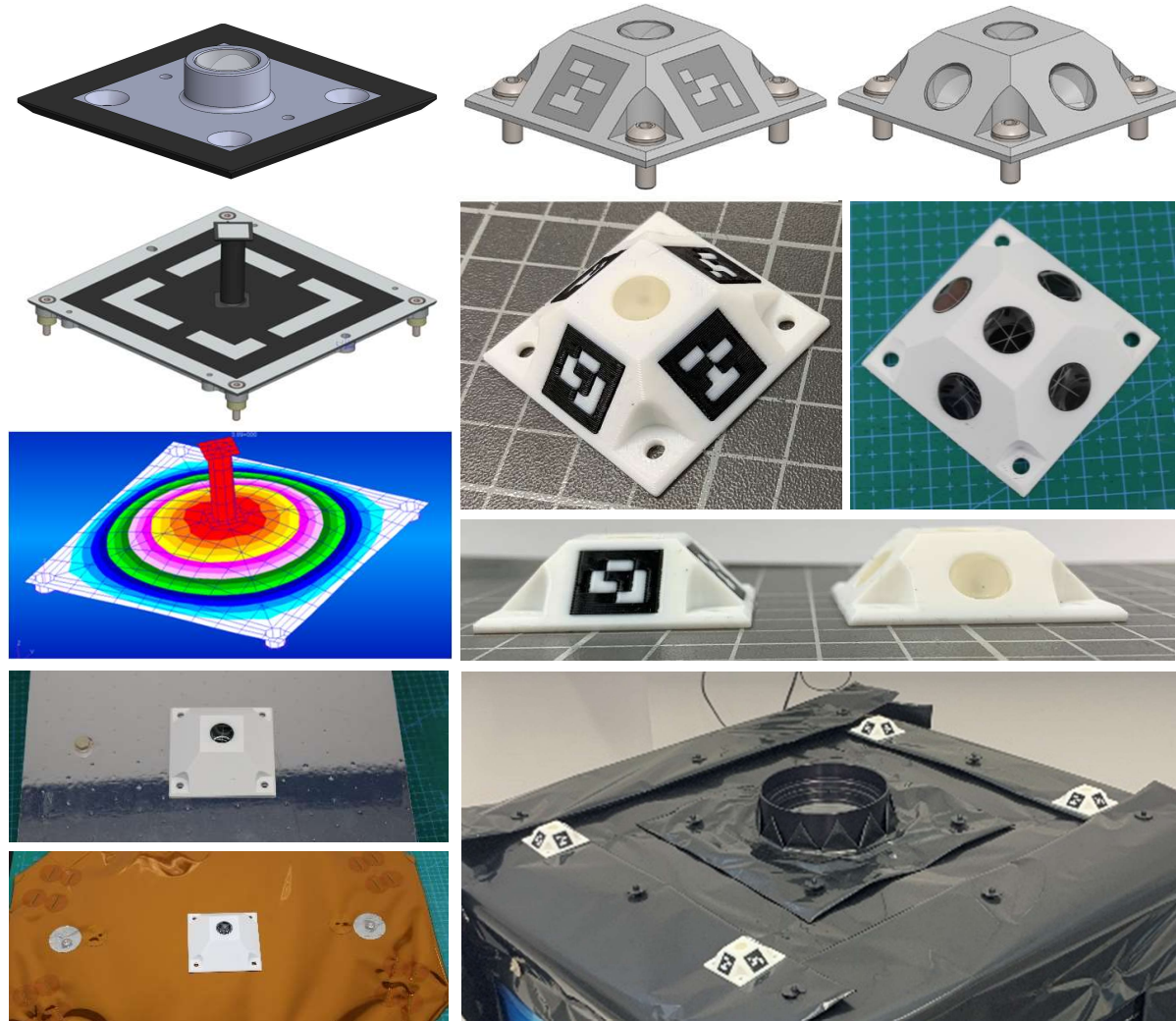
## MARKERS SECOND GENERATION (M2N)

Objective of the **Marker Supporting Navigation Second Generation** (also called **MSN-SG**) development is to **improve performance, reduce manufacturing cost** and achieve **higher production** rate of markers to be used on **future LEO** satellites and **large constellations**.

Project is ongoing under ESA supervision by implementing ESA's and industry – **OHB, Airbus, GMV** – **recommendations** and **lessons learned** coming from the **development and production** of the first-generation **flight markers** already **delivered** for **Copernicus missions**.

Development is a collaborative effort **supported** by the **Flight Segment** and Robotics Division of **GMV** (Spain) who provided system-level inputs to the MSN requirement specification.

Plan is to reach **TRL6** by the **end of 2026** and find a flight opportunity within two years for **in-orbit demonstration**.



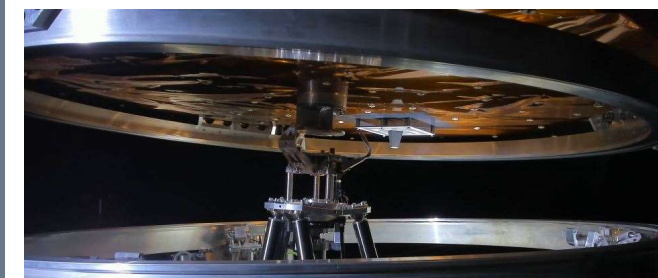
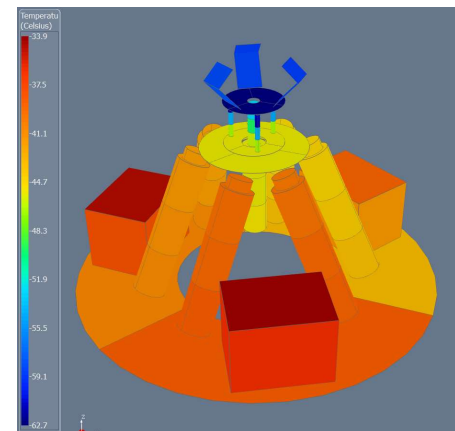
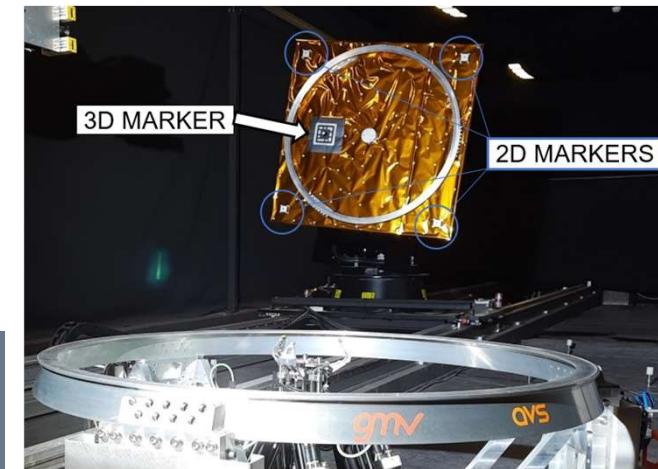
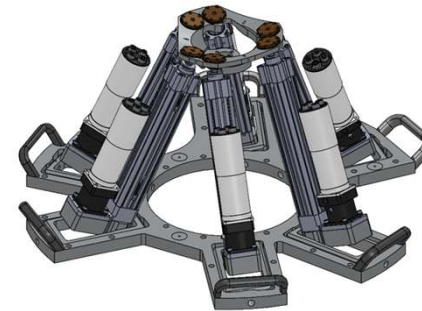
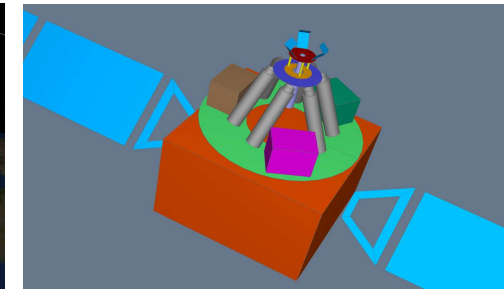
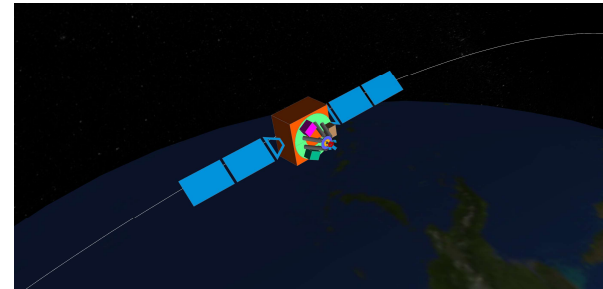
## CAPTURE PAYLOAD BAY (CAT)

ADM teamed up with **GMV** (Spain) under an ESA contract to get prepared for the in-orbit demonstration of the fully deployed **Active Debris Removal (ADR) system** developed by AVS (Added Value Solutions), GMV and ADM.

