

Inter-American University of Puerto Rico

HASP 2014

January Monthly Status Report

During the month of January the Thermal Energy Control & Particle Air Filter System (TECPAFS) team has been recruiting members for the project. Since the beginning of this month we have been dividing the members into the respective teams and their tasks. At the same time, working with the successful incorporation of the air particle air filter system students to the TECPAFS project. Meetings and investigation is being made to analyze and respond to the HASP 2014 Student Payload Summary reviews. The preliminary designs and body schematic of the project, are being analyzed for a model payload optimization.

Team Activities

1. The Power team (PT) is going to work with the incorporation of temperature sensors, currently investigating analog to digital converters (ADC). Analyzing the power budget, taking into account the heating films for high temperature on the phase change materials (PCM) and the valves to be used for the air particle air filter system.
2. The Software team (CT) have been evaluating the HASP requirement. Base on their skill and knowledge, they have choose to implement the Arduino platform. They find this to be more reliable and friendly user for the HASP function. The CT is currently working in the Arduino software to implement temperature sensors.
3. The Structure team (ST) is working on preliminary SolidWorks designs of the structure and studying a specific orientation needed for the incorporation of the particle air filter system with the PCM's.
4. The Thermal team (TT) is currently in charge of reviewing the PCM's to be used in the project, as well as the quantity. In addition, film resistance heaters are being selected as they are going to be used as heat source for the PCM experiment, where the heat storage capacity is to be determined in near space environment. Finally, the TT is analyzing how the air flow affects the particle air filter system at various altitudes.

Issues Encountered during Payload Design / Development

1. The quantity of temperature sensors are too much for the Arduino Mega that is going to be used. ADC for incorporation of temperature sensors with the microcontroller.
2. Working technology for particle air collection to the filter system.
3. Power consumption from the heating films.

Milestone

The biggest milestone this month was recruiting new members for the project, given some changes since the Student Payload Application (SPA) made December last year. Establishing proper training between the teams on the respective fields of Power, Structure, Thermal and Software incorporated for the TECPAFS project.

Current Team Members

This month's report demonstrates team changes on the TECPAFS project. Recruiting of new students was necessary for the future success of the project, here is a structure of the project, advisors, and student leader and team members:

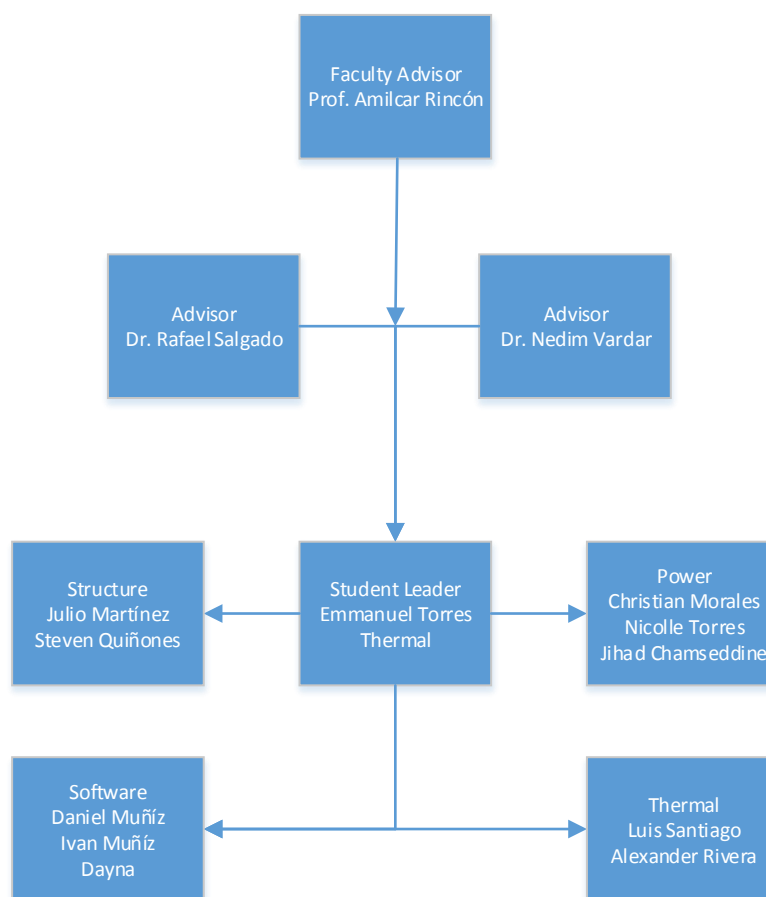


Figure 1 - TECPAFS team structure