

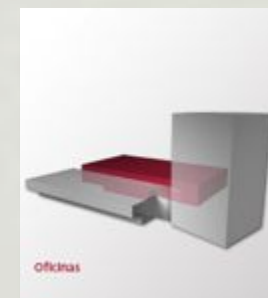
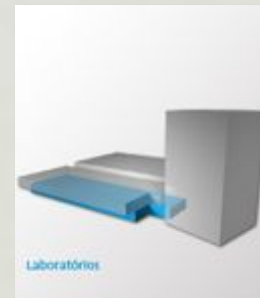


HPS-Portugal

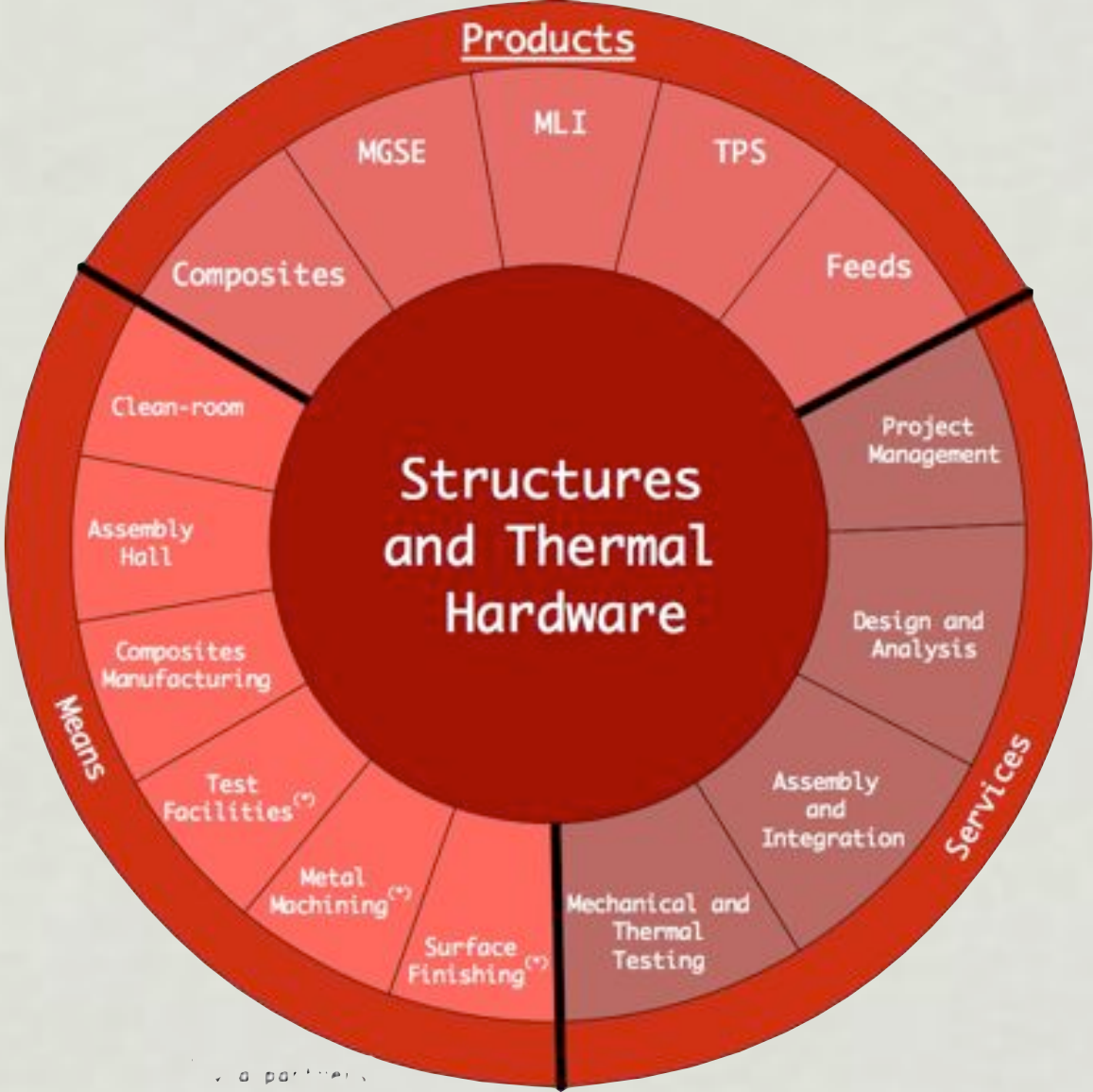
Spacecraft Structural and Thermal Hardware
Made in Portugal