**CAT** is a **robotic capture system** designed to enable spacecraft to **autonomously capture** prepared **space objects** both cooperative and non-cooperative, equipped with **ESA's Design for Removal (D4R)** standard **interfaces**.

**CAT Engineering Model** (CAT EM), will build on the results of the breadboarding phase (reaching TRL 4) and **further develop** the system to **TRL 6**, with the goal of **validating** the full functionality of the system in **space-relevant environments**.

ADM is responsible for **thermal control system design** including **thermal analysis** and providing **passive thermal protection system** and also to **provide 2D and 3D markers**.

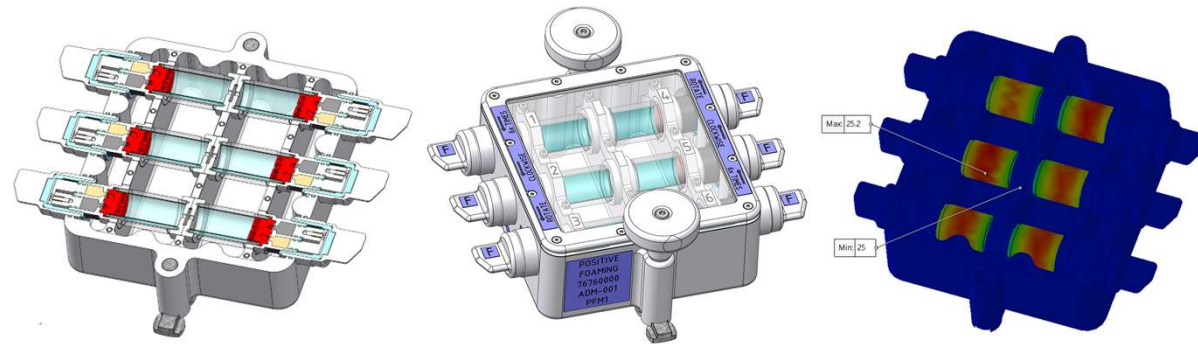


## POSITIVE

Objective of the **Porous Lightweight Material Development (POSITIVE)** project is to develop special foam generator **capable of foaming solid/liquid mixtures under reduced gravity to establish technologies** to be used to setup **permanent habitats on Moon and Mars** from **local resources** like Moon dust (**regolith**).

Development is ongoing in cooperation with **Axiom Space** under **ESA PRODEX** programme, while the experiment will be performed by **NASA**.

Technology is a **further development** of the already **existing** water-based system **tested onboard** the International Space Station (**ISS**) **in 2010** under Admatis' Foam Casting and Utilization in Space (**FOCUS**) **experiment**.

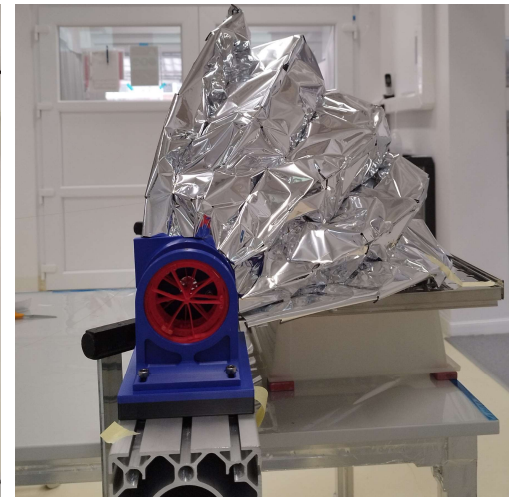
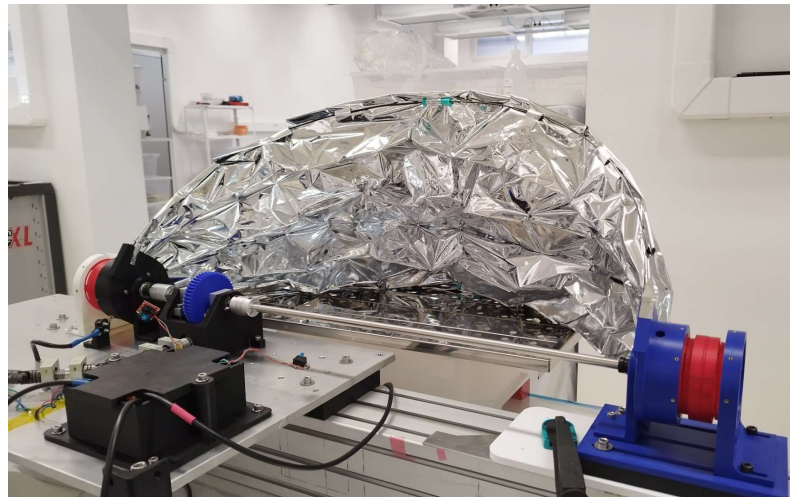
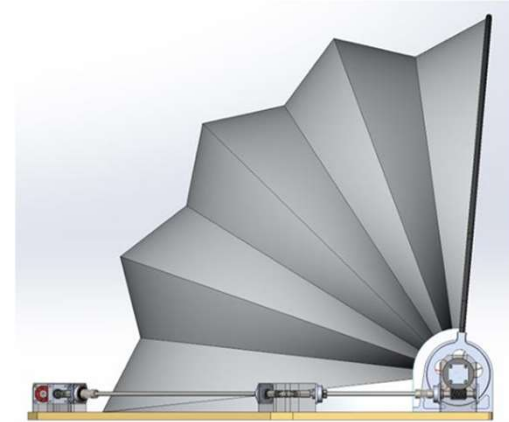
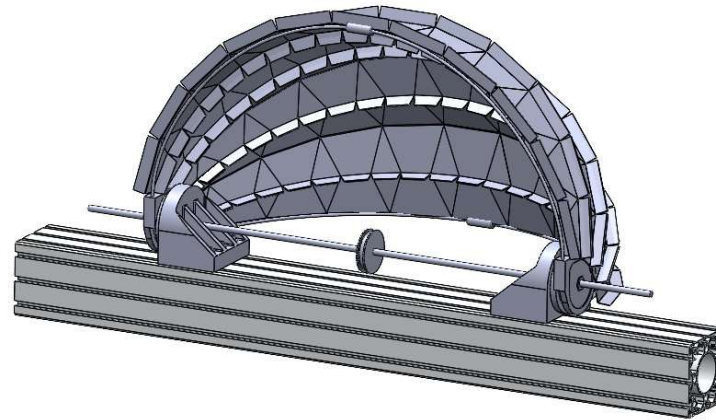
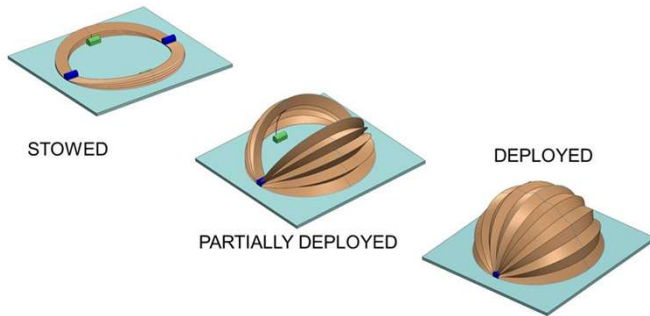


**RETRACTABLE MLI COVER (REM)**

Retractable MLI Cover for External Payload (**REM**) is an R&D project initiated at the request of ESA, aiming to develop a **deployable** and **retractable MLI cover**.

The system is designed to protect underlying instruments or radiators in its closed position and allows their normal operation when opened.

The project is carried out by a three-member consortium led by **Admatis** and having **ESR Technology** and **Almatech** on board, focusing on applications for lunar and deep-space missions.



