

# Weekly Status Report 4

**Dates: 2/11/2018 - 2/24/2018**

**Group Number: sddec18-02**

**Project Title: Steam Heat Controller Retrofit**

**Client/Advisor: Lee Harker**

## **Team Members - Role**

Sarah Coffey - Reporting Lead

Ken Wendt - Webmaster

Liz Wickham-Kolstad - Design Lead

Jevay Aggarwal - Technical Lead

Joe Filbert - Client Lead

Thomas Devens - Planning Lead

## **Summary**

The project has progressed at a slower pace throughout the last two weeks as we have taken a step back to redesign and research some of the main features of the project. Specifically, we have moved away from using a Raspberry Pi in the thermostat, due to concerns for the battery life, and are instead looking into using a stripped down microcontroller with software controls to limit energy consumption. This change also means that we will be unable to use SSH from the thermostat to the server, so we are evaluating alternative communication protocols. Additionally, we have opted to use a seven segment type display instead of an LCD screen in order to limit the energy consumption (figure 1).

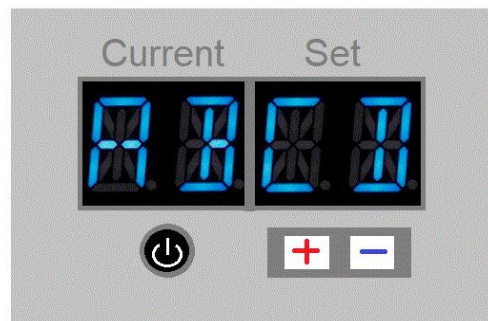


Figure 1 - Thermostat mockup

Another issue was the complexity of our original motor mount design; after some deliberation with our client, we have been advised to use a simplified version for the prototype. Members of our group are now working to build a mock-up of that simplified design. Through this re-evaluation, some sources of potential error have been identified. The location of some valves would not allow for space for the current mount design, but through further modeling, that problem has been mitigated (figure 2).

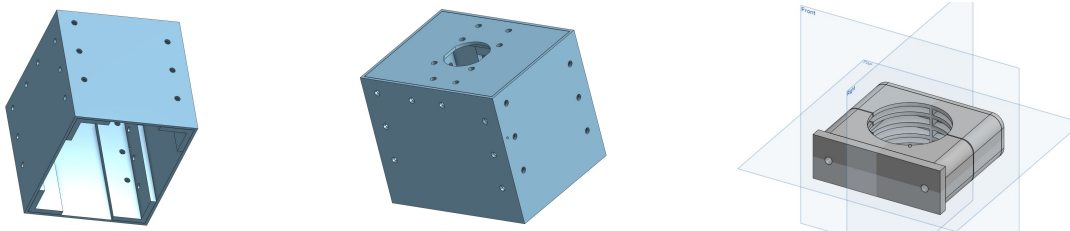


Figure 2 - Adapted motor mount design

## Pending Issues

In order to begin testing and validating ideas, we need to get certain parts ordered.

## Going Forward

Sarah, Liz, Jevay, and Thomas: Configure the Feather microcontroller and determine the new communication protocol with the server Pi. Begin setting up the web server on the server Pi. Continue working on the casing and buttons for the thermostat.

Joe and Ken: Finish motor mount design and prototype. Research and pick a motor controller to be used with the Raspberry Pi. Assist in measuring energy consumption on the Feather microcontroller.

## Individual Contributions

Name	Contribution	Hours Worked
Sarah	Researched alternative microcontrollers and found the Feather board. Brainstormed ideas for the thermostat UI and mocked up the prototype picture.	9
Ken	Evaluated designs for the motor mount and identified and fixed potential issues in the design. Continued to document these ideas in OnShape.	10
Liz	Researched microcontroller features and display options with them. Worked with Jevay to salvage the past groups LCD screens.	8
Jevay	Worked on the thermostat circuitry and helped finalize the design for the internal connections between buttons/sensors and microcontroller. Investigated button connections with the Raspberry Pi.	6
Joe	Soldered connections on a temperature sensor breakout board. Continued modeling the motor mount and refining the design with feedback from Lee. Began building a prototype.	13
Thomas	Refined project plan and looked into integrating the web server with ISU's Shibboleth authentication.	3

## Meeting with Client/Advisor

Not applicable this period

## Gantt Chart Status

