

Company Expertise
Aerospace & Defense



EXPERTS IN MECHANICS



SOPHIAHIGHTECH.COM

Thursday, October 12, 2023





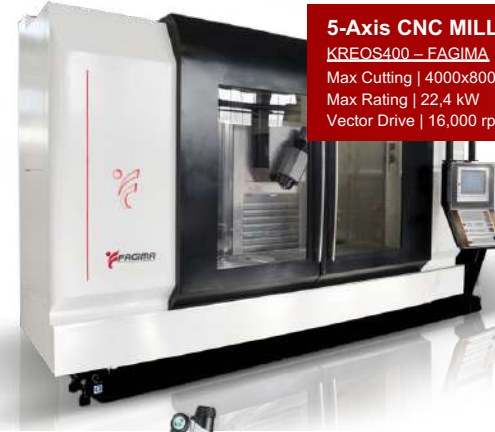
Facility List



Multitasking Machine, Lathe/ 5-Axis
MULTUS B250I LOKUMA
 Max Cutting | D600 mm x 750 mm
 Max Rating | 22.4 kW
 Vector Drive | 20,000 rpm



5-Axis CNC MILLING
UMC-750SS HAAS
 Max Cutting | 768x508x508 mm³
 Max Rating | 22.4 kW
 Vector Drive | 15,000 rpm



5-Axis CNC MILLING
KREOS400 – FAGIMA
 Max Cutting | 4000x800x1000 mm³
 Max Rating | 22.4 kW
 Vector Drive | 16,000 rpm



4-Axis CNC MILLING
VF-4SS HAAS
 Max Cutting | 1270x508x635 mm³
 Max Rating | 22.4 kW
 Vector Drive | 12,000 rpm



CNC TURNING
ST-30 HAAS
 Max Cutting: 533 x 660 (d,z)
 Max Rating: 22.4 kW
 Vector Drive | 12,000 rpm



Wire EDM
FANUC Robocut alba-1B
 Max Cutting: 300 x 300 x 540
 Moving: CNC



QUALITY CONTROL & REVERSE ENGINEERING
7520 Laser Romer Arm HEXAGON
 In air conditioned room
 Max Dimension | 1800 mm (x,y,z)
 Resolution | 752.000 points/sec



QUALITY CONTROL & REVERSE ENGINEERING
CMM GLOBAL S HEXAGON
 In air conditioned room
 Max Dimension | 900x1500x800 mm³
 Max 3D speed | 510 mm/s
 Max 3D acceleration | 1700 mm/s²



SELECTIVE LASER MELTING
TruPrint 3000 – TRUMPF
 Working Material | Metal alloys
 Working volume | D300mm x H400mm
 Cusing laser | Fibre laser 500 W



SELECTIVE LASER MELTING
M2 Concept Laser
 Working Material | Metal alloys
 Working volume | 250x250x350 mm³
 Cusing laser | Fibre laser 400 W



SELECTIVE LASER MELTING
M2 Concept Laser
 Working Material | Metal alloys
 Working volume | 250x250x350 mm³
 Cusing laser | Fibre laser 400 W



HEAT TREATMENT
NABERTHERM FURNACE
 Max Volume | 450xe | 1280°C
 + tem450x350 mm³
 Max. Temperaturperature uniformity
 + Motorized exhaust air flaps
 + Nitrogen environment

Celebrating 10 years | SOPHIA



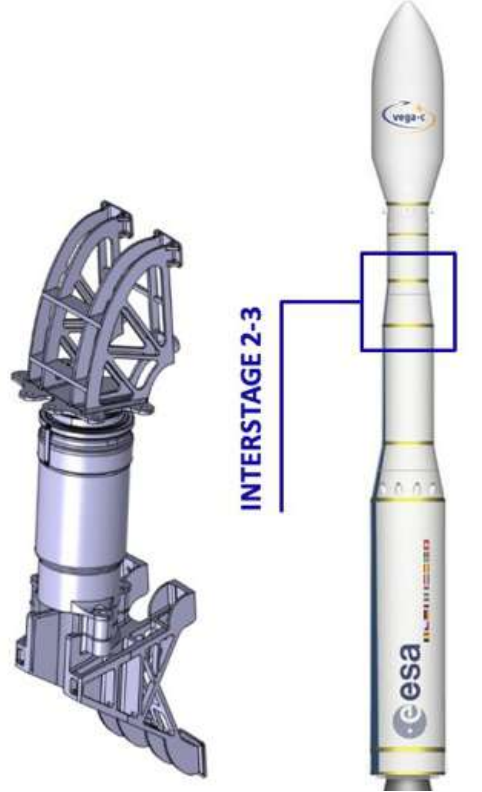
https://youtu.be/5d3aZgFoE6M?si=UczyyEcsDB_Tg1tB