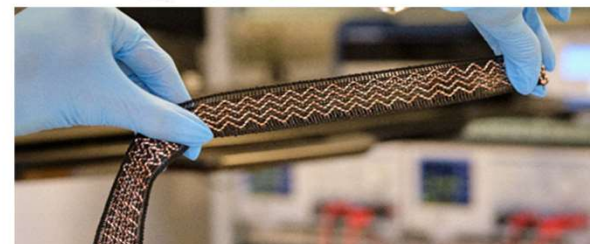
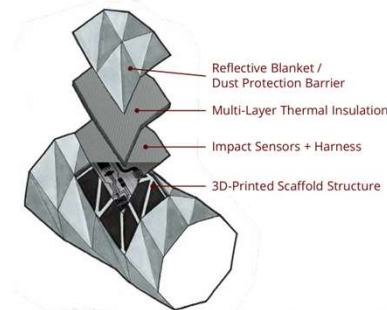
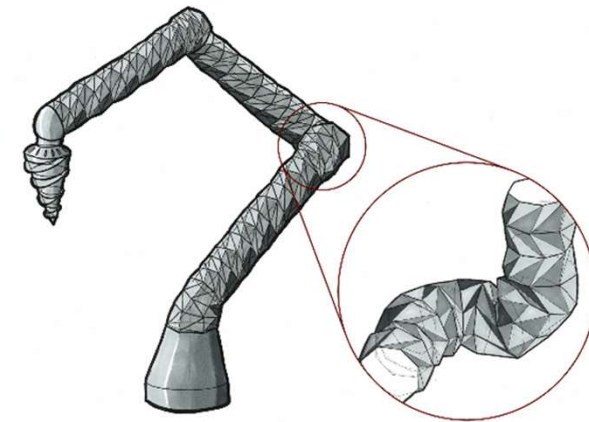
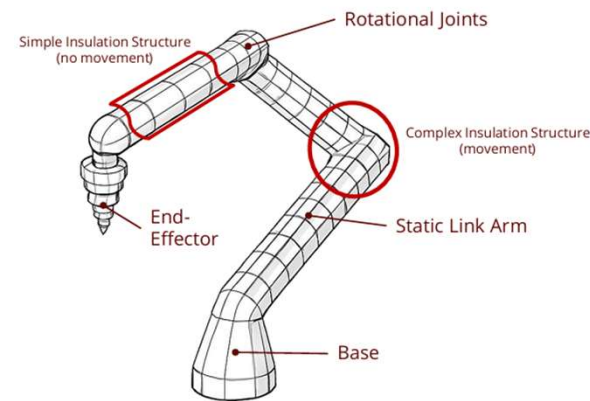
## SMART SKIN FOR EXPLORATION COBOTS

The **Smart Skin** for Exploration Cobots project aims to advance **robotic** operations in **harsh environments** by providing a **robust, modular, and adaptable protective skin**.

This **innovative** technology, based on **additive manufacturing** techniques, targets **robot manipulators for lunar and Martian missions**, although the Smart Skin concept is **designed** with the purpose of being **adaptable** to **orbital environments** as well.

Admatis is part of a **four-member Consortium** led by the **Danish Technological Institute (DTI)** and **responsible** for **thermal design** and **material development** and **manufacturing** of the **thermal protection system**.

Work is **started in 2026** and is being performed in close cooperation with DTI and the other Consortium members, **Redwire Space Europe** (Luxembourg), and **PIAP Space** (Poland) to reach **TRL 5/6 at 2028**.



Picture's credit: DTI

## MISSION OVERVIEW

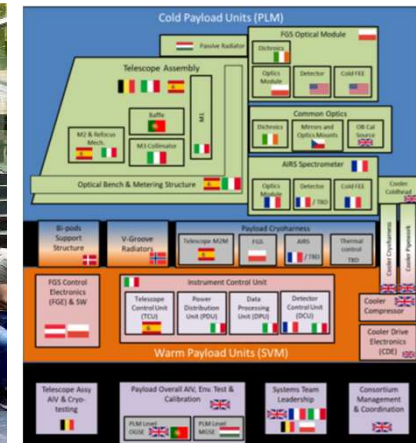
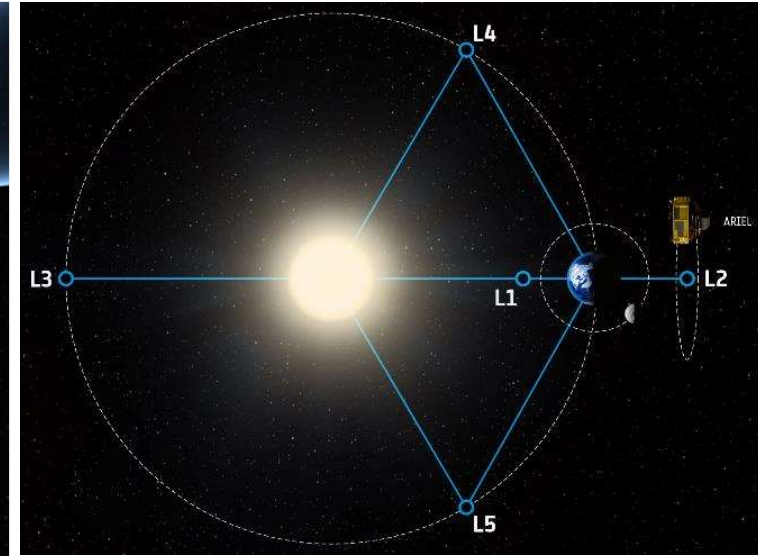
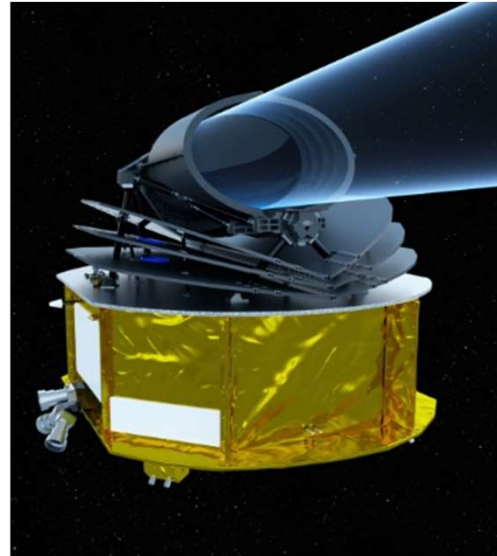


**ARIEL** is the **M4 mission** in the **ESA Cosmic Vision** plan. Mission is aimed at **observing** at least **1000** known **exoplanets** studying and **characterizing** the planets' **chemical** composition and **thermal** structures.

**ARIEL Payload** is developed by a **consortium** led by **RAL Space UK**. Contribution of more than **50 institutes** from **16 ESA countries** and **NASA, JAXA** and **CSA**. Prime contractor is **ADS**.

### Facts & figures:

- **Elliptical primary mirror:** 1.1 x 0.7 meters
- **Mission lifetime:** at least 4 years in orbit
- **Payload mass / launch mass:** ~500 kg / ~ 1500kg
- **Instrumentation:** 3 photometric channels and 3 spectrometers covering continuously from 0.5 to 7.8 microns in wavelength
- **Launch date:** 2031
- **Destination:** Sun – Earth Lagrange Point 2 (L2)
- **Launch vehicle:** Ariane 6-2. Launch shared with Comet Interceptor.



## ADMATIS WORK PACKAGE 1

Admatis is responsible for development of ARIEL Instrument Radiator (IR) Subsystem as a **built-to-spec** type project.

