May1727

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

Advisors: Dr. Venkataramana Ajjarapu & 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

Executive Summary:

Focused primarily on getting our Simulink models debugged. Eric Cole and Matthew Lee (the de jure Simulink Knowledge Experts) and each met with Pranav, another TA now assigned to working with us on our Simulink models. In order to keep the group moving we have been attempting to keep everyone busy by giving them separate tasks to work on too. More work needs to be done however on working one-on-one with the TA's and other group members to make sure they are also learning how to use Simulink.

Past Week Accomplishments:

Improved the simulink model. Received approval for use of an anemometer to measure the wind speeds around Coover hall. Continued to research turbines that we could potentially buy.
Solar team began breaking down the solar array system to analyze each of our components and troubleshoot.
We still had team members busy with a few interviews if I remember right. I have not checked in on the Wind team lately as we had a partial meeting right after the last Work Survey. Solar Team has developed a much better understanding of the inverter.
We began communication with WESO about using their wind turbine for Senior Design. We also improved both our Solar and Wind Simulink models. Both are functioning and we're now at the point of adding more detail to both of them. We were also told our budget may be larger than initially expected, so we began researching different wind turbines in the new budget range.
Eric and Matt sought help from Pranav (another TA) with their simulink models. As of now the models "work" but are not giving exactly correct outputs. Jeff (and Mike I imagine) researched wind turbines and got approval for setting up the anemometer for data collection. Matt worked with Brian to debug the PV array and MPPT blocks somewhat on Tuesday. Matt worked with Nathan to debug the inverter block somewhat on Thursday. Everyone worked to finish the design proposal last Sunday.
Worked on simulations, were told to do more research on wind turbines with a more lenient price range, worked on design document, coordinated with WESO to utilize testing anemometer.

Individual Contributions:

Name	Hours this week	Cumulative	Contribution
Nathaniel Byrne	2	28.5	Matt and I looked in depth at the inverter design block in the Matlab simulation. We believe that It is not working correctly. More specifically we feel strongly that the transistor set being driven by the PWM waveform block simply are not switching. This will be discussed with the rest of the group.
Brian Gronseth	4	25	Helped break down the system with and without the mppt to make sure the steps were working properly
Jeffrey Szostak	3.9	40.4	I began WESO communication. I also researched new turbines in our new budget range as well as assisted with the wind turbine simulink model.
Matthew Lee	5	37.4	Worked with Brian to debug the PV array and MPPT blocks. (In Progress) Worked with Nathan to debug the inverter block. (In Progress) Pranav worked with Me to debug the Solar Model as a whole (In Progress)
Mike Trischan	5	38	Worked on simulations, were told to do more research on wind turbines with a more lenient price range, worked on design document, coordinated with WESO to utilize testing anemometer.
Eric Cole	4	33	Worked with TA on wind simulink model. Attempted to find an accurate way to represent a wind turbine and generator.

Summary of Weekly Advisor Meeting:

Absent
Solar team was given a list of things to get started for this coming week.
Our adviser may have mentioned the possibility of using or simulating a different set of solar panels, this I am not certain if true as I was at a EE465 lab.
It went well. We decided to establish a new meeting time which is still to be announced.
Met twice with Prof and TA's. Thursday meeting entailed working through some solar issues and setting up a plan for debugging. Tuesday's meeting focused on wind turbines and working out a plan to justify the cost of a turbine to improve student learning. Solar and wind teams both sent a representative to meet with Pranav outside of these meeting to get help with the Simulink models.
Told to do more research

Plan for Next Week:

Break down model and see which parts work and which don't and fix the problems.
Solar team is working on setting a date to meet with professor ajjarapu. We will continue to break down the solar array to troubleshoot, as well as move onto the hardware of the system to make sure that works.
Continue resolving simulations.
improve our Simulink models, set up the anemometer, continue communication with WESO, and establish a solid idea of the new wind turbine market pertaining to our new budget.
All: -fill out the When2Meet with ALL times that you are available (Not just when it's convenient). Dr. AJ wants all six of us to meet with him, Ankit and Pranav whenever possible and so if that means 7am on Friday he wants to know, so please fill out this webpage again so we can mutually agree on a meeting time. http://www.when2meet.com/?5413681-33chN -Key access was approved, please make sure your account says approved. https://keys.ece.iastate.edu/rooms/?page=accesses Solar: See if old panels work Research new solar panels for characteristics, cost, compatibility with existing units Justify cost of panels by showing how it would impact all student learning Continue to break down simulation, piece-by-piece to debug and test Wind: Research bigger turbines, pick one to finally buy Coordinate with WESO to see if we can use their turbine justify cost of turbine by showing how it would impact all student learning
Continue to research turbines that have better stats at added cost.

Pending Issues:

We could not find a good way to model a wind turbine in simulink.
Na
NA
Currently, the anemometer is being used for a class which means we have to delay using it for a few days. This isn't very problematic.
Starting to get upset that we can't get past these models. Considering implementing "mandatory overtime" for team as it's necessary to finish these models before thanksgiving break.
NA

Comments/Extended Discussion:

NA
I was out of town from Thursday through Saturday for an interview and missed out on some information on where we are as a group.
I feel that we are making somewhat good progress on resolving the simulation, although it is a lot slowing than what I wanted.
None
See above pertaining to "mandatory overtime." Would that be too harsh?
None