Customers & Programs

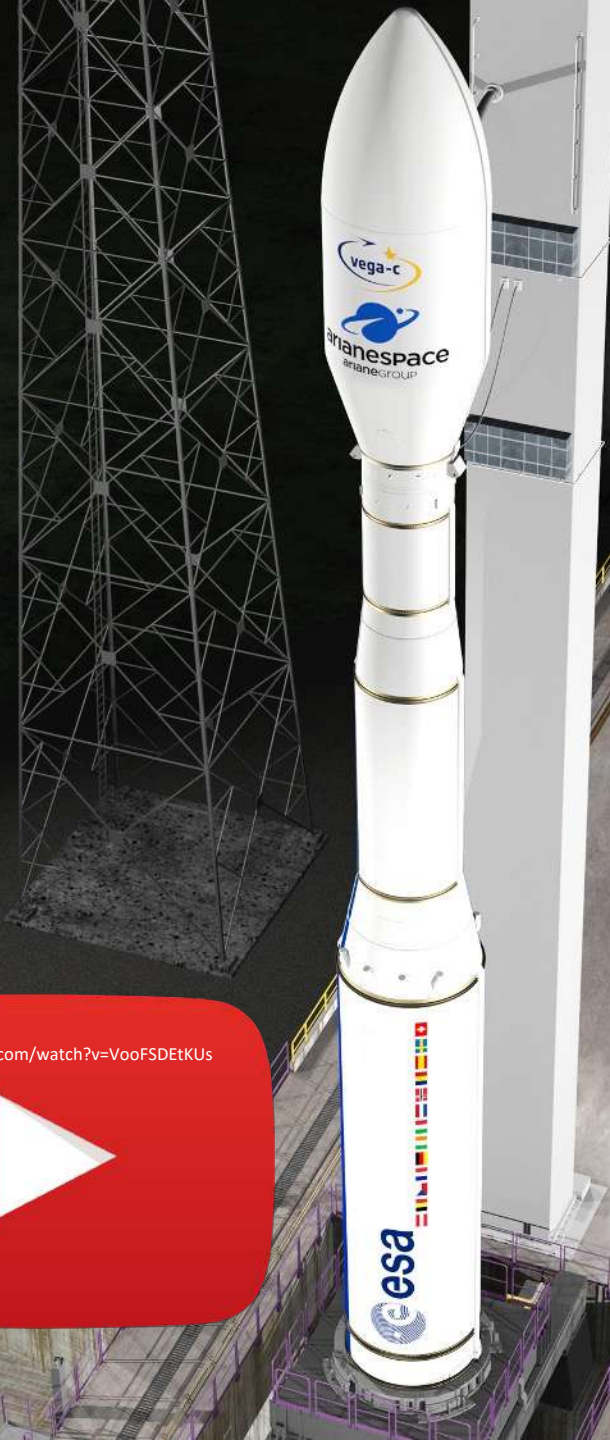




VEGA-C

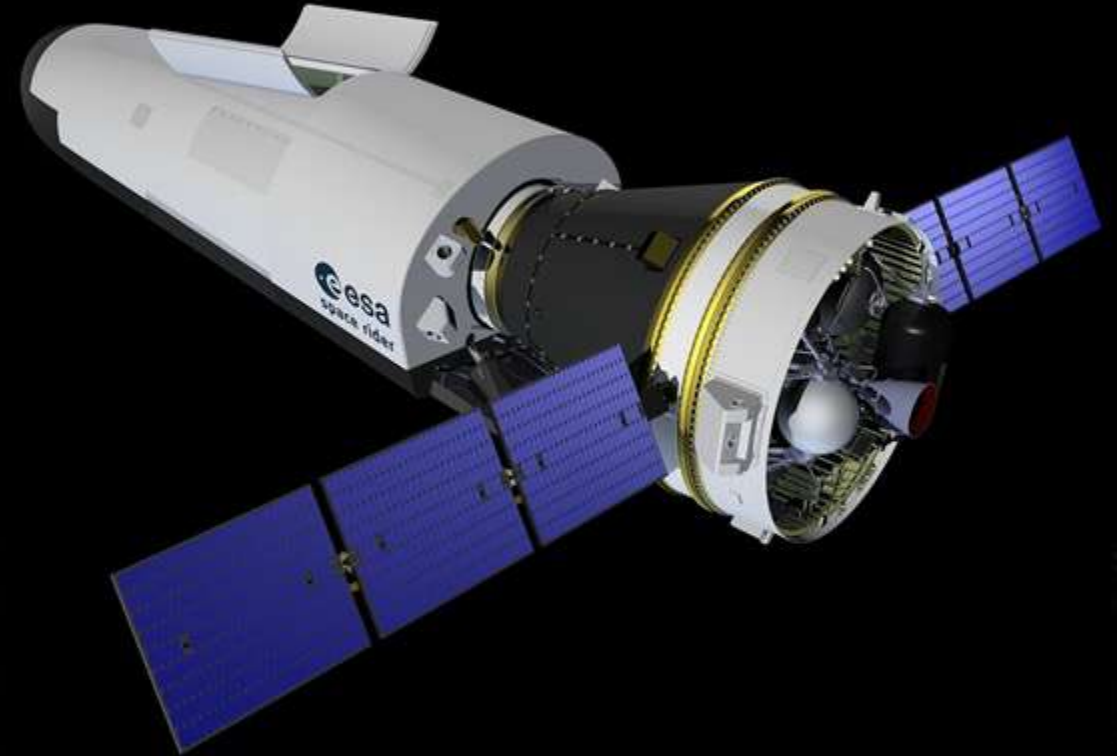
**** Spring Assy****

<https://www.youtube.com/watch?v=VooFSDEtKUs>



SPACE RIDER

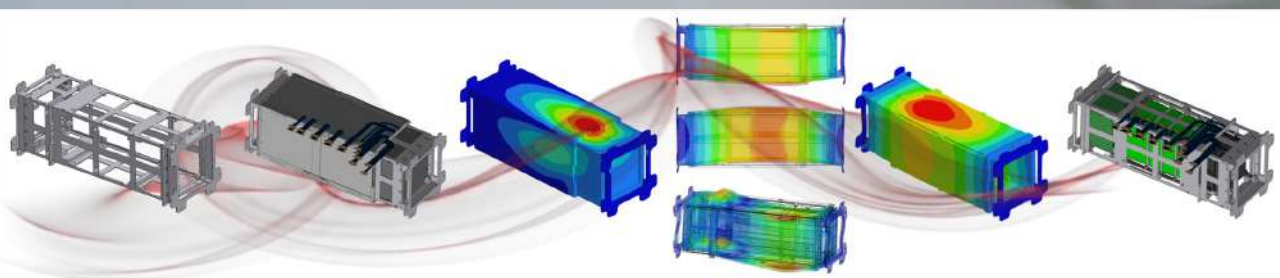
**** NOSE & WINDWARD Assy****



ION SATELLITE CARRIER