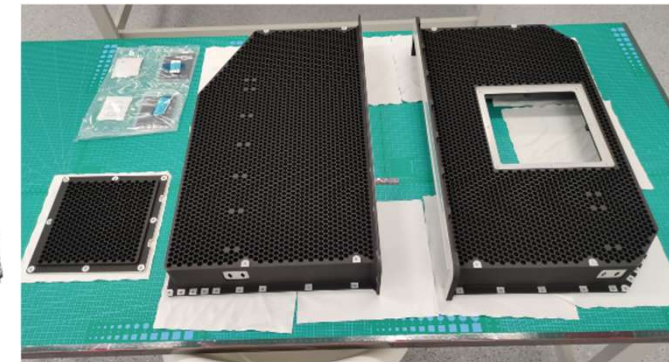
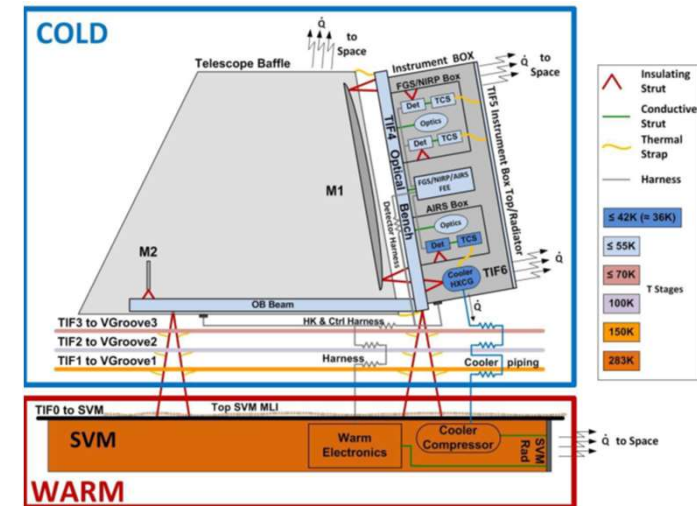
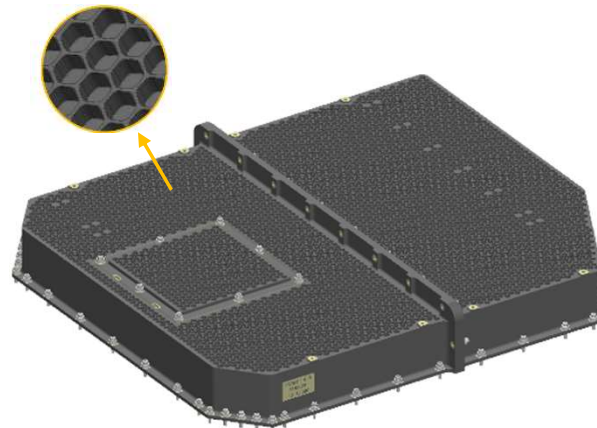
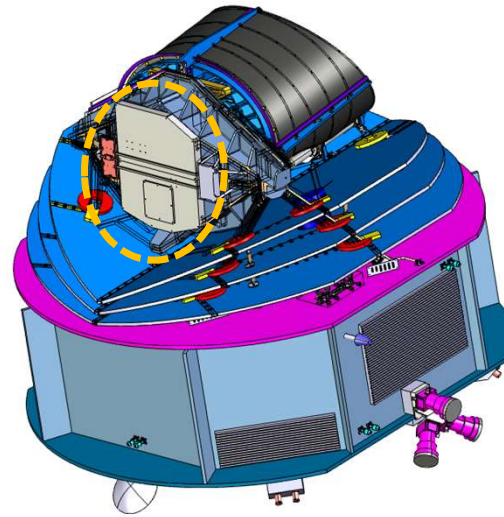
IR function is to **light tightly** seal instrument cavity while ensuring the necessary **radiative cooling** capacity to dissipate heat produced by instruments into deep space.

### Challenges:

- All parts and processes shall be qualified to the **cryogenic (45K) operation temperature**.
- Special **honeycomb radiative interface** shall be developed to **compensate** coating's **low emittance** at cryogenic temperature.

### Status:

- Structural Model (SM) successfully passed the test sequence and delivered to RAL.
- Structural Thermal Model (STM) is completed and ready for delivery.



## ADMATIS WORK PACKAGE 2

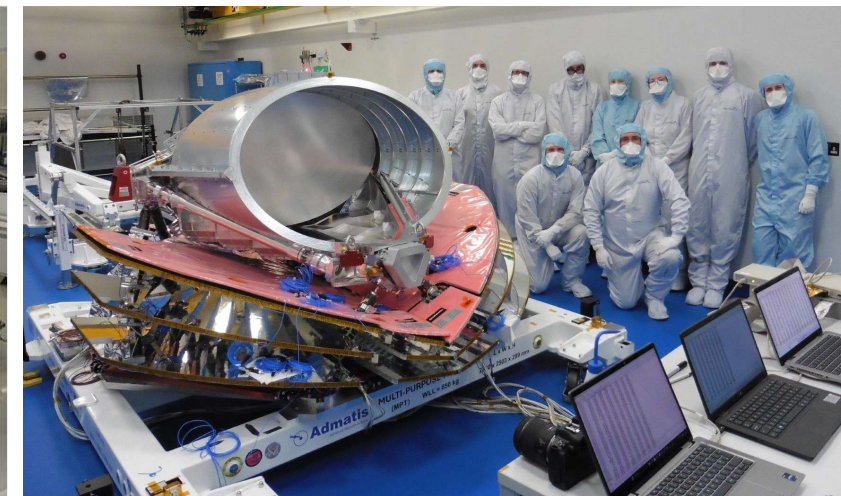
Admatis is also responsible for development a set of **MGSE** for **hoisting** and **lifting** of **ARIEL Payload** and the full **spacecraft**.

### Challenges:

- All used materials and processes shall be manufactured to the same quality and cleanliness level as the Payload
- Due to the large size, a new Cleanroom was built at Admatis new site.

### Status:

- First batch of MGSE is delivered end of 2024 / beg of 2025
- Second batch of MGSE is under manufacturing and to be delivered in 2026.



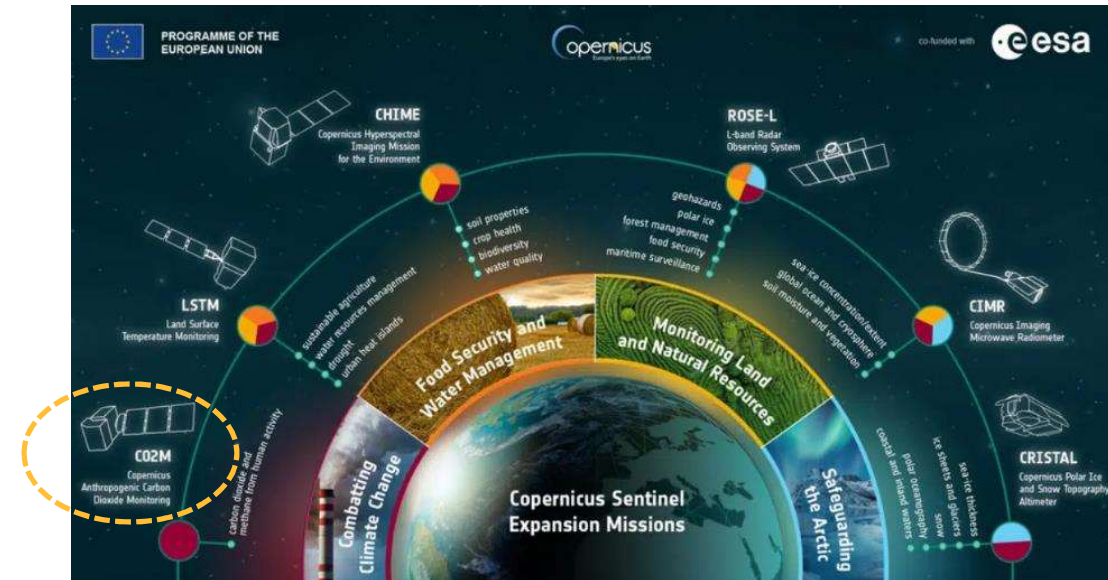
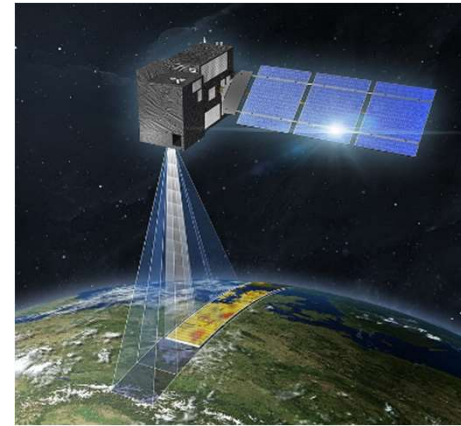
## MISSION OVERVIEW

**CO2M** is part of **ESA High Priority Candidate Missions**. The aim of the CO2M mission is to **measure** how much climate damaging gas - focusing on **carbon dioxide** and **nitrogen dioxide** - is **released** into the atmosphere specifically through **human activity**.

CO2M will be equipped with **three instruments**. Prime contractor is **OHB** and Payload Prime contractor is **Thales Alenia Space France**.

### Facts & figures:

- **Mission type:** Earth observation
- **Three satellites:** CO2M-A, CO2M-B, CO2M-C
- **Mission lifetime:** at least 7.5 years in orbit
- **Orbit:** Sun-synchronous
- **Instrumentation:**
  - CO2I: Integrated CO2 & NO2 Imaging Spectrometer
  - CLIM: 3-band Cloud Imager
  - MAP: Multi-Angular Multi-band Polarimeter
- **Launch date:** 2026 (CO2M-A, CO2M-B)



## ADMATIS WORK PACKAGE

Admatis is responsible for development of **Thermal Guard Assembly (TGA)** flight models as a **built-to-spec** type project.

