Multilayer Insulation (MLI) for Satellites, Subsystems, Payload Equipment, Instruments, Ground Facilities

HPS is a German/Portuguese supplier of Multilayer Insulation (MLI) for different types of applications. Our service includes systems engineering, thermal analysis, venting analysis, blanket design, blanket manufacturing, performance testing, acceptance testing, and final integration on the satellite or respective hardware. The manufacturing of the blankets is performed inside a brand new state-of-the-art cleanroom class 1,000 in Porto, Portugal.

Mission references are e.g.: Alphasat (external instrument MLI), eROSITA (X-ray telescope MLI), ExoMars (EDM internal & external MLI), NOMAD and CaSSIS instrument MLI), SENTINEL-4 (instrument MLI), Solar Orbiter (thermal dummies MLI), Meteosat 3rd Generation (telescope optics MLI), Heinrich Hertz (antenna MLI).

MATERIAL EXAMPLES

Black Kapton MLI
Used for long term missions where low aging effects of the surfaces are needed.

Two Side Aluminised Kapton MLI
Used if a low emissivity is needed, e.g. for internal or non-illuminated areas.

One Side Aluminised Kapton MLI
Used if a good alpha/epsilon ratio is needed, e.g. at external appendices.
Mission References

**ALPHASAT TDP8-MLI**
- MLI for the environmental testing and radiator sensor instrument TDP-8 onboard Alphasat
- Design & MAIT: 2009 - 2011
- Qualification supervision by ESA
- 6 blankets
- 2,5 m² total area
- Cleanliness class 10.000 (ISO7)
- Launch: 2013
- Customer: EFACEC (PT), ESA.

**eROSITA TELESCOPE-MLI**
- MLI for a 3m high space telescope
- 115 blankets per model
- 50m² total area
- Cleanliness class 1.000 (ISO6)
- Design: 2010-2011
- EQM MAI: 2012
- FM MAI: 2014
- Flight in 2015/2016 onboard russian satellite Spectrum-X-Gamma to Lagrange point L2
- Customer: Max-Planck-Institute (D), DLR.

**EXOMARS EDM-MLI**
- MLI for all internal and external areas of the descent module (EDM)
- 260 blankets
- 35m² total area
- Cleanliness class 1.000 (ISO6) and under planetary protection measures
- Design: 2012-2013
- Manufact. & Integration: 2014
- Launch: 2016
- Customer: TAS (I), ESA.

**TYPICAL MLI HARDWARE MANUFACTURING FLOW**

Template Campaign  Foil Cutting  Blanket Finishing  Packaging  Integration