

# THERMAL SUBSYSTEMS

Ensuring Optimal Spacecraft & Component Temperatures for Performance

The Space Dynamics Laboratory (SDL) is a world leader in developing proven solutions to thermal subsystem challenges for spacecraft developers. Our full-cycle, in-house expertise enables SDL to meet the most stringent spacecraft requirements and is backed by our AS9100D and ISO 9001 certification.

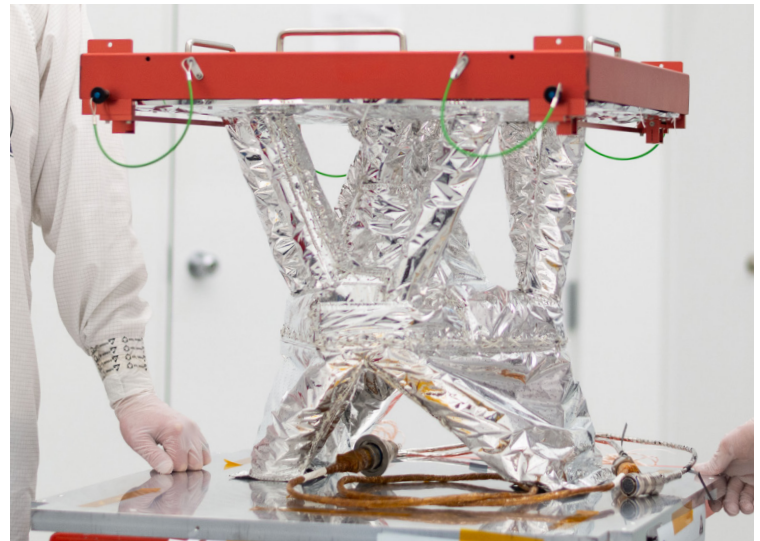
Our thermal management team designs, analyzes, fabricates, and tests thermal elements and subsystems for both passive and active solutions, including the following:

- Thermal straps
- Radiators (monolithic and honeycomb) with options for integrated conductor bars and/or thermally isolating structural supports
- Thermal switches
- Pyrolytic Graphite Sheet (PGS) embedded conductor bars (in addition to traditional conductor bars)
- Cryogenic dewar systems
- Cryocooler thermal interfaces and heat rejection systems
- Thermoelectric cooler-controlled systems
- Multi-layer insulation (MLI) blanketing
- Thermal control coating applications (paint, silver Teflon™, etc.)

## ENGINEERING

SDL's thermal, structural, and systems engineers have decades of experience developing thermal solutions for large space instruments and small satellites. Our engineers optimize designs and build and test hardware to meet each spacecraft's unique requirements.

- **Thermal engineers:** Provide support from initial thermal trade studies, detailed design, and modeling to thermal vacuum testing, thermal model correlation, and flight predictions
- **Structural engineers:** Provide end-to-end support with response analysis, vibration testing, and structural model correlation
- **Systems engineers:** Assist with requirements development, validation, and verification along with design, integration, and test activities



*The RCM assembly for MISE.*

## HERITAGE

SDL has designed, built, and tested space and airborne instruments since 1959. We designed, built, and tested the Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) instrument, which is still on orbit and has performed flawlessly since 2001. More recently, SDL has engineered thermal subsystem solutions for various NASA missions, including Mapping Imaging Spectrometer for Europa (MISE), Nancy Grace Roman Space Telescope, and Atmospheric Waves Experiment (AWE).

- **MISE:** SDL provided detailed engineering, thermal and structural modeling, interface definition, material procurement, manufacturing, assembly, vibration and thermal vacuum testing, requirements verification, and delivery of the Radiator Cryocooler Mount (RCM) assembly for the Europa Clipper mission.
- **Nancy Grace Roman Space Telescope:** SDL designed, fabricated, and tested the Cryogenic Thermal Subsystem (CTS) for the Coronagraph Instrument (CGI) built by Jet Propulsion Laboratory.
- **AWE:** SDL is providing end-to-end mission support, including thermal subsystem design, analysis, fabrication, testing, and model correlation for the Advanced Mesospheric Temperature Mapper (AMTM) instrument.

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