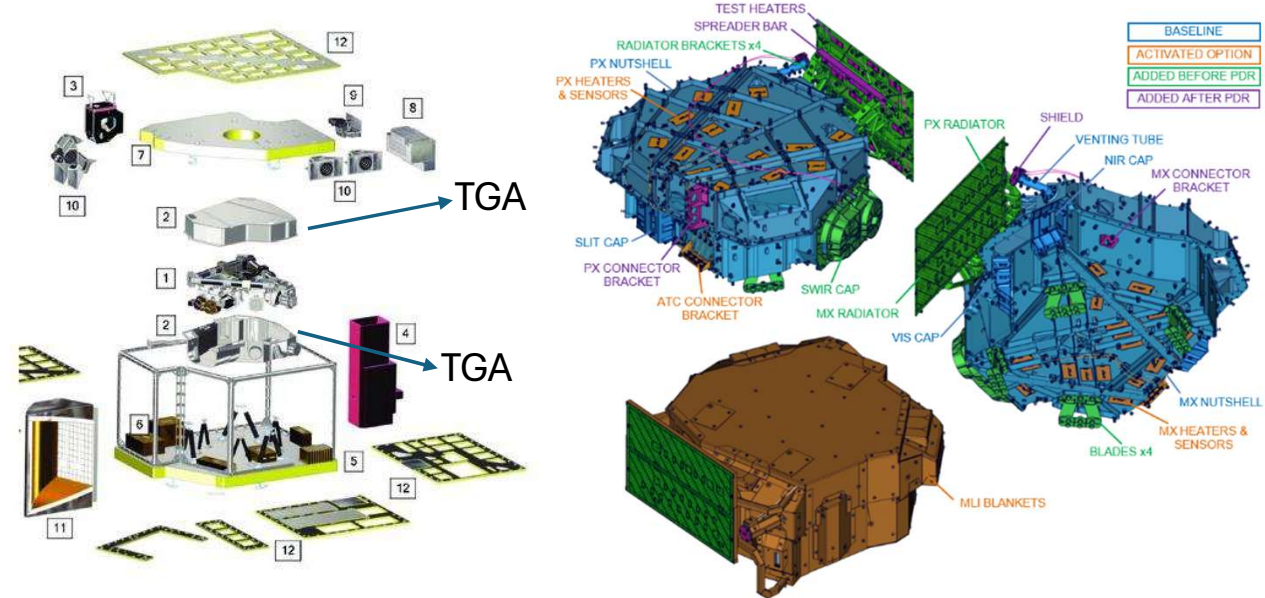
TGA function is the **encapsulation** and **thermal insulation** of **CO2I instrument**.

### Challenges:

- Equipment includes several units with multiple function including **structural** parts, **passive**- and **active thermal control**.
- To **ensure** the **thermal insulation** function and **reduce mass**, main **two component** is made of **one part** in **1.3m x 1.3m x 0.3m** with **2mm** wall thickness.

### Status:

- Proto-flight Model (PFM) and Flight Model 2 (FM2) passed the environmental test sequence and delivered.
- Flight Model 3 (FM3) is being manufactured.



## SDS – ADMATIS WORK PACKAGE

Admatis is responsible for development of **Structural & Thermal Subsystem (STSS)** of **Space Dosimetry System (SDS)** which will be a **scientific** instrument to monitor **radiation environment** under interplanetary space.

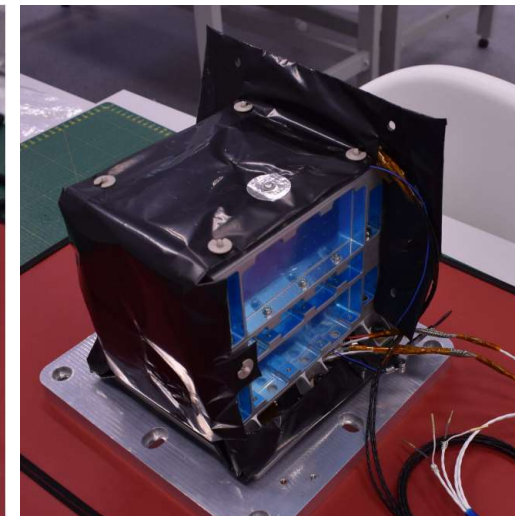
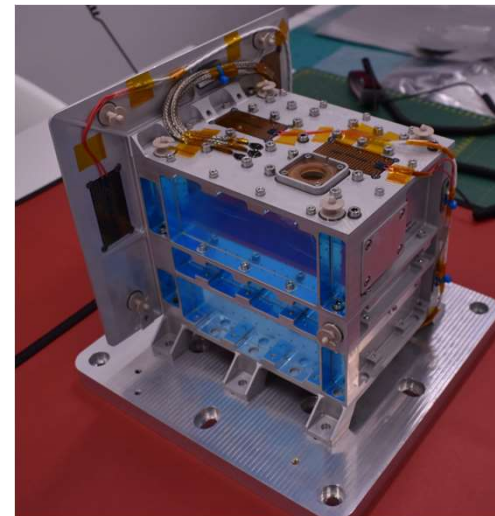
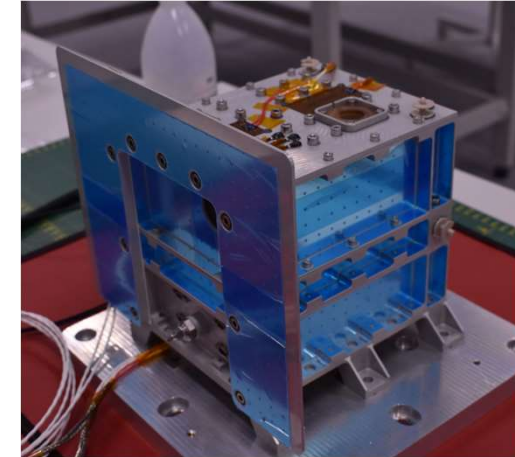
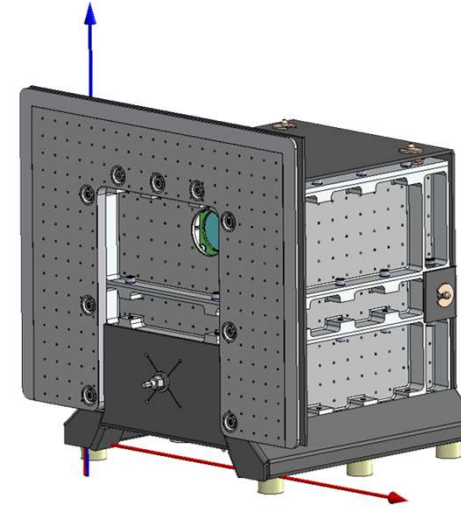
Work is performed in close **cooperation** with **EK (Centre for Energy Research)**, who is the responsible for **SDS**.

### Challenges:

- **Variable** thermal, magnetic and radiation **environment**.
- Existing technologies shall be **fine-tuned** to **small scale** and **confined space** for integration.

### Status:

- Structural-Thermal Model (STM) and Engineering Model passed the test campaign and delivered.
- Engineering Model (EM) qualification testing is ongoing.



## MISSION OVERVIEW



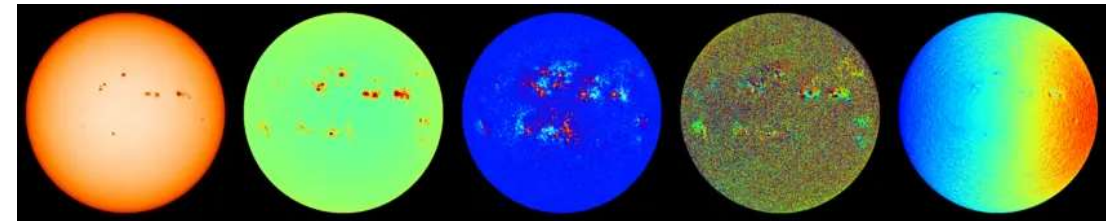
**Vigil**, formerly known as Lagrange, is a future **space weather mission** under development by the **ESA**. The mission will provide the ESA Space Weather Office with instruments able to **monitor the Sun**, its solar **corona**, and **interplanetary medium between the Sun and Earth**

To this purpose the Vigil will place for the **first time** a spacecraft at **Sun-Earth Lagrange point 5 (L5)** from where it would get a 'side' view of the Sun observing regions of **solar activity** on the **solar surface before** they turn and **face Earth**.

