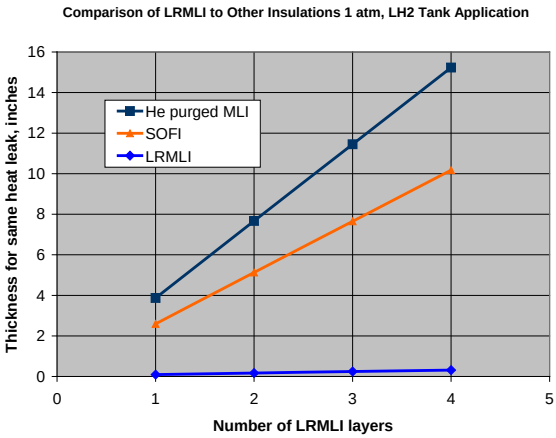
03/2010- NASA Funds LRMLI Phase II SBIR Program at Quest

With the successful demonstration of the feasibility of Quest's Load Responsive MLI (LRMLI) thermal insulation concept, NASA has awarded a Phase II SBIR (Small Business Innovation Research) contract to Quest to continue the development of LRMLI. LRMLI offers high thermal performance both in-atmosphere and on-orbit/in-space, and offers significant advantages in thermal performance, mass and robustness over conventional insulations.

LRMLI dynamically compresses a spacer under atmospheric load, supporting an integrated, thin, lightweight vacuum shell, then disconnects spacers under vacuum for reduced heat leak and higher performance on-orbit. Quest's LRMLI is the subject of a U.S. patent application and PCT filing.



Phase I prototypes were designed, built and tested by Quest. A quarter-inch thick LRMLI insulation panel had the same heat leak as 16" of polyurethane foam insulation (Spray On Foam Insulation, SOFI). LRMLI in-atmosphere has 64X lower heat leak per thickness than SOFI; on-orbit LRMLI should have ~130X lower heat leak than SOFI.

Robust LRMLI replaces SOFI, which has significant problems and a lack of robustness with cracking and cryopumping.

NASA applications include:

- Cryopropellant thermal insulation for Exploration EDS & Altair vehicles
- Passive thermal control where pre-launch ground operation insulation is critical
- Space cryogenic instrument thermal insulation
- Liquid hydrogen powered aircraft cryotank insulation

Non-NASA applications include:

- Terrestrial applications requiring high performance thermal insulation
- Cryogenic dewar insulation for research, medical & industrial uses
- Liquid hydrogen powered aircraft, such as Boeing HALE
- Liquid hydrogen powered cars, such as at BMW
- Insulating superconducting devices such as MRI & superconducting systems
- Insulated and refrigerated shipping & storage containers
- Thin insulation panels for high efficiency buildings
- Refrigerator-freezers