COMPANY PROFILE

- * Founded in March 2007
- * Shareholders are a private German SME (HPS GmbH), a Portuguese R&D institute (INEGI) and a private shareholder
- * Facilities located in Porto, Portugal
- * Access to a 20 square meter 10 000 class Cleanroom
- * Access to large assembly hall and workshop
- * Team: 7 people, including engineers and manufacturing staff
- * Turnover: ~500 000€

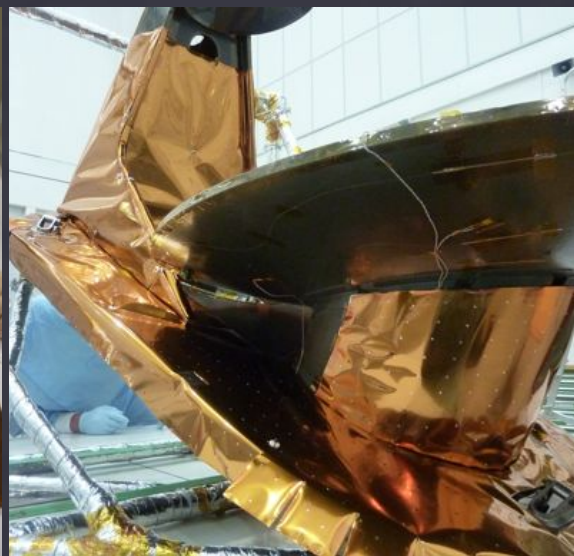
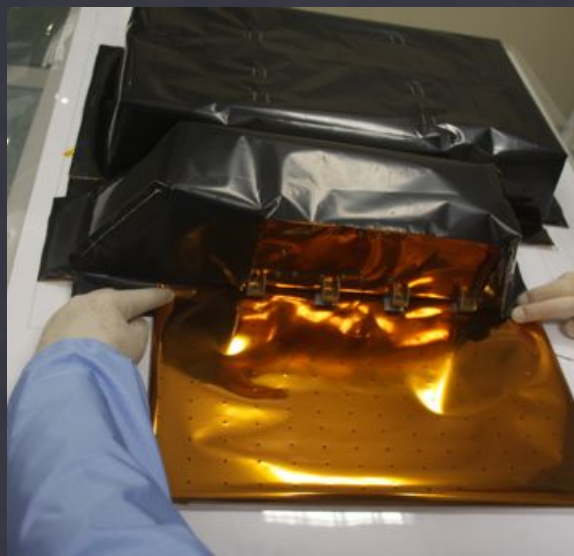
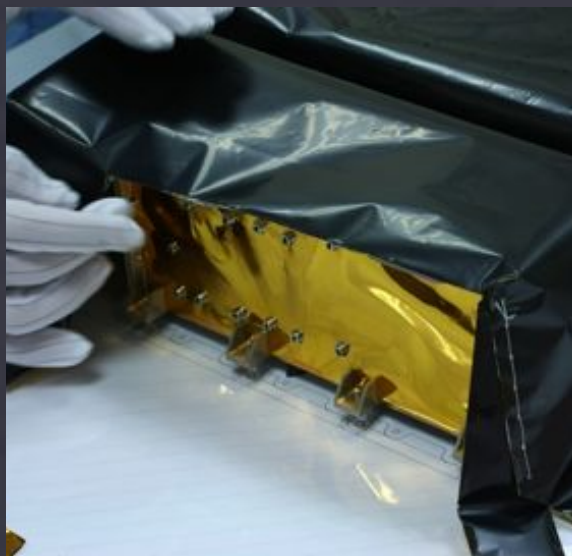