Vigil will be equipped with **three instruments**. **Prime** contractor is **Airbus**.

### Facts & figures:

- **Mission type:** Interplanetary
- **Mission lifetime:** at least 4.5 years on L5.
- **Instrumentation:**
  - Compact Coronagraph (CCOR)
  - Heliospheric Imager (HI)
  - Photospheric Magnetic field Imager (PMI)
- **Launch date:** 2031 / **Arrive to L5:** 2034



## ADMATIS WORK PACKAGE

Admatis is responsible for the development of **Multi-layer Insulation (MLI)** qualification and flight models to be delivered for Vigil's **PMI** (Photospheric Magnetic field Imager) **instrument as a built-to-spec** type project.

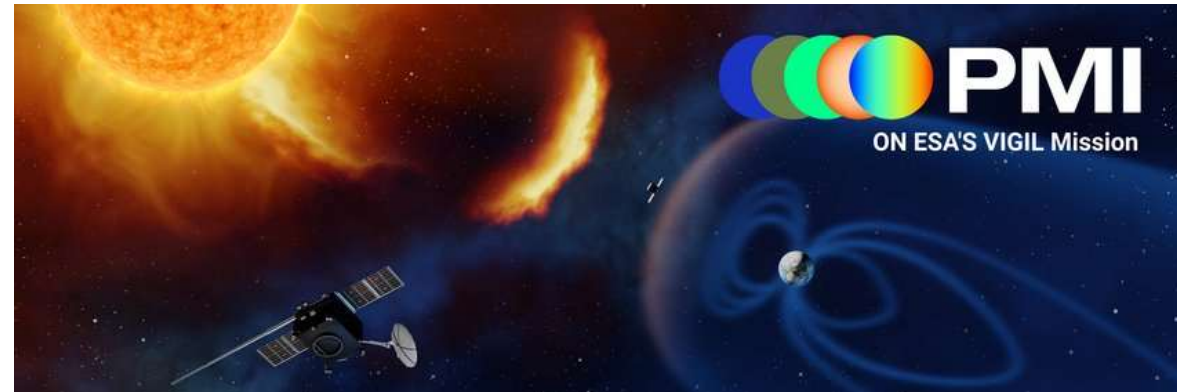
Hardware will be delivered to **Max Planck Institute for Solar System Research (MPS)** who is responsible for the development of PMI. Instrument will provide the complete **photospheric vector magnetic field information** (field strength, azimuth, inclination) and most of the physical parameters.

### Challenges:

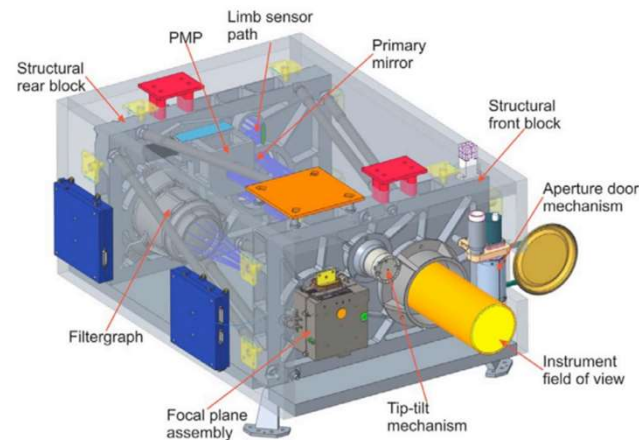
- Harsh radiation environment and challenging temperature extremes on the way to- and operations on Lagrange 5.

### Status:

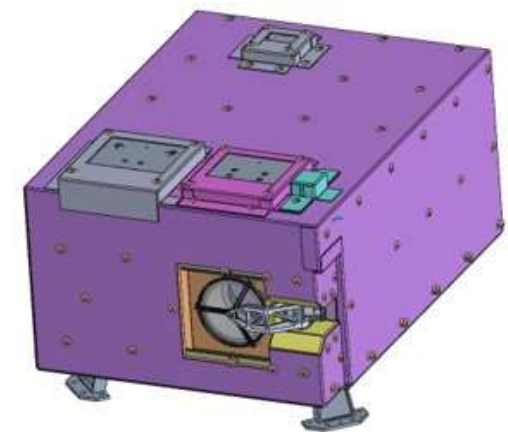
- Project is advancing to design review to start manufacturing of Engineering Qualification Model.




PMI preliminary design



PMI MLI preliminary design



## OVERVIEW

 **sentinel-2** is a **four-satellite** fleet and part of the **Copernicus** programme. Their payloads are the **Multi Spectral Instrument (MSI)** aiming at continuous Earth Observation on 13 channels. Prime contractor was **Airbus Defence & Space**.

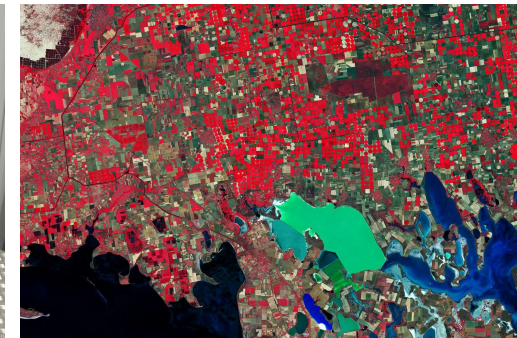
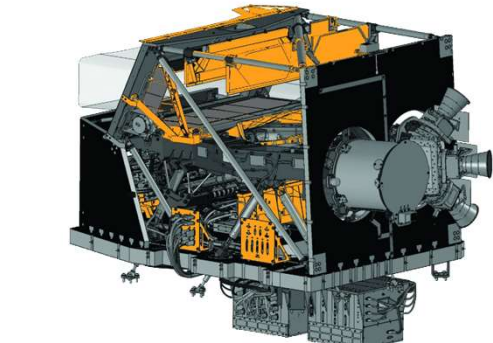
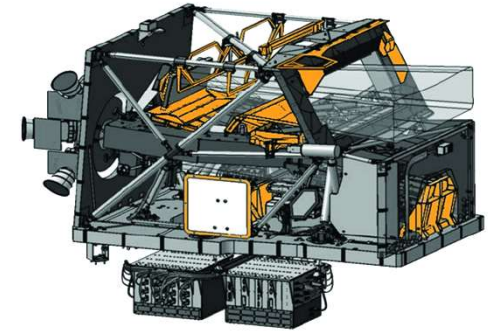
Admatis was in charge of **design, manufacturing and testing** of several **metallic, mechanical and thermal hardware (MMTH)** as part of Sentinel-2 Payload secondary structure. Project was implemented from 2009 to 2018.

### Delivered hardware (orange parts in the right):

- In total, more than **2700 parts** have been delivered per satellite.
- Two types of FEE and one type of harness radiators
- Thermal shields, telescope and calibration baffles
- Harness supports and brackets
- Invar and titanium brackets and mounts.

### Launch:

- Sentinel-2A: 23 June 2015
- Sentinel-2B: 7 March 2017
- Sentinel-2C: 5 September 2024
- Sentinel-2D: 2028 (planned)



## OVERVIEW



**Characterising ExOPlanet Satellite** is a photometric observatory launched into LEO to measure transits of **Exo-planets**. **CHEOPS** was the **first S-class** mission of **ESA**.

