Bi-Weekly Status Report 5

Dates: 10/21/2018 - 11/3/2018
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

Hardware: We used the reflow oven to surface mount components to the MCU pcb. Started initial testing of MCU board. Specifically, we verified the output voltages of the LM317 LDO regulator; which powers the raspberry pi. After verifying output voltage was correct we attempted to power the raspberry pi with the MCU pcb. We found that the regulator is running hot, because we are dropping from 24Vdc to 5Vdc with a bootup current draw from the raspberry pi of approximately 750mA. The current demand and voltage drop means the regulator is dissipating ~14.25W of power. To address this issue while continuing the use the PCB we designed we will be adding a voltage drop before the regulator, and adding a 10 C/W heatsink to the LM317. Additionally, we are beginning to design an enclosure to house the MCU components. After browsing digikey for available enclosures, we decided that we would make our own with 3d printing services available in the department of mechanical engineering.
Software: The software subteam continued to work on securing the connections for the RCU, MCU, and website. The team also identified the needs for error checking and reporting, and the plan for implementation. The webteam determined that shibboleth authentication would not work for our application, based on the new (and lack thereof) information from ITS. After a discussion with a technical advisor, we decided to use LDAP instead.

Pending Issues

Hardware: LM317 regulator is to hot, need to reduce the voltage supplied to the regulator by including a voltage drop before the regulator and mounting an appropriate heatsink to the TO-220 package device.
Software: LDAP is still not fully configured yet; we will need to get help from our technical advisor in ETG to get it working.

Going Forward

The hardware and software teams have identified the last major things that need to be done before the semester is over, and will be working to have those done.

Individual Contributions

Name	Contribution	Hours Worked	Total Hours
Sarah	Figured out how to send emails from the web server, configured the Spring project to authenticate through LDAP, and worked on the AES encrypt/decrypt for the RCU.	7	49
Ken	Completed the RCU PCB design that is currently being manufactured. Soldered the MCU and began troubleshooting it. Currently, the regulator is getting to hot as it is dissipating a large amount of power so I am working on ways to bring it down to a reasonable temperature	9	44
Liz	Implemented Server code into error transmision, working on sending errors to database, motor control - adding detection for if valve turns too easily (broken)	7	46
Jevay	Worked on the AES encryption for the raspberry pi. Looked into possible designs for the case for RCU	6	45
Joe	Used reflow oven to surface mount components to MCU. Started 3d modeling enclosure for MCU. Troubleshooting MCU LDO regulator temperature.	6	36
Thomas	Implemented mass control of all blocks, added placeholders for whitelist stuff and error stuff Started looking into LDAP for authentication	10	46.5

Your Meeting with Client/Advisor

Not applicable