COMPETENCES AND SUPPORT NETWORK



^(*) via partners

Reference Projects and Activities



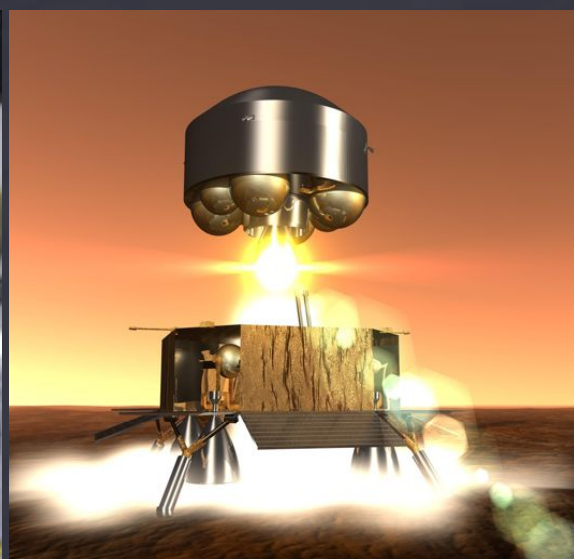
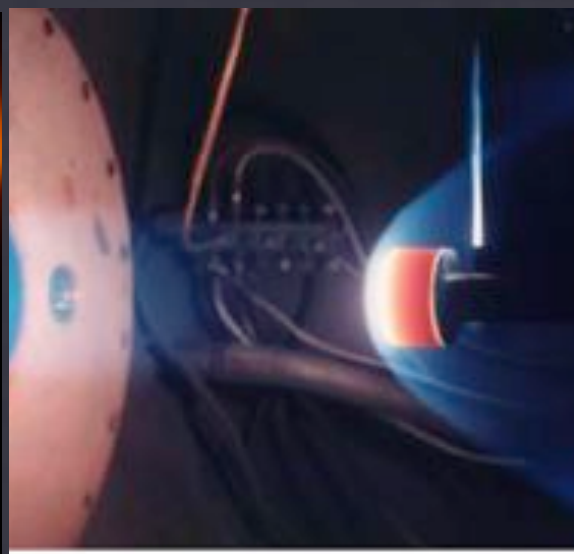
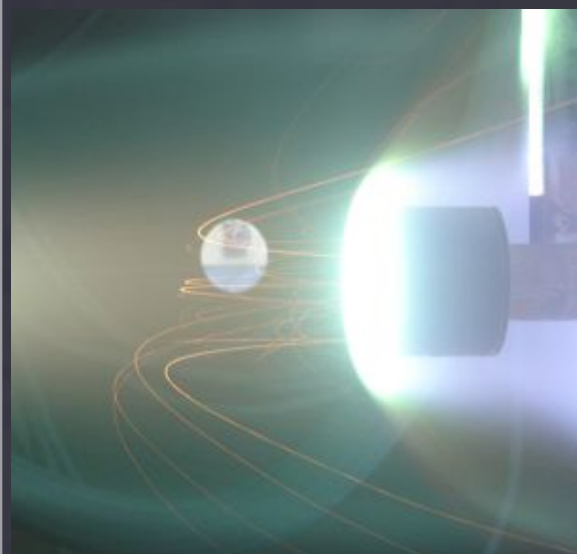
MULTI-LAYER INSULATIONS

IN PARTNERSHIP WITH CITEVE-FAMALICÃO

Multi-Layer Insulations

- * Passive thermal protection systems
- * *Know-how* transfer from Astrium-DE
- * Made in Portugal
- * **First Flight Hardware delivered to EFACEC (TDP8)**
- * **Second Flight Hardware delivered to Kayser-Threde (EnMAP)**
- * **Third Flight Hardware in the making for German x-Ray Telescope (eROSITA)**





