

Group number: DEC1706

Project title: Renewable Energies Lab

Client &/Advisor: Prof. Ajarapu

Team Members/Role:

Leader: Travis Merrifield

Webmaster: Erika Korhonen

Communications: Noah Chartouni

Idea Holder: Josh Pacht & Steve Ukpan

- **Weekly Summary**

This weeks focus was on cost analysis of our train system as well as our simulink model. We discovered a potential issue with the current setup and made contact with the manufacturer of our MPPT. As a result we decided a new method of connecting our hardware together.

- **Past week accomplishments**

- Cost analysis, of the systems (solar train and home/rv)
- Cleaned up simulink model
- Proposed an improved system model setup
- Introduced a train model concept for lab experiences

- **Individual contributions**

<u>NAME</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Elika	6	72
Josh	6	64
Noah	7	56
Travis	4	67
Steve	7	61

- **Elika:** Calculated the feasibility and payback period of the currently installed solar power system as well as researched more train options. While doing the calculations, I found that the MPPT is the limiting factor in our system. I also discussed many aspects of the system and potential train layout with the other team members.
- **Josh:** Looked into an issue that we had discovered in the way the MPPT is connected to the load. More specifically discovered that it was not a good idea to have AC loads hooked up to the MPPT module. After contacting the company it was discovered that the load should be hooked directly to the battery due to high surge currents as the MPPT module has a 15 Amp limit. Assisted Travis with some of the simulink model. As we were having some issues with the inverter.
- **Noah:** Researched pricing for a load draw option. Came up with a design of said setup and calculated out costs.
- **Travis:** Worked on the model with Josh. Got most the general idea of the model complete. It just needs a little fine tuning.
- **Steve:** Worked with demonstration of train model for the lab. Brainstormed ideas for final presentation.

- **Plan for coming week**

- **Elika:** Start to analyze a model train in the PV system. I will bring my train and tracks to school and record a video clip to show for our final presentation. I will also find a way to add more solar panels to the existing setup.
- **Josh:** Will look more into the specifics of the train setup that we want to have. This means looking into the best possible model as well as finding the best way to accomplish our goal. Also to finish up the simulink model.
- **Noah:** Will look at how to use the AC load with a possibility of adding a motor to

better utilize the AC load portion of the project.

- **Travis:** Finish the model in simulink. Start the slides for the final presentation.
- **Steve:** Determine optimal solution for the inverter crisis in the simulink model.
Brainstorm solar train lab setup and procedure

- **Summary of weekly advisor meeting**

This week we showed professor Ajarapu our cost analysis of the RV and Train model. He believed that there would not be any issue providing money from the department for the train model. He would like us to come up with ideas on how we can make more stations of trains, rather than having one set. He approved when we recommended the wiring setup of the MPPT for future use. Overall it was a productive meeting. Erika mentioned that he had some model trains already in his possession. If we could make a small scale test of the system, it would be very beneficial for our presentation.