EE/ CprE 491 – ssddec18-19 Weekly Report
9/10/18 – 9/24/18
Group number: 19
Project Title: Design and Implementation of a small scale standalone Hybrid Solar PV and Wind Energy Generation System
Client & Advisor:
Venkataramana Ajjarapu
Team Members/Role:
Christopher Goodrich: Circuit Design Lead
Taylor Mullen: Testing Engineer
Kenny Nguyen: Webmaster/Circuit Design Engineer
Damon Stubbs: Software Lead
Andrew Wassenaar: Team Leader

Past Week Accomplishments:

- **Confirmed with ETG that pricing for our parts are acceptable for senior project.**
- **Had a meeting with professor about our Senior Project and moving forward.**
    - **Conversation about Lab manual for project, adjustments that will be made with the addition of the resistor bank**
    - **Cleaning up the lab manual so that it is more fluid and readable**
    - **Being able to combine more knowledge about circuit design from pervious courses to the lab. These include finding certain configurations of resistors in order to find a resistor value.**
    - **Overall clean up and revisal of the lab manual is needed.**
- **Decided on a leader for the current month, Taylor Mullen will be our leader for this month.**

Pending Issues:

- **Ordering parts from ETG**
    - **Current status is that some parts are not found on Digikey.com. Therefore, a meeting with ETG is needed to find other suppliers to purchase from.**

    - **Resistor bank may be able to dissipate a lot of heat because it takes an upwards of 200 watts going through the resistor, therefore the usage of plywood and plexiglass may not be advised.**
    - **A meeting with Lee Harker will be scheduled this week in order to get the material use to build the resistor bank figure out and if there is any need for anti-static material used for the resistor bank as well.**
- **ABET is coming in the near future, therefore ETG wanted us to move the cart with part of our project to another location so the current room looks neat. This will also cause us to not be able to work on the project.**
- **Understanding what truly went wrong with the circuit and why the Arduino burnt out.**
    - **We have a theory as to why the Arduino burnt out but wanted to fully confirm what truly happen so that we do not burn out another Arduino.**
- **Currently the system is not properly grounded so that the system is not as safe. Will continue to make sure that there are no live wires or no live bolts in the system.**
- **The layout out our lab equipment in awkward and impractical for lab. After communicating with ETG, we are looking at ideas to improve our lab booth set up.**

Individual Contributions:

Name	Individual Contribution	Hours this Bi-Week	Cumulative Hours
Christopher Goodrich	I worked on setting up a plan with ETG to improve the functionality of our lab. I am working on getting permission to add in conduit to run all wiring through. When we get conduit in place, I will continue with rewiring the circuit. I have also been working on developing a PCB to function as a high-power buck/boost converter. This is something that will allow students to better understand what a MPPT	10	68

	does. This next week I will not be able to do much concerning the circuit, but I am going to focus on developing the buck/boost converter. In any addition time, I would like to work with Taylor to begin mapping out all of the existing equipment for our schematic.		
Taylor Mullen	Enacting as leader for the current month as well as been researching schematic drawing programs. Worked with EAGLE before and looked into KiCad and FreePCB and a couple others. Will look into seeing what in the lab manual needs revising and into the few selected schematic programs in more depth.	6	44
Kenny Nguyen	The last two weeks I've been figuring out resistor prices and parts to order from ETG. I've been talking to Lee Harker and asking about our resistor bank design. This includes what materials we should use and if there are any underlying issues he sees. Will get parts order this week and have a meeting with Lee to get his input on necessary upgrades and needs for resistor bank.	8	53.5
Damon Stubbs	Continued development of resistor simulation program. Developed a working online model. Identified issues with resistor combination possibilities and fixed the issue for 4-combination resistors. Created a report on feasibility of using different number of resistors and the tradeoff between accuracy and simplicity. Confirmed current proposed 8-resistor setup is sufficient for accuracy of the elbow point via these simulations.	6	60.5

Andrew Wassenaar	Brainstormed ideas for alternative materials/designs for the resistor bank per Lee Harker's requests. One idea for solving Lee's problem and cooling the resistor bank is to use small DC fans powered by the solar system. Continued designs for auxiliary circuit to power LED's indicating which resistors are currently in use. The batteries we use to supplement the system lost charge over the summer, so I looked into lead-acid batteries and their minimum charge threshold for reusability; this is to determine if they are salvagable, or if we need to buy new.	7	61

Plans for coming 2 Weeks:

- **Order all parts for resistor bank, Arduinos, and other supplies.**
- **Checking wiring for system and rewiring and soldering where needed.**
- **Prepare for upcoming presentation of senior design project and moving on**
- **Revision on lab manual**