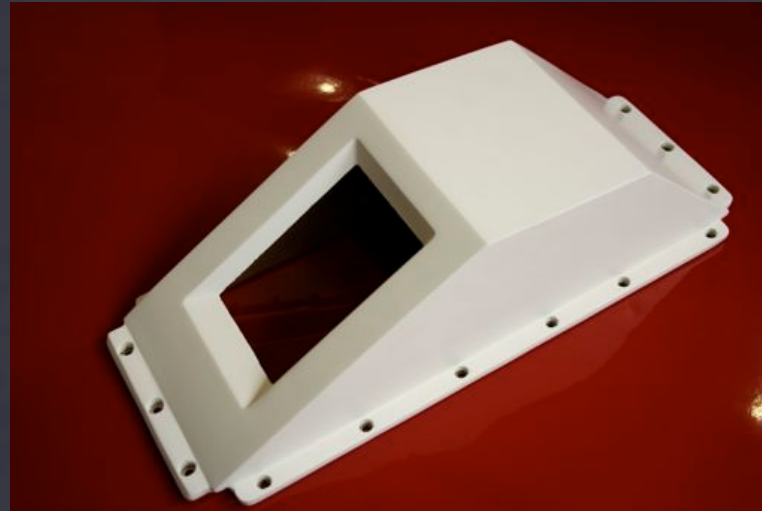
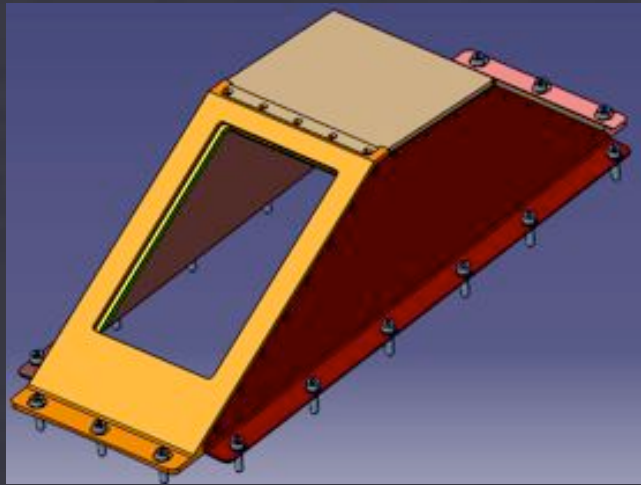
DEVELOPMENT OF AN EUROPEAN ABLATIVE MATERIAL

PRIME CONTRACTOR OF ESA

Ablative Materials

- * Subcontracts to Astrium(FR) and Lockheed Martin (UK)
- * INEGI participates in the manufacturing of demonstrator structure
- * HPS-PT is prime in charge of project management
- * Activity will close in March 2012
- * Successfully developed 2 High Performance Materials filling a gap in the European TPS markets
- * Follow-on study will follow under MREP!





