EE/ CprE 491 – ssddec18-19 Weekly Report
8/28/18 – 9/10/18
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:

- **Found resistors to use for resistor bank, all will above 225 watts.**
- **Used a diagram of the pin layout of the Arduino to understand how each pin functions and what inputs are being relayed to them.**
- **Went through the wiring of the system and concluded where certain sections of the pins on the Arduino burnt out.**
- **Retraced the wiring in order to understand where each wire is getting its input and to where it is being outputted too.**
- **Team realized that it would be extremely beneficial for a complete circuit diagram for when other teams will have easier understand of how each component is and how they function as a whole in the circuit.**
- **Confirmed with professor Ajjarapu of what we wanted to do with the project and move ahead. These include the following:**
  - **Buying resistors for resistor bank, Two Arduinos, one to replace the burnt one prior, and another to control an LCD screen to display DC Voltage. Other necessities are also including such as plywood, screws, banana pins, plexiglass, etc.**
  - **Rewiring of the system due to poor wire management from the last group. Interchanging wires makes the system less safe and hard to understand what every component is doing.**
  - **Having better insulation for wiring outside and fixing that. Wires are becoming too brittle being outside from the weather.**

- Creating a circuit diagram for students to better understand how each component is used and why. Also will be used so that the next team to expand on this will be able to understand how each component works.
- Revising the lab document to include the resistor bank and how resistance relates to the MPPT.

Pending Issues:

- **Ordering parts, will confirm order with ETG and confirm if price is acceptable for senior project.**
- **Choosing a team leader and if it is necessary to switch leaders for the last couple of weeks of the project.**
  - **Professor Ajjarapu wants to switch leaders so that everyone has a chance to be a follower, and a leader. So, we each individual experience what it's like to be a leader and give tasks to others.**
- **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.**

Individual Contributions:

Name	Individual Contribution	Hours this Bi-Week	Cumulative Hours
Christopher Goodrich	The last two weeks I have been going through our PV circuit and trying to diagnose our shorting issues and am looking into why our Arduino burned out. I have also been looking getting materials to rewire the circuit; this is to provide a reliable circuit configuration that stops the shorts from happening. For the next	10	58

	two weeks: I will be getting the new wiring materials, start tracking each circuit component to make a wire management grid, and verifying wire ampacities. I am also going to look into adding a physical ground to keep faults from discharging into our circuit.		
Taylor Mullen	Looking into redrawing the circuit diagram for the system with Chris and making sure the changes are reflected in the new circuit diagram for the old one. In the next couple weeks, I'm going to be looking into different schematic drawing programs as well as good practices, such as color-coding wires, etc.	4	38
Kenny Nguyen	Found resistors for resistor bank and priced check them. Found prices for other items such as Arduino. Corrected resistor values so that all values can be used with a power of 225 watts or above. For the next two weeks I will be revising the laboratory manual to include the resistor bank. I will also run simulations on the current lab manual to make sure that the simulations are working as intended and if need be revise them.	9.5	45.5
Damon Stubbs	Over the summer I coded a program in Java to calculate various resistor combination possibilities. This is so that students can get as close to the exact elbow point resistance as possible. I have researched various ideas for load possibilities as problems arose. Designed a switching system for the resistors which did not end up being feasible. Found root cause of Arduino burning which was the voltage input	18	54.5

	and discussed with Chris. Presented on future Arduino and display purchases and integrability. In the next few weeks I will continue to diagnose and resign Arduino code and determine usage for the Java code		
Andrew Wassenaar	I performed some administrative tasks for the semester, including compiling schedules of all team members and organizing meeting times with our advisor. I also compiled and finalized the list of needed construction materials for our load. In the coming weeks I will be working on designing an auxiliary circuit to control the LED's associated with each resistor in the bank. This will also incorporate the switches in a fashion that is compact and easy to use.	8	54

Plans for coming 2 Weeks:

- **Confirm order with ETG so that we can get the parts as soon as possible and build the resistor bank.**
- **Rewiring the system, making sure every wire is correctly color coded and that they are all insulated so they do not become brittle.**
- **Soldering the wires to make sure that they are soldered correctly.**
- **Start on Circuit Schematic of the whole system.**
- **Improve on lab safety that includes making sure that there are no live wires, no live bolts, and that they circuit is properly grounded.**
- **Verify the wire ampacity for our current draw.**
- **Develop a physical ground for our circuit.**
- **Develop a wire management grid.**