8-3-2012

Ingenuity meets Curiosity

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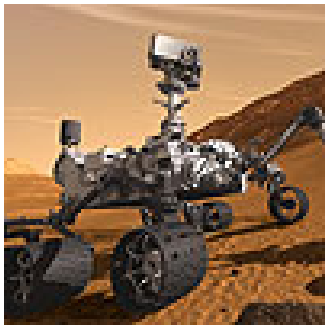

Ingenuity meets Curiosity

08.03.2012 | Hot Topics, Research, Science

Dayton ingenuity will be driving Curiosity, the Mars Science Laboratory rover scheduled to touch down on Mars early Monday after a 352-million-mile trip from Earth.

Chad Barklay, a senior research engineer in the University of Dayton Research Institute's Energy Technologies and Materials division, developed the layout and assembly procedures for the radioisotope power system that will operate Curiosity's wheels, robotic arm, computers, radio and instruments. "We helped build the proverbial tail on the Curiosity dog," said Barklay, referring to the power generator attached to the back end of the rover – whose design, including camera "head," make it appear somewhat canine-like.

Barklay studied materials engineering at the University of Dayton, receiving his master's in 2004 and a doctorate in 2007.

He designed the layout and assembly procedures under contract to the Idaho National Laboratory, which assembled and tested the Multi-Mission Radioisotope Thermoelectric Generator. The power system works by converting heat created by naturally decaying isotopes into electricity to power the rover. Heat from the generator will also be used to keep the rover's mechanical, computer and communication systems at operating temperature.

The system will generate enough electricity to power "the most advanced payload of scientific gear ever used on Mars' surface" and throughout the length of the mission, currently scheduled to take one Martian year, or 687 Earth days, according to an Idaho National Laboratory Research Fact Sheet: http://www.inl.gov/research/mars-science-laboratory (url: http://www.inl.gov/research/mars-science-laboratory) . The rover will look for and preserve evidence in the Martian surface that may point to whether conditions were ever favorable for microbial life.

Prior to the MSL launch, Barklay also participated on a team of scientists who determined which tests would be needed to ensure that the power system will properly function after the lab lands. "The MSL will go through a series of pyro shock events, such as parachute deployment and retro rocket firing, as it goes through entry, descent and landing," Barklay said. "We needed to make sure that the power system could withstand these events and remain operational to execute its mission after landing."

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