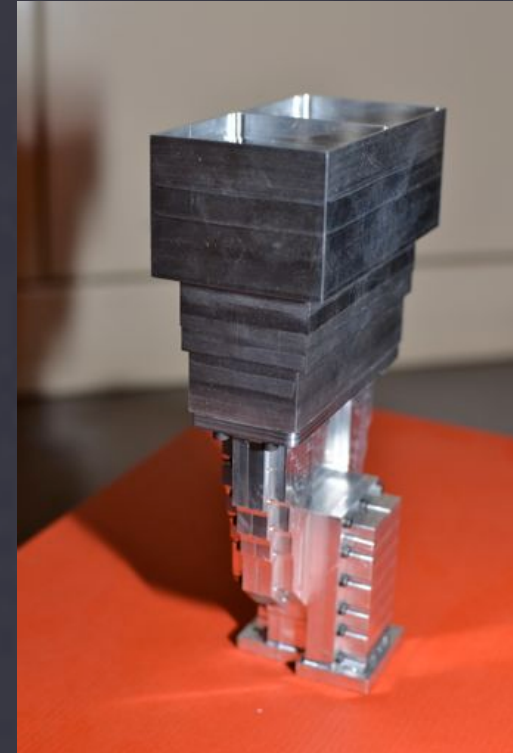
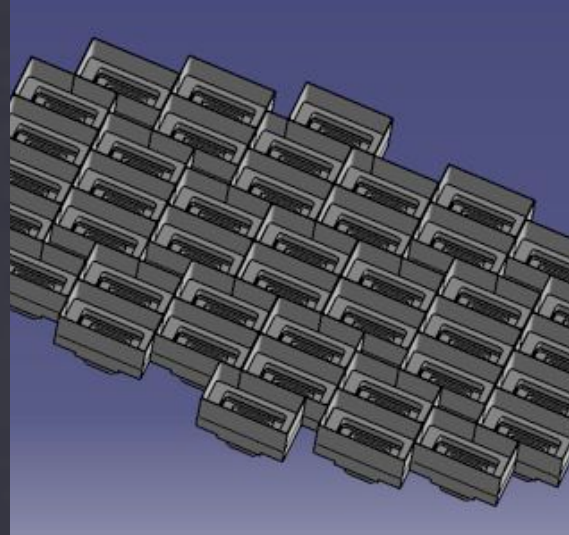
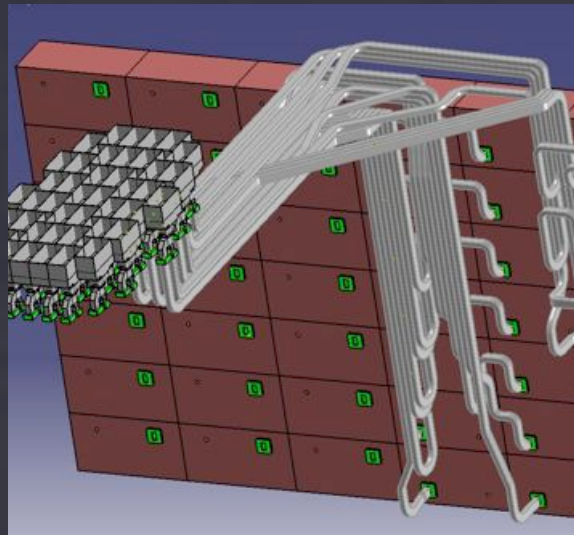
APPLICATION OF CORK BASED TPS

CONTRACTED BY KAYSER-THREDE

Application of TPS material

- * Work performed under subcontract to Kayser-Threde GmbH in Munich.
- * Application of cork based TPS to the outer shell of the Video and Environmental Monitoring System
- * HPS applied the TPS in clean-room environment and supply MAP coating on the protected parts.



