Mechanical/Aerospace Sustainability Project

Lunar Mining

Mission Statement

To create a successful Lunar Robot for moving dirt to protect a proposed habitat on the moon from radiation, to be submitted to Hamilton Sundstrand and NASA by 2Q 2012.

Synopsis

NASA is interested in future habitats that can be places on the surface of the moon and perhaps Mars. These habitats need to provide shelter from cosmic radiation for the astronauts. One potential solution is to move surface soil (regolith) into position to act as a shield. No "winning" concepts have been produced that can efficiently move this material for habitat protection. The process would have to be automated, so the building of a robot or device is necessary.

The strategy for the project was broken down into three parts:

1. Brainstorm ideas for the robot prototype
2. Research moon regolith, electromagnetic radiation, and cosmic radiation specifically.
3. Model the prototype using SolidWorks software.

There are guidelines that must be followed when building the robot regarding its size and weight. Since there is radiation involved, there is also a concern about the materials being used. A third obstacle in the process is the regolith, itself. The Regolith is not composed of the same material as Earth sand, and it can be devastating to equipment. The restraints and potential problem areas are what makes this project very challenging. These are the problems that plague engineers at NASA and other companies every day. This project gives a little taste of what a typical day as a NASA engineer is like.

Sean Belleau	Gateway CC
Scott Klasner	University of Hartford
Andrew Leahy	Tunxis CC
Marquette Jones	Manchester CC
Brett Murno	University of Hartford
Alicja Urbanczyk	Central CT State University
Benjamin Lamy	Northwestern CT CC
Sarah Matloff**	University of Hartford