Satellite Cooling System Breakthrough Developed By Lockheed Martin Space Systems

PALO ALTO, Calif., Dec. 4, 2013 /PRNewswire/ -- Scientists and engineers at the Lockheed Martin [NYSE: LMT] Advanced Technology Center (ATC) have developed the lightest satellite cryocooler (cooling system) ever built. The breakthrough is seen as a game-changer in the design of affordable, advanced-technology flight systems, as it costs up to ten thousand dollars a pound for a satellite to orbit the Earth.

Known as a microcryocooler, the new cooling system weighs approximately 11 ounces, three times lighter than its predecessor, and is expected to have an operating life of at least ten years. The microcryocooler operates like a refrigerator, drawing heat out of sensor systems and delivering highly efficient cooling to small science satellites orbiting the Earth and on missions to the outer planets.

"Temperatures as low as -320 F are required for infrared instruments and the coolers must operate with minimum power and long lifetimes," said Ted Nast, Lockheed Martin fellow at the ATC inPalo Alto. "That is why we constantly pursue a deeper understanding of the dynamic effects of temperature on cutting-edge technology and develop new systems, like our microcryocooler, that will perform successfully within the demands and constraints presented by severe, operational thermal environments."

Lockheed Martin is the industry leader in satellite cooling systems, having successfully flown more than 25 cryocoolers in space over the past 40 years - most recently on the WISE and Gravity Probe-B NASA science satellites. In addition to space applications, the microcryocooler can be utilized in tactical systems, such as unmanned aerial vehicles and tanks.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 116,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation's 2012 sales from continuing operations were $47.2 billion.

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