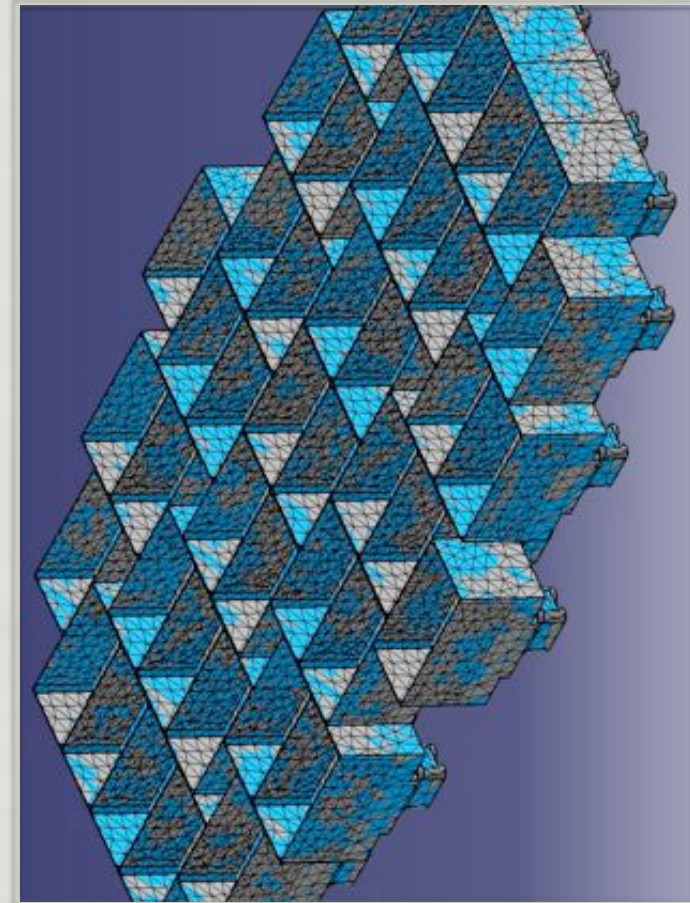


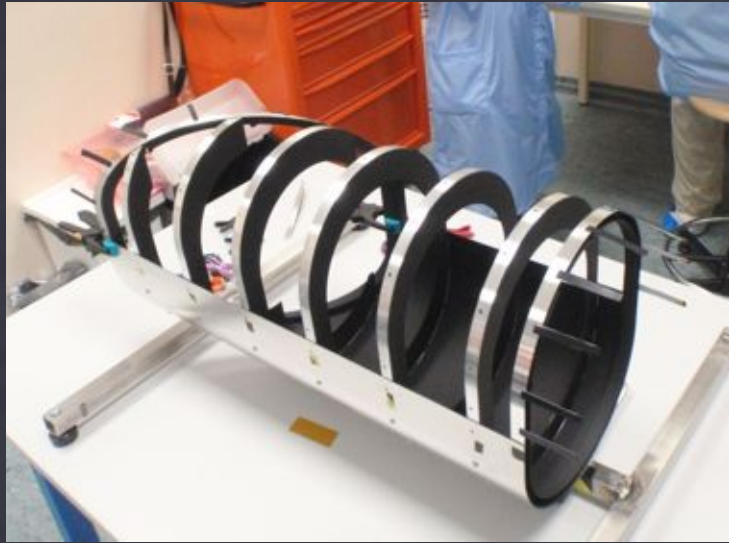
DESIGN OF ANTENNA FEED CLUSTERS

PART OF AN ESA STUDY SUBCONTRACT BY SPACE ENGINEERING (IT)

Design of feed clusters

- * Work performed under subcontract to Space Engineering (IT).
- * Thermo-mechanical design of feed cluster and beam forming network
- * Detailed mechanical design and coordination of breadboard manufacture
- * This Artes 5.1 allowed for the first manufacturing of a complex antenna feed and feed cluster later this year in Portugal!!