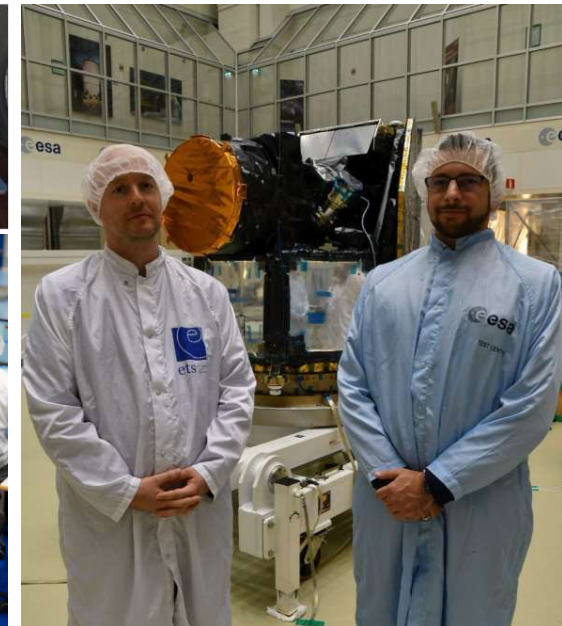
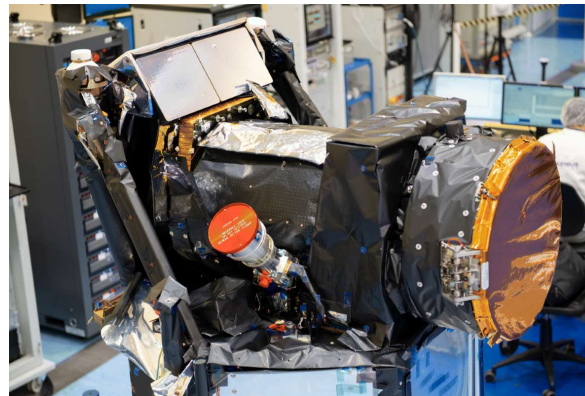
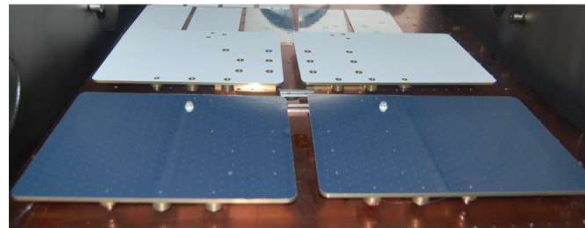
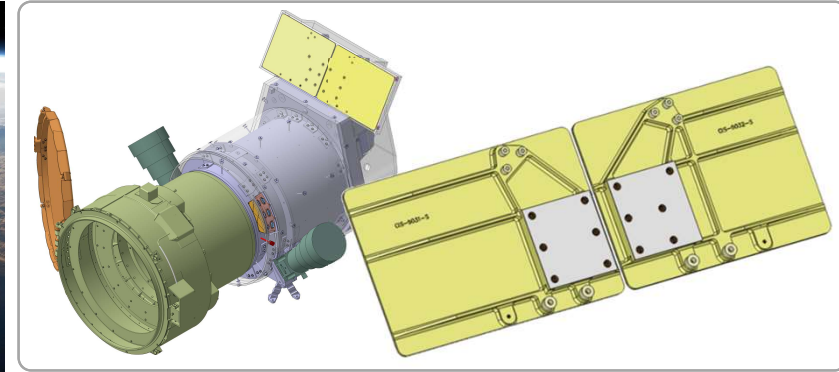
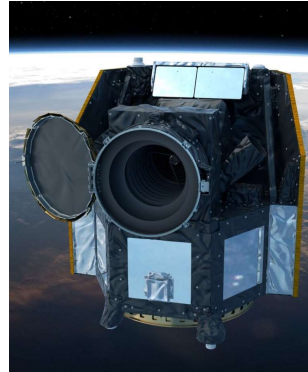
Admatis was in charge of **design, manufacturing and testing** of **Instrument Radiator** made of an **FPA** and an **FEE Radiator**. ESA was the mission architect, while the **Consortium** was led by **University of Bern**. Project was implemented from 2013 to 2017.

Main challenge was to ensure the instruments **50 mK temperature stability** under its -55°C and 10°C operational temperature.

### Delivered hardware:

- FPA Radiator STM, PFM and Flight Spare.
- FEE Radiator STM, PFM and Flight Spare.

**Launch:** 18 December 2019



## OVERVIEW



ESA's **Jupiter Icy Moons Explorer**, will make **detailed observations** of the giant gas planet and its **three large** ocean-bearing moons: **Ganymede, Callisto** and

**Europa** – with a suite of remote sensing, geophysical and in situ instruments.

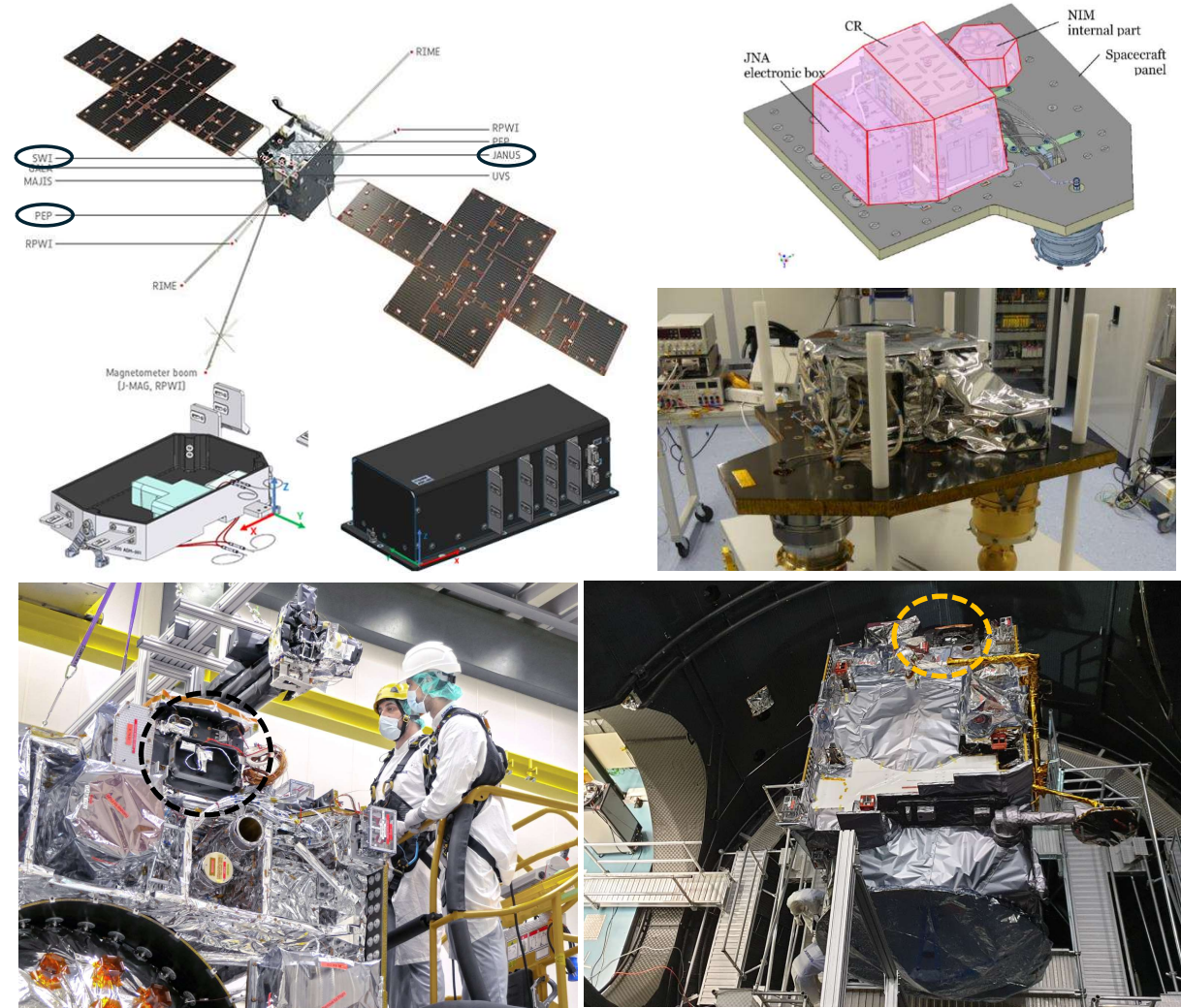
Development was led by **ESA**, prime contractor was **Airbus**. Admatis provided the **MLI blankets** for Particle Environmental Package (**PEP**) instrument and three **thermal dummy models** of **SWI** and **JANUS** equipment for spacecraft thermal test. Project was implemented from 2019 to 2020.

### Delivered hardware:

- PEP Instrument MLI STM and PFM.
- SWI and JANUS Thermal Dummy Models.

