

# EE 492 Weekly Report    MAY15-21    Week 15 (02/15/15-02/22/15)

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**Advisors:** Venkataramana Ajarapu

**Client:** Venkataramana Ajarapu

**Members (roles):**

- Daoxi Sun- *web master*
- Riley O'Connor- *team leader*
- Trevor Webb-*communication leader 1*
- Shihao Ni – *web master*
- Xiaokai Sun- *communication leader 2*
- Ben Ryan- *concept holder*

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**Project Title: Hybrid Solar Wind Generation System**

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## Weekly Summary

At the end of fall semester our team had successfully simulated both the solar and wind generation systems in Matlab Simulink. The challenge for this semester is now to implement our designs with equipment, and produce the desired results.

The wind team has made progress with building their circuit, but a mistake lead to a rectifier being burned and now they are working to make a new one.

The solar team has salvaged what they can from the batteries, and has enough capability to power some of their components individually for testing purposes, but cannot test the entire circuit until more batteries are obtained. These batteries will be ordered as soon as possible.

## Meeting notes:

### General Notes

- I. Present solar material and wind material to our advisor
- II. Focus on becoming familiar with equipment
- III. The solar team must test the functionality of the inverter, which may or may not be operational, and show that the system consisting of solar panels, batteries, and an MPPT can power a load.
- IV. The Wind team must do the research for testing inverter and build up buck converter while waiting for the new rectifier since the rectifier was damaged in the testing process.

## 10/2    Group Meeting with Advisors

**Duration:** 60 min

**Members Present:** 5

**Purpose and Goals:**

Present relevant background information over our project to both our advisor and our fellow group members. Both the solar and wind teams now have made some progress with hardware, and will present that progress while getting useful advice on how to proceed from our advisor.

**Achievements:**

Both groups obtained advice for moving into week two of working on this project.

The solar team has now identified all the outputs from the solar panels, but the power we were expecting was not being delivered to the load or the batteries in our system. After trouble shooting the circuit and testing the individual components, we found that the batteries left over from a previous project are dead and this is the root of our systems failure. New batteries will be ordered soon.

Now that the MPPT is being charged, there should be some power going to the load, but we aren't seeing that power during testing. We will experiment with some different loads to see what exactly is happening.

The wind team has already ordered the new rectifier for the project. Another device in the lab will be used for the buck converter IGBT component instead of buying a new one. Mount of the motor is being made. All three members need to do some introspection to avoid any actions that may cause damage to the equipment.

## Pending issues

1. Obtaining access to the power systems lab at our convenience
2. Altering existing systems to suite our needs
3. Successfully creating solar and wind generation individually
4. Combining both forms of generation to supply one load

## Plans for next week

1. Wind team: (Ben, Xiaokai, Shihao) will meet to design and implement their wind generation system
2. Solar team: (Riley, Daoxi, Trevor) will meet to continue troubleshooting the circuit, and test the inverter
3. Each team will also develop results that can be presented at our next meeting with our advisor and his grad student.

## Individual Contributions (this week)

Daoxi Sun: 5

- Attended weekly meeting with advisor
- Charge the battery to test the inverter
- Testing inverter with 12V fan while MMPT is on

Riley O'Connor: 6

- Prepared and tested the inverter
- Troubleshooting the solar system
- Attended weekly advisor meeting
- Looked up battery prices
- Charged batteries and measured output

Trevor Webb: 6

- Troubleshooting the solar system
- Attended weekly advisor meeting
- Updated information in the weekly report
- Prepared and tested the inverter
- Charged batteries and measured output

Shihao Ni: 6

- Attended weekly advisor meeting
- Testing the rectifier but failed
- Research for new rectifier and heat sink
- Upload the report to website
- Research for the inverter

Xiaokai Sun: 6

- Attended weekly advisor meeting
- Updated information in the weekly report
- Testing the rectifier but failed
- Research for new rectifier and heat sink

- Research for how to test the inverter and the data sheet
- Research for the IGBT for buck converter

Ben Ryan: 8

- Attempted to test the circuit with the rectifier, but burned it by accident
- Took the lab safety course for the shop in Coover
- Researched new rectifier parts and assembled a list for the advisor to order
- Ran Matlab tests for component identification
- Attended the weekly advisor meeting

## **Total contributions for the project**

Daoxi Sun (76 hr)

Riley O'Connor (73.5 hr)

Trevor Webb (71.5 hr)

Shihao Ni (89 hr)

Xiaokai Sun (85 hr)

Ben Ryan (97 hr)