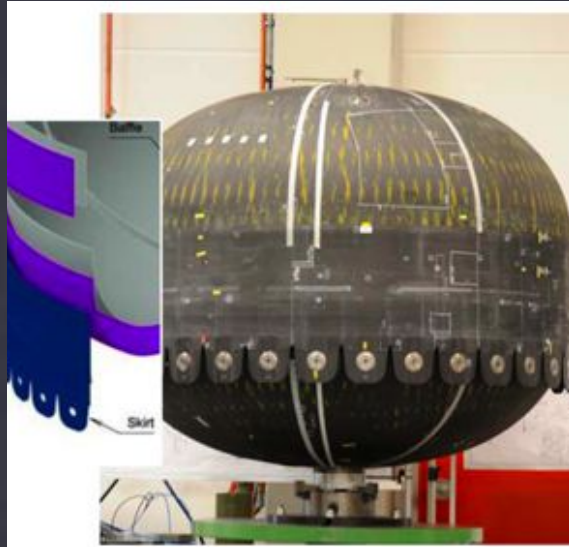
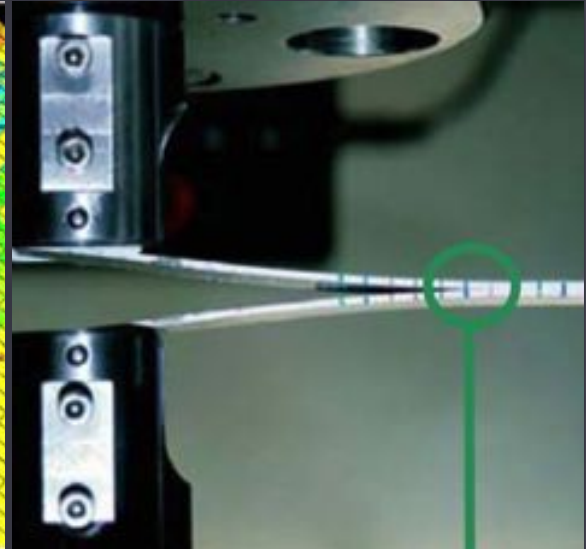
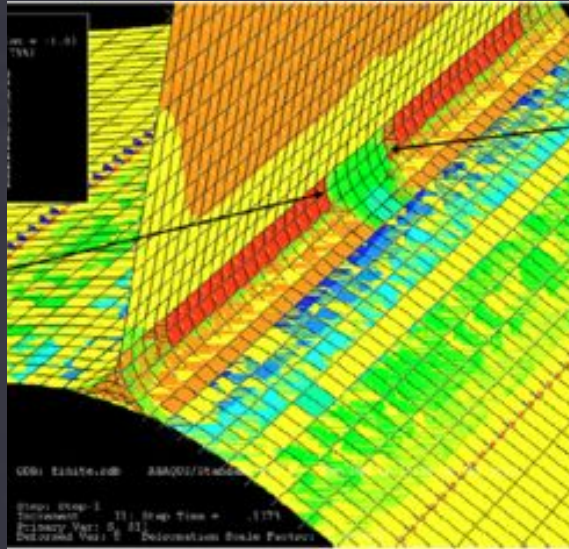
DESIGN AND MANUFACTURE OF TELESCOPE BAFFLE

TOGETHER WITH HPS-GMBH FOR KAYSER-THREDE

Telescope baffle

- * Work performed for Kayser-Threde
- * Design and assembly of a complete telescope baffle for the EnMAP mission
- * 95% parts manufactured in Portugal
- * Assembly and inspection performed in Portugal
- * STM Delivered October 2011, PFM to be delivered beginning 2012





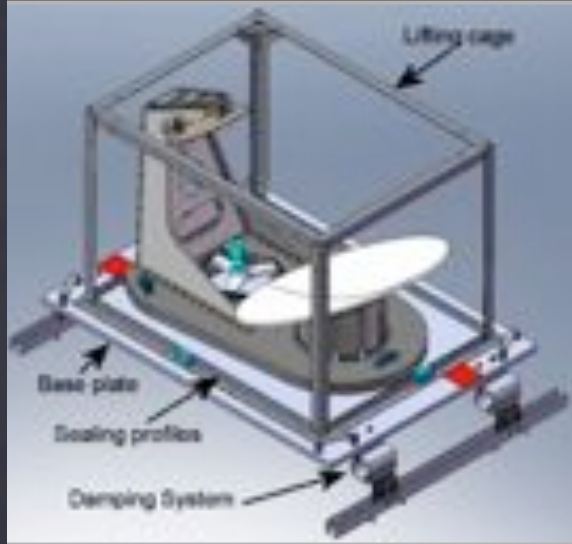
DELAMINATION ASSESSMENT TOOL

PRIME CONTRACTOR OF ESA

Delamination Tool

- * Second ESA TRP study won by HPS Portugal
- * Subcontracts to MT- Aerospace, RUAG, INEGI, Invent, etc
- * HPS-PT is prime contractor in charge of project management and development of new design methodologies for damage tolerance



