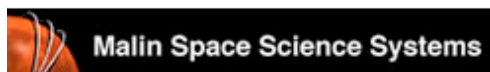




- [Aeronautics](#)
- [Opto-Mechanical](#)**
- [Lunar Reconnaissance Orbiter Camera](#)
- [MAHLI & MastCam](#)
- [RocketCam DVS](#)

LROC THERMAL ANALYSIS



Challenge

The Lunar Reconnaissance Orbiter (LRO), is a robotic mission that will study the Moon during its orbit. Its primary objective is to spend one year in a polar orbit collecting detailed information about the Moon’s environment. Because of important temperature fluctuations in orbit, a primary concern for high precision optics, such as the Lunar Reconnaissance Orbiter Camera (LROC), is thermal insulation. Proper MLI thermal protection, as well as heater systems needs to be designed to protect the optics for the whole duration of the mission.

Solution

Predict Thermal Behavior

Quartus was contracted by Malin Space Science Systems (MSSS) to perform thermal analysis for the NASA Lunar Orbiter Cameras (LROC). The narrow angle cameras, a vis/UV wide angle camera and an electronic sequence & compressor system were analyzed. Quartus received preliminary thermal models and flight predicts from MSSS.

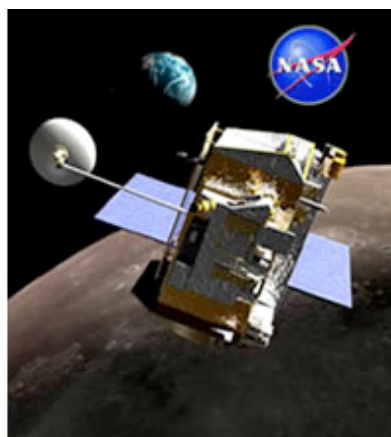
Mature Thermal Model for Integration

MSSS models were updated to mature configurations using NASA’s preferred software. New flight simulations were run and a thermal vacuum test setup was modeled and evaluated to test for near lunar orbit conditions. Proactive support by experienced opto-mechanical thermal analysts combined with balance of direct and end customers’ needs resulted in customer success.

Result

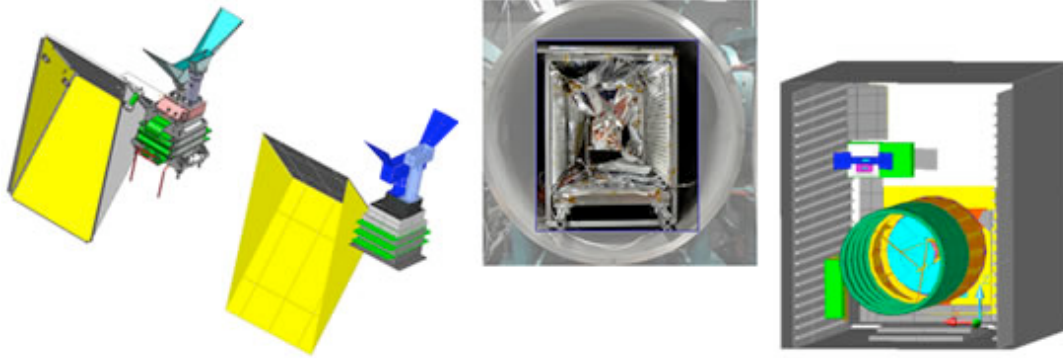
“...Quartus is enthusiastically tackling each problem as they occur and finding some of the errors from former analyses. ... Overall, it was great to work with Quartus...”

Charles Baker
LROC Thermal Director, NASA GSFC



Aerospace

Consumer Products



Engineering Methods

- Orbit Thermal Load Analysis
- Thermal Test Configuration Analysis
- Radiation/Conduction Analysis

Computer Aided Tools

- SolidWorks™
- Thermal Desktop™
- RADCAD™
- Sinda™

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