**** All Mechanical P/Ns ****



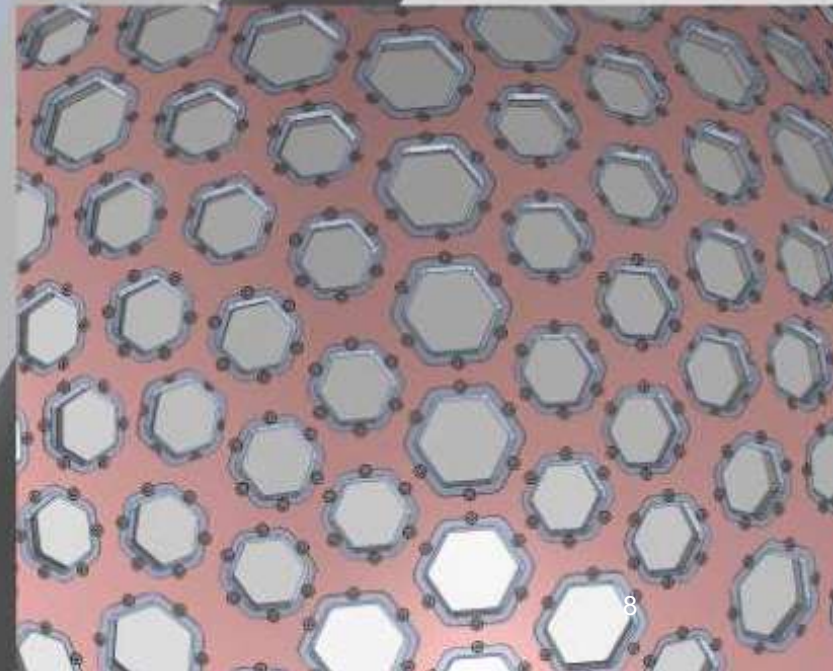
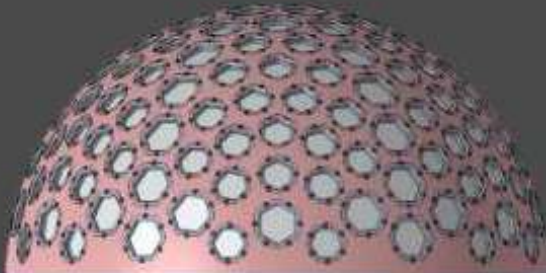
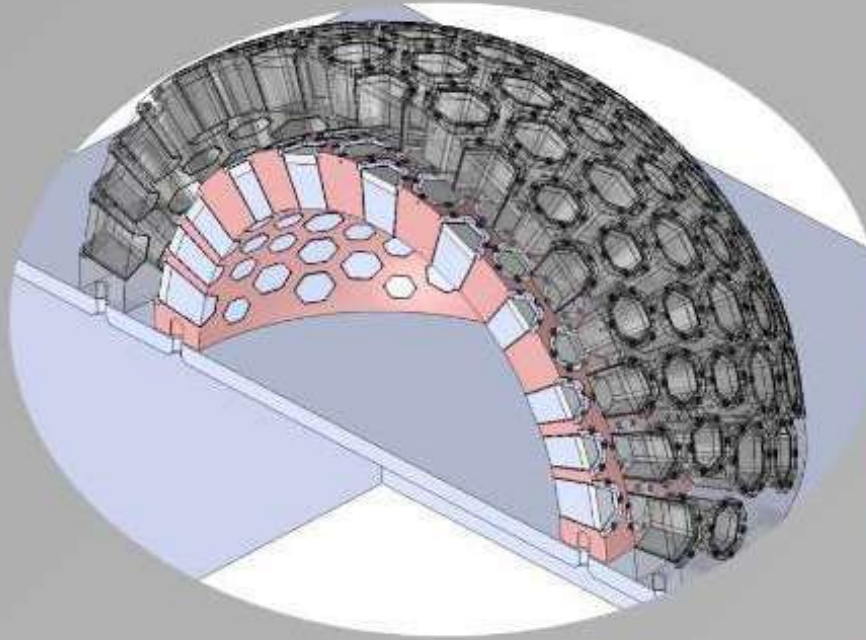
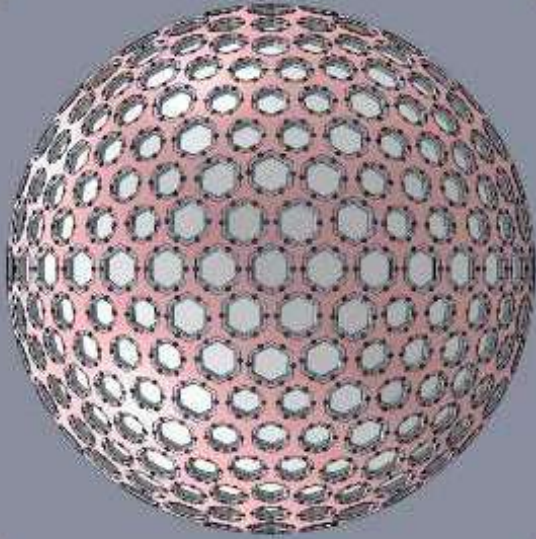


ZIRÈ Satellite

**** Design - Manufacturing - Assembly - Integration & Qualification ****



Crystal Eye Satellite | Complete Assy





<https://youtu.be/S5nd0FjhEe4?si=FG9Jy4-GU13j6u5K>



ROTORMACH



ADDITIVE MANUFACTURING



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<https://youtu.be/-8R57LQueAk?si=MHj77a6H0lwaf2ca>