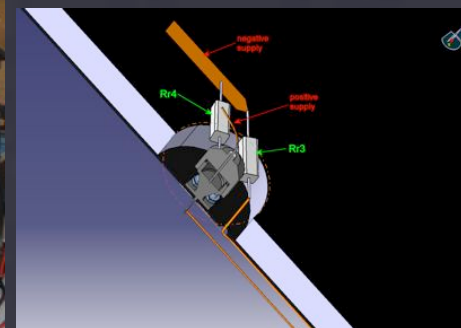
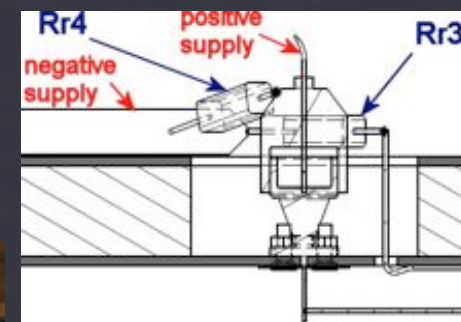
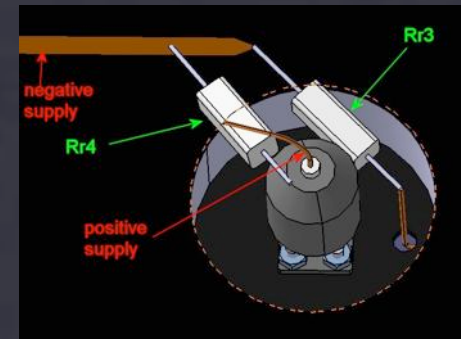


MECHANICAL GROUND SUPPORT EQUIPMENT

Lifting and turning device

- * Lifting and turning device for launcher structure
- * Mechanical Design totally made by HPS
- * Parts manufactured in Portugal
- * Assembled by HPS in Portugal
- * For a large European aerospace company
- * Design and built under strict QA provisions



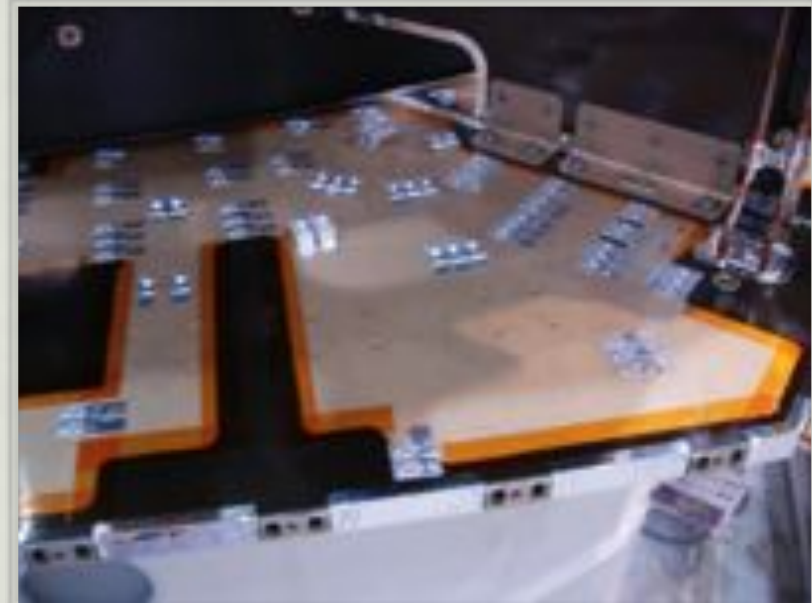


FAULT CURRENT TESTS ON GROUNDING RAILS

PRIME CONTRACTOR OF HPS GMBH

Grounding Rails

- * Work performed under subcontract to HPS GmbH in the framework of TRP study: Advanced Gounding Rail Concepts for Satelite Structures
- * Execution of Fault-current tests, thermo-elastic tests, insert pull-out tests
- * Work performed by HPS in the Labs of the Faculty of Engineering.



CONTACTS

HPS-Lda

PEDRO PORTELA

Rua Dr. Roberto Frias 400

4200-465 Porto

email: portela@hps-lda.pt

telf: +351 22 9578718