National Aeronautics and Space Administration

Game Changing Development

Monthly Highlights

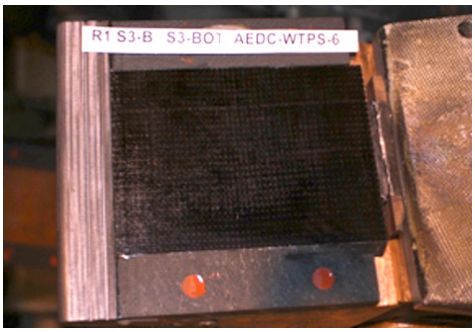
September 2012

Woven TPS: Successful Arc Jet Testing

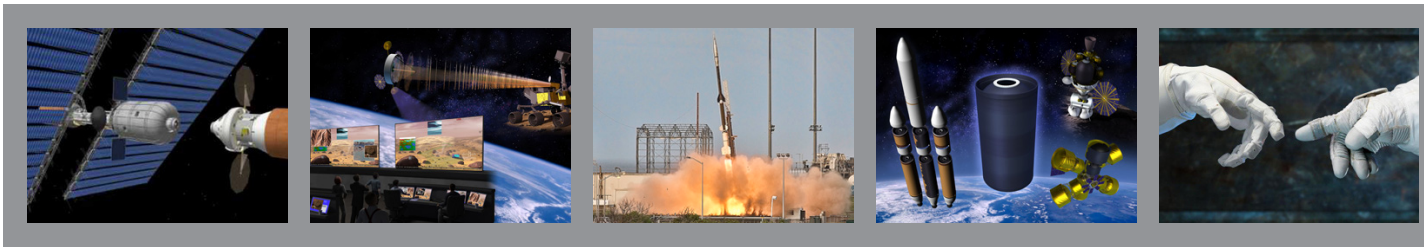
Jay Feldman (from left), Mairead Stackpoole and Raj Venkatapathy observe the AEDC wedge configuration prior to test.

The Woven TPS team at NASA Ames successfully completed testing of 14 different models at the Arnold Engineering Development Center at extreme heating, pressure and shear conditions. Twelve of the models were of the 3-D Woven TPS family. Along with the 3-D Woven TPS, the team also tested Chop Molded and Heritage 2D Carbon Phenolic so they could compare Woven TPS.

All of the 3-D Woven TPS models ablated in a controlled manner, and no anomalies or failure of any of the materials were observed. Compared to fully dense, as well as mid-density WTPS, Chop Molded Carbon Phenolic recession was very uneven and the post-test article showed significant roughness.



Pre- (left) and post-test (right) images of a 3-D WTPS material. Material behaved in a controlled manner.



Human Robotics Systems reaches milestones

Grapple Arm

On Sept. 16, the Human Robotics System team members at NASA's Jet Propulsion Laboratory completed a September 2012 Level 1 project milestone. The team completed assembly and initial checkout of the Grapple Arm and got it ready for testing. For more information on the arm, visit: http://tinyurl.com/9dxtf8r.

Dust Tolerant Automated Umbilical (DTAU)

At NASA's Kennedy Space Center Human Robotics Systems engineers completed a level two milestone on Sept. 19. They delivered a Dust Tolerant Automated Umbilical (DTAU) which mounts into a quick-attach mechanism on the Multi Mission Space Exploration Vehicle (MMSEV) at Johnson Space Center (JSC). This DTAU allows power, data and cryogenic fluids to be transferred from the MMSEV to any payload, such as a fuel cell in a Portable Utility Pallet (PUP) that can be picked up with the quick-attach.

