

 <p>TEXAS SPACE GRANT CONSORTIUM DESIGN CHALLENGE</p>	TOPIC # - TDC-17
	DESIGN OF DUST TOLERANT EVA COMPATIBLE CONNECTORS
	FALL 2008

### OBJECTIVE:

In the dusty Lunar environment, astronauts will be making and breaking various electrical and fluid connectors with their gloved hands. A goal is keep out dust when the electrical or fluid connector is exposed. Design an electrical or fluid connector for lunar exploration with EVA capability. The connector should include dust mitigation capabilities.

### BACKGROUND:

America will send a new generation of explorers to the moon aboard NASA's Orion crew exploration vehicle and the Altair Lunar Lander. Orion is part of the Constellation Program to send human explorers back to the moon, and then onward to Mars and other destinations in the solar system. Altair will be capable of landing four astronauts on the moon, providing life support and a base for weeklong initial surface exploration missions, and returning the crew to the Orion spacecraft that will bring them home to Earth

Once on the moon, astronauts will need to use vehicles, tools and scientific equipment to complete their missions. They will stay in pressurized habitats.

**PROBLEM:** The task would be to design an electrical or fluid connector for lunar exploration with EVA capability and keeps dust out. These connectors could be on the space suit for recharging the portable life support system or on lunar surface systems for assembly or maintenance. The goal would be to creatively design a connector that is easy to operate with a gloved hand while keeping dust out with minimum crew operations and complexity. The Advanced EVA Technology Group will provide information on concepts from previous studies.

### DESIGN TEAM PROFILE:

- ❑ **Level:** Upper Division Undergraduates [JR/SR]
- ❑ **Major:** 4 ME majors
- ❑ **Teams:** Mentor may accept more than one team for this project.

Design project topic offered by:  
NASA Johnson Space Center  
Crew and Thermal Systems Division