**Launch:** 14 April 2023

**Arrival to Jupiter:** July 2031



## OVERVIEW



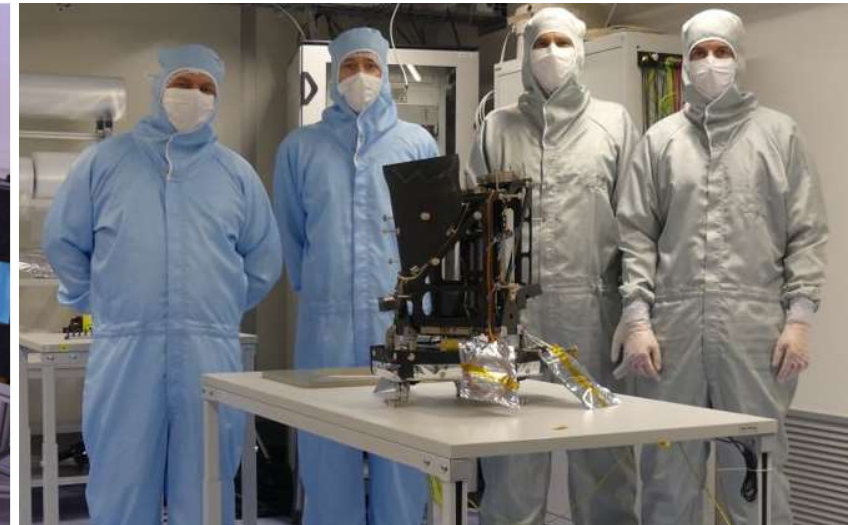
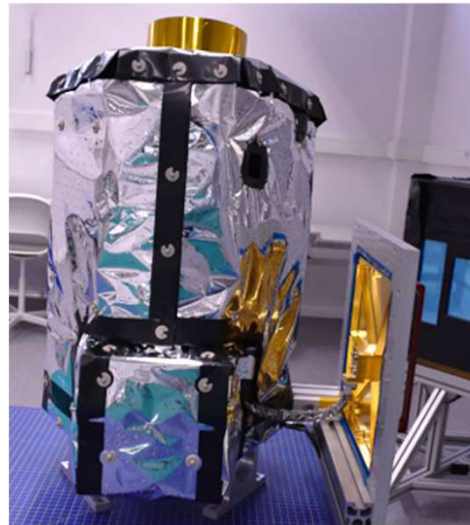
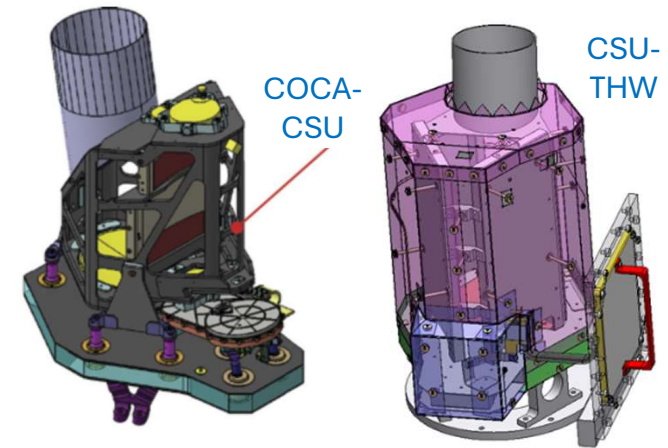
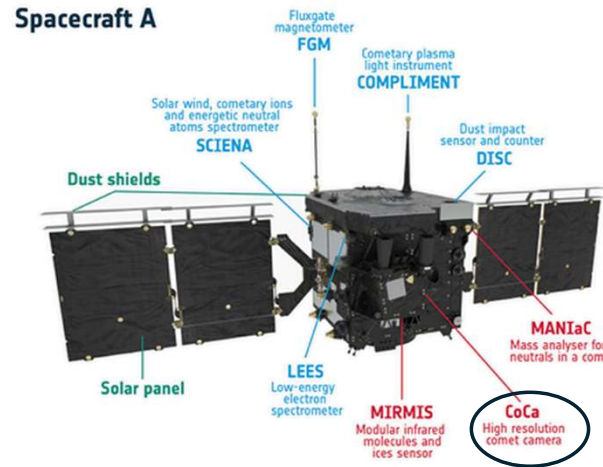
Comet Interceptor is the first **F-class mission** of **ESA**. **Primary science goal** is to **characterize** for the first time, a dynamically-new **comet** or **interstellar object**, including its **surface composition, shape**, and **structure**, the composition of its **gas coma**.

Development is led by **ESA** in cooperation with **JAXA**. Prime contractor is **OHB Italy**. Admatis was responsible for development of **passive** and **active thermal control hardware (THW)** of **Camera Support Unit (CSU)** of **Comet Camera (CoCa)** instrument.

### Delivered hardware:

- COCA-CSU-THW STM, PFM and Flight Spare.

**Launch:** Late 2028 or early 2029



## OVERVIEW



**Foam Casting and Utilization in Space** was a foaming experiment on board of **International Space Station** in February 2010.

Test is performed in the frame of ESA's **SURE** project which was an

opportunity of scientists and SMEs in **new EU Member States** to perform tests on ISS. **Scientific background** and **hardware development** is given by **Admatis**.

The experiment container was sent to Baikonur and reached the ISS with the **PROGRESS-36P cargo flight**. The **experiment** was **performed** by **NASA astronaut Jeffrey Williams**.

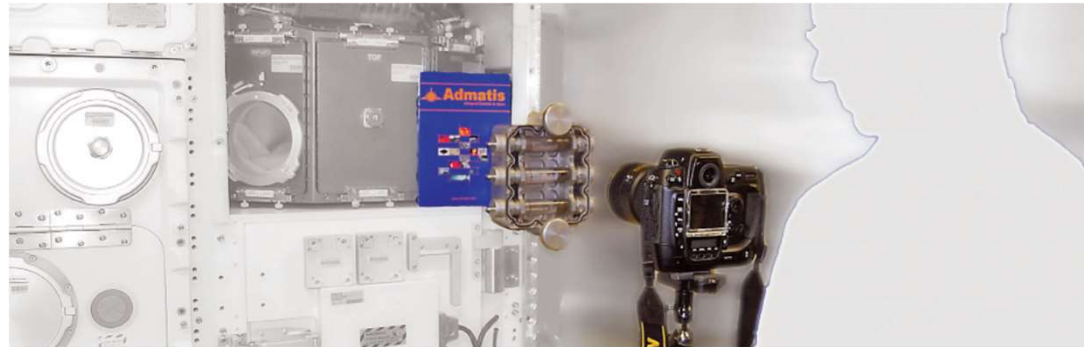
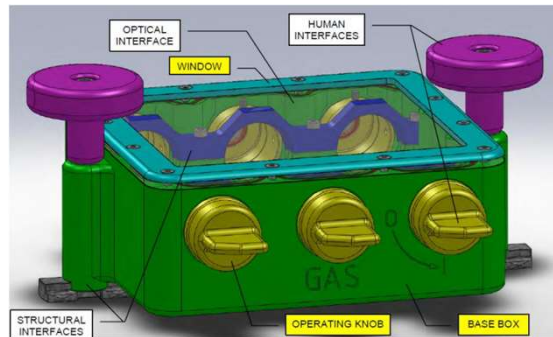
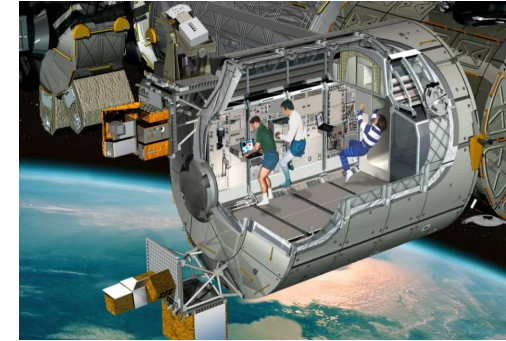
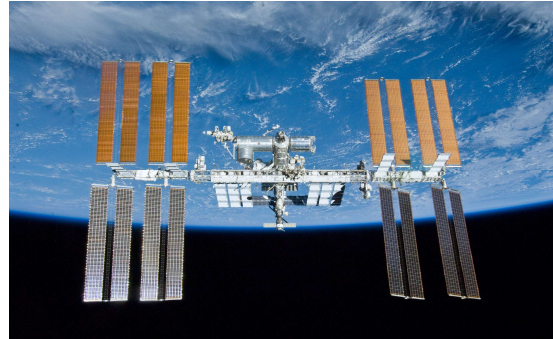
### Delivered hardware:

- FOCUS Training Model and Flight Model.

**Launch:** 3 February 2010

**Docking:** 5 February 2010

**Test:** 7 February 2010







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