AEROSPACE MANUFACTURING





Space Parts with Additive Manufacturing



VEGA-E COMBUSTION CHAMBER



SOUNDING ROCKET COMB. CHAMBER



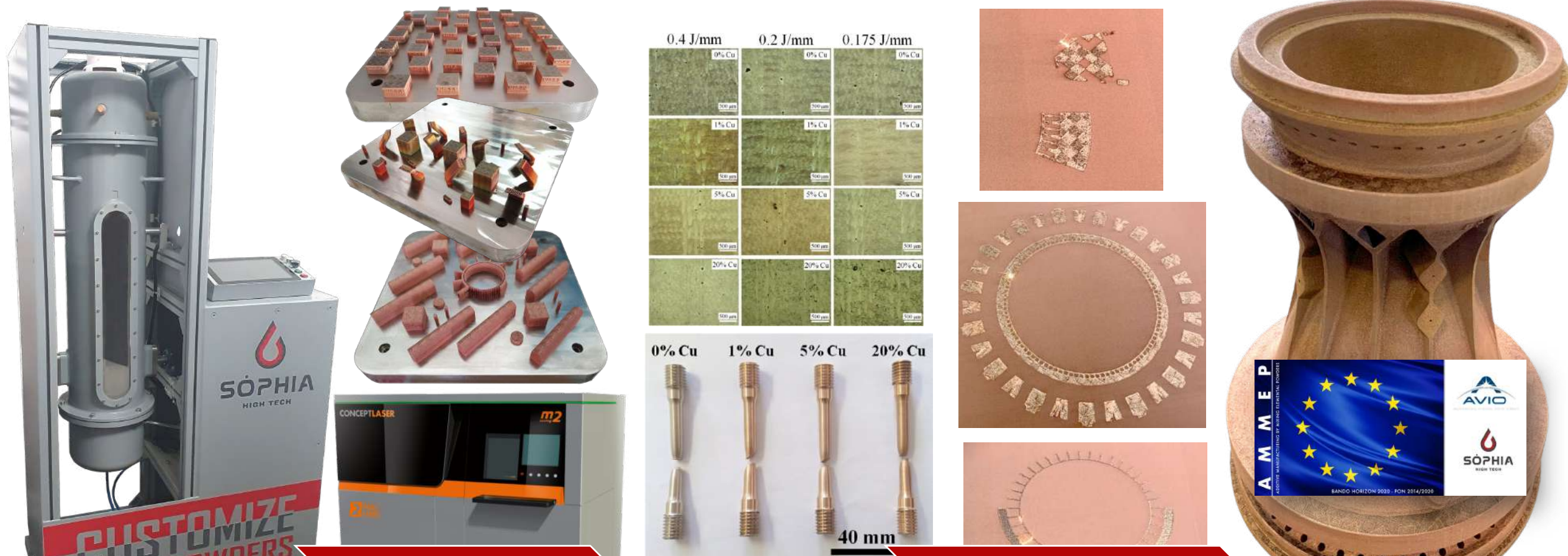
VEGA-E FUEL NOZZLE



VEGA-C LINER



POWMIX R&D Project [Powder Mixing + SLM + Machining]



Powder Mixing
new material

SLM
samples

Testing
material validation

Optimization
industrial scale

SLM + CNC
Aerospace Part

PNRR: **AVIO** assegna a **SOPHIA** le attività di supporto per lo Sviluppo, la Realizzazione ed integrazione dell'Innovativo Motore MPGE.

Motore MPGE

MULTI-PURPOSE GREEN ENGINE



CONTESTO

In-Orbit Economy | In Orbit services. Linea M1C2.I4 del PNRR-FC
Attività di ricerca, sviluppo tecnologico e produzione concernente il design, lo sviluppo e la qualifica di un motore green multi-purpose per applicazioni orbitali e sub-orbitali [IOS, VEGA-C, VEGA-E e Space Rider].

Nel Contratto dell'**AGENZIA SPAZIALE ITALIANA** [ASI] n. 2023-8-I.o, cui la **AVIO SpA** è affidataria, **SÒPHIA HIGH TECH** è stata scelta dalla AVIO SpA per l'attività di supporto alla progettazione, produzione, assemblaggio, integrazione e Testing di ITEM del Motore MPGE. Il progetto concluderà lo sviluppo entro il primo semestre del 2026, in accordo con gli obiettivi del PNRR. Una prima versione del motore verrà predisposta entro la fine del 2024 per le applicazioni specifiche nell'ambito del trasporto spaziale.

OBIETTIVI

SÒPHIA è responsabile della Produzione e del Controllo dei seguenti ITEM:

Thermal Control System | Combustion Chamber | Nozzle Extension | Injection Section | Piping



SPACE THRUSTER

SOMMA VESUVIANA [Na]



AEROSPACE SYSTEM



Organizzazione con Sistema
di Gestione certificato EN9100 - ISO 9001

ECSS-Q-ST-70-80C [ESA]



**ADDITIVE
MANUFACTURING**

INDUSTRIAL Ph.D.



Thank You!



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