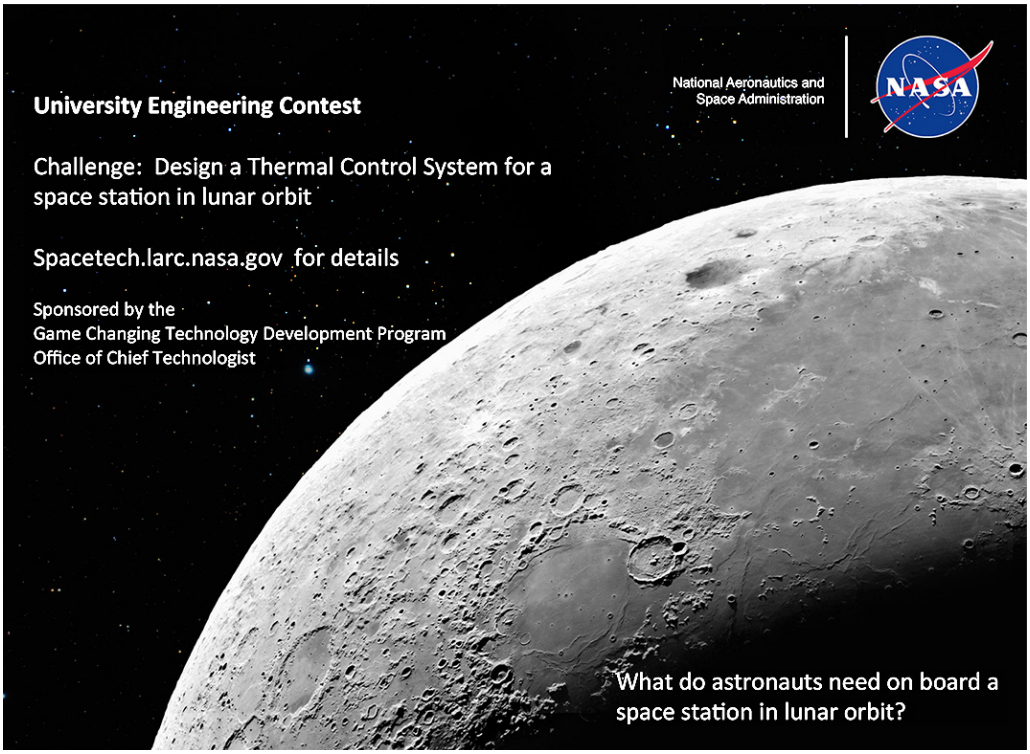
The MMSEV Dust Tolerant Automated Umbilical (DTAU) System.

In the News

GCD Program Director Steve Gaddis was featured in NASA Tech Briefs. To read the interview online, visit: http://www.techbriefs.com/component/content/article/14792.

Optical Communications, NICER and EBF3 all made the news recently. To read more about 3D printing and EBF3 in the Smithsonian Air & Space Magazine, visit: http://tinyurl.com/d6pugya. For the article on Optical Communications and NICER in Forbes Magazine, visit: http://tinyurl.com/92mzl6n.

Game Changing Engineering Challenge!



The Game Changing Development Program is sponsoring a university engineering contest. The challenge is to design a thermal control system for a manned space station in low lunar orbit. Multi-disciplinary teams are encouraged.

Letters of intent are due December 1, 2012; entries are due in April 2013. Finalists will present their work to a panel of experts at a NASA Center.

Detailed information is posted at http://spacetech.larc.nasa.gov.

Game Changing Education and Public Outreach

NASA Langley's Open House

Thousands of visitors toured the Structures and Materials Lab where the LSMS and lunar habitats are located.

HIAD project manager Mary Beth Wusk speaks to a young boy about the IRVE-3 test flight.

NASA Langley Research Center held its first Open House in five years on Saturday, Sept. 22. An estimated 10,000 people attended the event. Game Changing technologies, Electron Beam Freeform (EBF3), IRVE-3, and the Lightweight Surface Manipulator System (LSMS), were highlighted at the event.

Marshall's Innovation & Technology Day

Members of the Composite Cryogenic Tank Demonstration project participated in NASA Marshall Space Flight Center's Innovation & Technology Day held Sept. 12. The event was well attended by around 1,700 NASA employees, contractors, and Army personnel. In the Technology Expo area, more than 74 booths of interactive displays, exhibits and demonstrations showcased the latest trends and initiatives in the areas of information technology, engineering, science programs and projects.

Composite Cryogenic Tank Demonstration project members Justin Jackson and Lynn Machamer.

Game On!

http://gameon.nasa.gov

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