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Colorado News

Colorado Engineering Firms Win NASA Grant to Develop Innovative Insulation for Space Exploration Mission - Super-Insulation May Be Used in Energy Efficient Appliances of the Future

DENVER, Feb. 15 /PRNewswire/ -- Quest Product Development with partner Ball Aerospace and Technologies Corporation have won a NASA Small Business Innovation Research grant to develop an advanced thermal insulation needed for long manned space exploration missions. Integrated Multilayer Insulation (IMLI) is expected to be two to three times better insulation than the current best spacecraft insulation known. Conventional multilayer insulation, used to preserve rocket fuels such as liquid oxygen and hydrogen, or keep sensitive cryogenic instruments operating, is based on fifty year old technology. It is labor intensive to produce and requires a heavy vacuum shell. Gary Mills, Ball Aerospace Principal Engineer and inventor of this new technology, states "a thermal insulation system with one-third the weight of conventional cryogenic insulation -- and two-fold better performance -- would be revolutionary".

Quest will use micro-molding to create an engineered polymer substructure that is an extremely effective thermal barrier with unique fabrication capabilities. This technology may be used not only in space applications, but also to insulate cryogenic dewars for industrial, research and medical uses and to insulate commercial tanks and containers to preserve produce during transportation. A potential IMLI use is super-insulation for home refrigerator/freezers and water heaters. A one inch thick panel could have an insulation "R-value" of 3,600, compared to polymer foam insulation with an R-value of 7. Alan Kopelove, Director of Business Development at Quest Product Development, believes you may one day get refrigerators or freezers with IMLI insulation that would reduce their energy usage by 50%, and water heaters that use 18% less energy, lowering your home energy demand. Research suggests that implementing IMLI for these two home appliances could result in annual energy savings of \$8B for the country.

Quest Product Development (<http://www.quest-corp.com>) is a high-tech research and development company, and manages the development process to bring new technologies from universities and companies to market. Ball Aerospace is a leading company with 50 years experience in space system development and innovative technologies to support the Space Exploration mission. This NASA grant is for the first of three phases of product development that hopefully will lead to a successful product for use in NASA's new spacecraft, military and commercial satellites, and commercial insulation applications.

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