

HASP 2016 Student Payload Monthly Report

Payload Flight Number: 20016-09	Institution: University of Central Florida																																																																																																			
Payload Title: Hazardous Gases for Harsh Environments LED Sensor																																																																																																				
Student Leader: Michael Villar (Graduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 mvillar@knights.ucf.edu Cell: (561) 512-3953	Faculty Advisor: Dr. Subith Vasu Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 subith@ucf.edu Office: (407) 823-3468																																																																																																			
Current Team Members: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Justin Urso (Graduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 Justin.urso13@knights.ucf.edu Cell: (352) 817-9212 </div> <div style="width: 45%;"> Akshita Parupalli (Undergraduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 Akshita.parupalli@knights.ucf.edu Cell: (321) 696-9969 </div> </div>																																																																																																				
Past Team Members: Kyle Thurmond (Graduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 kthurmond@knights.ucf.edu Cell: (407) 617-0475																																																																																																				
Report Month: May	Report Date: 5/27/2016																																																																																																			
Gantt Chart:																																																																																																				
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Tasks</th> <th colspan="5">May</th> <th colspan="4">June</th> </tr> <tr> <th>5/1/2016</th> <th>5/8/2016</th> <th>5/15/2016</th> <th>5/22/2016</th> <th>5/29/2016</th> <th>6/5/2016</th> <th>6/12/2016</th> <th>6/19/2016</th> <th>6/26/2016</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">DAQ Programing (K,M)</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">Environmental Chamber Testing 2 (M,A)</td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">1st Paper (K,M,A)</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">HASP Chassis Construction (M,A)</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td style="text-align: left;">HASP Electronics Readiness (M,A)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td style="text-align: left;">Corrective Actions (M,A)</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">HASP ST&P Measurements (M,A)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">HASP Flight (M,A,J)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Tasks	May					June				5/1/2016	5/8/2016	5/15/2016	5/22/2016	5/29/2016	6/5/2016	6/12/2016	6/19/2016	6/26/2016	DAQ Programing (K,M)	X	X								Environmental Chamber Testing 2 (M,A)			X	X						1st Paper (K,M,A)					X	X				HASP Chassis Construction (M,A)					X	X	X	X	X	HASP Electronics Readiness (M,A)							X	X	X	Corrective Actions (M,A)		X								HASP ST&P Measurements (M,A)										HASP Flight (M,A,J)										
Tasks		May					June																																																																																													
	5/1/2016	5/8/2016	5/15/2016	5/22/2016	5/29/2016	6/5/2016	6/12/2016	6/19/2016	6/26/2016																																																																																											
DAQ Programing (K,M)	X	X																																																																																																		
Environmental Chamber Testing 2 (M,A)			X	X																																																																																																
1st Paper (K,M,A)					X	X																																																																																														
HASP Chassis Construction (M,A)					X	X	X	X	X																																																																																											
HASP Electronics Readiness (M,A)							X	X	X																																																																																											
Corrective Actions (M,A)		X																																																																																																		
HASP ST&P Measurements (M,A)																																																																																																				
HASP Flight (M,A,J)																																																																																																				

HASP 2016 Student Payload Monthly Report

Team Member Activities:

Kyle Thurmond has since graduated UCF and as such has been moved to the Past Members list. He is still available for consultation if the need arises.

Michael Villar worked primarily with Akshita Parupalli with optimizing wiring and system layout for a second round of Environmental Chamber Testing. As well as creating detailed wiring schematics of current system layout for ease of modification. Prep work has also begun on finalizing wiring organizational layout for the HASP flight chassis as well as reinforcing solder connection joints and shortening excess wires.

Akshita Parupalli has continued on the test cell redesign. The cells dimensions and geometries have been finalized and a detailed materials analysis is being done to select the optimal test cell composition. Current favored choice is to make the cell out of PVC. Different polyethylene compositions for the diaphragm are also being tested in the EC to determine the most resistant material.

Justin Urso's focus has been on an outside research project and was mainly available for consultation and environmental chamber testing assistance.

Issues Encountered:

- Update: New Electronics modifications for LED temperature control
 - Imbedded TEC in the LED housing only operates in a single direction, waiting on response from manufacturing company to confirm. If correct an additional TEC will be added to the back of the LED casing to enable heating to resolve the problem.
- Update: Continual modifications to the Payload chassis
 - A second round of environmental chamber tests are underway so temporary support structure is still in use. The final flight payload chassis is being prepped upon completion of EC testing.

Milestones Achieved:

- Secondary Environmental Chamber testing was completed.
 - Another round of Environmental Chamber tests are underway and set to be completed within the next few days. A few improvements on the previous rounds of testing should increase accuracy of collected data.
- cRIO DAQ VI improvements
 - Modifications to TEC relay internal VI timing has been optimized to improve responsiveness of solid state relays for TEC current switching.