



Thermal Insulation

Capabilities

Thermal insulation is a Northrop Grumman specialty. Quality tailored Multi-layer Insulation (MLI) blankets offer simple, lightweight, passive, proven, and reliable thermal insulation at low cost. Spacecraft/payload performance and longevity depend on stable onboard thermal environments during mission life, which may span decades and include thousands of extreme temperature excursions.

Over 45 Years of Experience

- Developing
- Fabricating
- Integrating
- Customizing flight-qualified thermal protection systems for complex and deployable:
 - Spacecraft
 - Subsystems
 - Payloads
 - Components
- Engineering solutions for any orbital environment – ranging from the fiercest heats to the coolest cryogenic temperatures.

- Delivering products for jobs of any size and complexity based on our customers' needs and requirements.
 - Space flight and non-flight applications
 - Air applications
 - Ground support equipment

Engineering for Mission Success

Our thermal engineers and technicians have successfully met diverse requirements for:

- MLI thermal control and stability
- Contamination control
- Passive intermodulation mitigation
- Special applications for special customers



Dedicated, Focused, and Customer Driven

Our flexibility ensures we are the best choice to fulfill your thermal insulation needs. We are here to work with you to find the most cost-effective solutions to your problems. Our team can do as much or as little as your needs dictate.

- **Customized MLI:**

Our experienced MLI design team will efficiently 3D model the MLI using your 3D CAD hardware model, ensuring accurate, first pass MLI designs of the highest quality. Dynamic, movable mechanism MLI is our specialty.

- **2D production drawings:**

If needed, we can generate the production drawings used to fabricate your blankets. Our standard production template is a model of design efficiency, refined over many years of successful program use, easily reducing your design costs.

- **MLI Fabrication:**

Our world-class MLI fabrication team can fabricate your blankets for you, using your provided production drawings and templates, or by working to drawings and templates created by our team. Either way, our team of experienced technicians can fabricate even the most complicated pieces of MLI expertly and efficiently, all within our multiple large 100,000 class clean room facilities.

- **MLI Installation:**

Our team has extensive experience working on and installing MLI blankets to flight hardware through all phases of integration activities, including launch site operations. We are willing to travel to your facility to support you as needed, and have traveled to support integration tasks for our

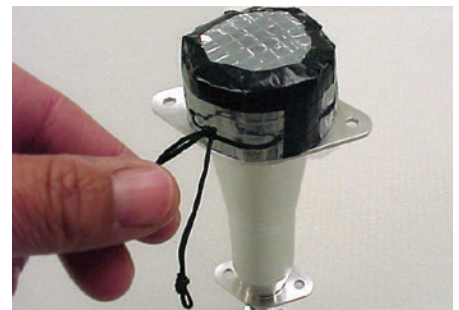
customers at facilities all over the world, including New Zealand, French Guiana, Korea, and Taiwan.

Demonstrated customer satisfaction

- Aerospace programs from large, complex NASA science missions to critical defense programs.
- Northrop Grumman and our business partners

Contact us to provide a quote for your thermal insulation needs. Our team of talented engineers and technicians will work with you to provide an exceptional product that meets your exact requirements.

Regardless of the size of your task, we have the team and facilities to ensure mission success.



For more information, please contact:
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