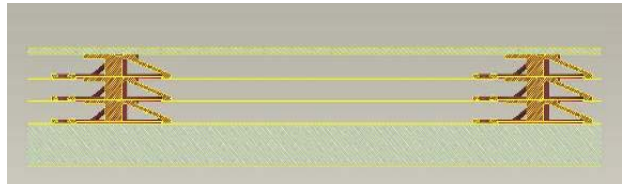


### 03/2009- NASA Funds Load Responsive MLI Phase I Program

Quest Technology, Quest Product Development Corp's technology development business unit, has won a NASA award to develop a novel ultra-high performance thermal insulation system for use by NASA on launch vehicles and next generation spacecraft. NASA Goddard Space Flight Center awarded this SBIR Phase I program, which is a six month effort to demonstrate the feasibility of this Load Responsive MLI concept, which uses a novel dynamic beam spacer to control spacing and reduce heat leak between layers of thermal insulation.

NASA likes to use cryogenic propellants such as liquid oxygen and liquid helium due to their high energy content and clean combustion. Long term storage of cryogenic propellants with minimal loss is required for new Exploration spacecraft, and advancements over current state of the art Multi-Layer Insulation (MLI) are needed. This program will conduct R&D for Load Responsive MLI (LRMLI), an innovative thermal system that under atmospheric pressure compresses dynamic Posts to support an integrated, thin vacuum shell for high performance in-atmosphere operation, then disconnects the Posts during on-orbit and Lunar surface operation to provide ultra-high performance thermal insulation.

LRMLI could offer superior on-orbit performance to MLI, and 93x lower heat leak than Spray On Foam Insulation (SOFI) during launch, and no need for N<sub>2</sub> or He purge. Cryopropellant boiloff could be significantly reduced during pre-launch and launch operations.



In Phase I we would model, design, fabricate LRMLI prototypes and test thermal performance in vacuum and atmosphere, reaching Technology Readiness Level 4. In Phase II we would move toward a commercially viable product. Quest is teaming with Ball Aerospace in conducting this research and development.

Quest's LRMLI technology has a U.S. and PCT patent application pending. This insulation technology, designed to operate in-air, could mean thin insulation panels for refrigerator-freezers that use about a quarter of the energy of current appliances. This technology might also one day replace the problematic SOFI insulation that caused the loss of the space shuttle Columbia.