

JSC Senior Design Project and or Intern Request Form

EA3-6

Project Title:	Low Force Orbital Replacement Unit Cold Plate Design		
Project Description:	The Habitable Airlock incorporates removable avionics enclosures that must be coupled to a cold plate in order to function in a vacuum environment. In order to facilitate maintenance in space the insertion and removal forces must be minimized. This project will develop concepts leading to detailed design and analysis of the cold plate with considerations for maximizing the thermal coupling between the avionics enclosure and the cold plate and the ability to then minimize the extraction forces.		
Choose most appropriate area of research:	<input type="checkbox"/> Planetary Surface Systems <input type="checkbox"/> Ground Operations <input type="checkbox"/> Propulsion <input checked="" type="checkbox"/> Spacecraft <input type="checkbox"/> Human Health Program		
Program Applicability	<input type="checkbox"/> ISS <input type="checkbox"/> CEV/SLS <input type="checkbox"/> Commercial Crew <input type="checkbox"/> Asteroid <input checked="" type="checkbox"/> Adv. Technology (AES/STMD)		
Choose one project:	Roles and Responsibilities of Senior Design POC/Mentor		
<input checked="" type="checkbox"/> Senior Design	I have coordinated with my management and I am able to support at least three (3) teleconferences (kick-off, mid-term, and final) with a Senior Design Project Team at a university that chooses my project. I understand that I shall not provide any sensitive or classified information to the Senior Design Project students of faculty. I will provide feedback to the project team if requested.		
<input type="checkbox"/> Internship	I have coordinated with my management and I am able to support an intern. If an intern is selected for my project, I will provide an environment where an intern can grow and we may have a mutually beneficial and successful internship. My project will be able to provide a desk space, work area, and computer for an intern. I will review any final report or presentation that the intern generates during his/her internship and submit it to Export Control (DAA) for approval. This project opportunity will be posted in OSSI, through the office of Education (use exact same title). OSSI website: : https://intern.nasa.gov		
Check desired Timeframe for Internship:	<input type="checkbox"/> Year long <input type="checkbox"/> Summer <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring		
Check desired Major/Minor(s) for Internship:	<input checked="" type="checkbox"/> Aerospace Engineering <input checked="" type="checkbox"/> Aeronautical Engineering <input type="checkbox"/> Astronautical Engineering <input type="checkbox"/> Biomedical Engineering <input type="checkbox"/> Chemical Engineering <input type="checkbox"/> Civil Environmental <input type="checkbox"/> Health Engineering <input type="checkbox"/> Electrical, Electronic Engineering <input type="checkbox"/> Computer Engineering <input type="checkbox"/> Engineering Physics <input type="checkbox"/> Industrial Manufacturing Engineering <input type="checkbox"/> Materials, Metallurgical Engineering <input checked="" type="checkbox"/> Mechanical Engineering, Mechanics <input type="checkbox"/> Nuclear Engineering <input type="checkbox"/> Astronomy, Astrophysics <input type="checkbox"/> Chemistry <input type="checkbox"/> Optics <input type="checkbox"/> Physics <input type="checkbox"/> Atmospheric Sciences <input type="checkbox"/> Geography <input type="checkbox"/> Geosciences <input type="checkbox"/> Oceanography <input type="checkbox"/> Natural Resource Management <input type="checkbox"/> Mathematics, Applied Mathematics <input type="checkbox"/> Computer Science <input type="checkbox"/> Astrobiology <input type="checkbox"/> Biology <input type="checkbox"/> Biochemistry/Biophysics <input type="checkbox"/> Microbiology Bacteriology <input type="checkbox"/> Chemical Engineering <input type="checkbox"/> Other, please specify:		
Mentor Name:	William J Harris	Mentor's E-mail:	William.j.harris@nasa.gov
Title & Organization:	EA3/ DPM – Habitable Airlock	Phone #: 281-483-0480	
Alternate POC/Mentor Name:	Nathan A. Howard	Alternate's E-mail:	Nathan.a.howard@nasa.gov
Education Office Signature and Date:		Intern Mentor's Signature & Date:	
As supervisor/manager, I approve of the above named individual as Senior Design Project POC of Intern Mentor.		Supervisor/Manager's Signature & Date	5-31-13
(For Intern Request Only) As Administrative Officer, I am aware that the above named Intern Mentor has submitted a request for an Intern.		Administrative Officer's Signature & Date:	

Title: Low Force Orbital Replacement Unit Cold Plate Design

Sponsor: NASA Johnson Space Center, Engineering Directorate, Habitable Airlock Project,

Personnel: 2-4 ME/Thermal Analyst

Expected person-hours: 200

Deadline: Spring 2014

Statement of Work:

The Habitable Airlock Project (HAL) at the Johnson Space Center is investigating design concepts for a modular space flight element that provides a 30 day habitation for a crew of 2 with airlock and multiple vehicle docking capabilities as a compliment to exploration activities.

The Habitable Airlock incorporates removable avionics enclosures that must be coupled to a cold plate in order to function in a vacuum environment. In order to facilitate maintenance in space the insertion and removal forces must be minimized. This project will develop concepts leading to detailed design and analysis of the cold plate with considerations for maximizing the thermal coupling between the avionics enclosure and the cold plate and the ability to then minimize the extraction forces.

Expectations of this JSC Senior Design Project include detail design package and supporting analysis that potentially lead to hardware fabrication and test.