

May1727

**Project Title: Stand-alone Hybrid Solar/Wind
Power Plant**

**Advisors: Dr. Venkataramana Ajarapu & Ankit
Singhal**

Team Member – Roles

Nathaniel Byrne - Group Leader

Brian Gronseth - Solar Tech. lead

Jeffrey Szostak - Wind Tech. Lead

Matthew Lee - Communications Lead

Mike Trischan - Key Concept Holder

Eric Cole - WebMaster

Past Week Accomplishments:

Solar team created an experiment bank and lab documents based off of some of the experiments for EE452 students to eventually perform.

Fixed the generator output waveforms by changing the base torque of the machine. Found the input and output power of the wind model. Wrote a lab walking students through why we and how we are using AC-DC-AC power conversions.

This week, the group worked on our Senior Design presentation which we're presenting 3-Mar-2017. We also made minor updates to the hardware and software as well as made minor updates to the Simulink files.

Looked into getting a new irradiance meter, obtained correct measurements from hardware, wrote modular lab experiments.

Took more measurements in solar equipment, researched irradiance measuring devices. Worked on testing wind turbine. Met with sister senior design group

The team as a whole made some labs for the lab bank. We are also working on getting a presentation for Amariucaí.

Individual Contributions:

| Name | Hours this week | Cumulative | Contribution |
|-----------------|-----------------|------------|--|
| Nathaniel Byrne | 3 | 58.5 | I created a lab module(0.5hour). I helped/attended the presentation with Ajarapu(1.5hours). I helped make the presentation for Amariucaí+misc. discussion(1hour). |
| Brian Gronseth | 2 | 64 | Created a hardware lab for students to take lab measurements of the equipment and to ultimately calculate the power losses of the system. |
| Jeffrey Szostak | 3 | 80.4 | I lead the wind team in regards to finding out the wind turbine's phase to phase resistance/inductance. Fixed the generator output waveforms by changing the base torque of the machine. Found the input and output power of the wind model. Wrote a lab walking students through why we and how we are using AC-DC-AC power conversions. & I made minor updates to the Wind hardware this week. Most of this week, I was out of state so I was unable to do a great deal of work. |
| Matthew Lee | 10 | 88.3 | I made minor updates to the Wind hardware this week. Most of this week, I was out of state so I was unable to do a great deal of work. |
| Mike Trischan | 3 | 77 | Worked on testing wind turbine |
| Eric Cole | 8 | 70 | Fixed the generator output waveforms by changing the base torque of the machine. Found the input and output power of the wind model. Wrote a lab walking students through why we and how we are using AC-DC-AC power conversions. |

Summary of Weekly Advisor Meeting:

Discussed the goals and purpose of the lab documents and how to make the software and hardware labs work together.

Went well.

I was unable to attend the advisor meeting. For most of the meeting, the Solar aspect of the project was discussed.

Still wants to see our simulations. Apparently everything we showed him last semester and everything we've shown him this semester still isn't good enough!

Discussed past accomplishments and future goals

We were able to gain some more insight on what the lab should look like.

Plan for Next Week:

Create interchangeable labs and find where the power losses are occurring in the solar hardware. Also looking into the power generation and consumption in the software system.

Add batteries to the wind simulation and measure power at all critical points within the simulation to see where power loss is happening.

Finish the Senior Design presentation as well as acquire the remaining wind turbine parameters. We now have the correct coupler which has been properly threaded so we are now able to run the tests.

Give the man what he wants.

Work on testing turbine, create lab docs, work on solar hardware and make sure we are familiar with interface

The Amariuca presentation, all of us, this Friday.

Pending Issues:

Na

Na

None.

Understanding what Ajarapu wants. I will be trying to go to office hours.

The wind turbine testing is proving to be a lot more work than anticipated. Between the theory (such as understanding dq axis) and methodology (such as energizing the dq axis to measure voltage and current to find inductance), Jeff and I have put in a serious amount of work with very little to show for. From our adviser's viewpoint, our task is to get parameters for the turbine. All we have to show, so far, is phase-phase resistance and inductance. We've put almost 30 hours of work into this, yet, to our adviser, it looks as if we did very little.

Na

Comments/Extended Discussion:

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|--|
| None |
| None |
| None |
| None |
| None |
| I feel we are on track and we are very close to the real completion of our objective. Of course this does not include some of the final documentation for this course. But Actually. I'm a little worried about how we are going to be judged by a panel of members from industry, when our project is geared as academia product and not a product of industry. If this resolution fails due to this mismatch of objectives between the 491/492 structure vs Ajjarpu , this project should then be indefinitely discontinued. |