

## EE / CprE / SE 491 – sdmay18

### Group 42: “Power Systems Analysis in an Induction Type Wind Turbine”

September 10 – 16

**Client:**

Ron Zickefoose

**Faculty Advisors:**

James McCalley and Nick David

**Team Members:**

- Ben Zickefoose – Team Lead/Chief Engineer
- Melissa Flood – Power Engineer/Meeting Facilitator
- Tate Stottmann – Power Engineer/Test Engineer
- Matt Miner – Power and Controls Engineer/Meeting Scribe
- David Clark – Controls and Embedded Engineer/Report Manager

Weekly Summary

Bi-weekly meeting with our advisor Nick David. Mr. David will oversee the majority of our work. He suggested some direction we could take with both the wind turbine testing and paperwork management. It was also suggested to make some Simulink models of our circuit layout. Decided to make an additional meeting with Mr. David for next Monday 09/18. Prepared slides for Tuesday’s classroom presentations. Conducted a meeting with Lee Harker to discuss a possible class on an AutoCad program. He suggests Autodesk Inventor. We are trying to narrow down how many students want a class and when is the best time for Mr. Harker to conduct said class. Weekly meeting Friday 09/15. Meeting with Professor Robert Zickefoose to discuss the needs of the wind turbine testing and what to discuss with REC. Discussed meeting on site at the location of the wind turbine with advisor Nick David over the weekend.

Past Week Accomplishments

Productive meetings. Discussed and revised a test to determine the wind envelope for the turbine engine. Have a tentative class setup for Lee Harker to conduct a “How to” on Autodesk Inventor. Laid out the ground work for the need discussion with REC (Rural Electric Co-op).

Pending Issues

None at this time.

Individual Contributions

| Team Member    | Contribution  | Hours | Total Hours |
|----------------|---|-------|-------------|
| Ben Zickefoose | Discussion with Nick David. Met with Lee Harker for safety training. Meeting with Prof. Zickefoose. Conference call | 12    | 22          |

PROGRESS REPORT - 20170916

|                |   |     |      |
|----------------|---|-----|------|
|                | with Bob Zickefoose on general turbine layout and operation. Afterward we had a team meeting to go over what we learned and plan out our tasks. Shopping around for and purchasing a tube container to house the physical blueprint drawing, take the site map and foundation drawing to Copyworks across from campus to scan them so we can have a digital copy of them to be uploaded. Participated with Nick David in a site visit, showing him around, explaining the different existing components, and discussing different possible directions to take it in the future. |     |      |
| Melissa Flood  | Discussion with Nick David. Meeting with Prof. Zickefoose. Researched what 'islanding' meant and basics about induction motors. Uploaded old information about simulating induction motors onto the shared google drive   | 4   | 6    |
| Tate Stottmann | Discussion with Nick David. Continue research. First look at NEC standards regarding low power wind turbines. Research into popular brands of commercial turbines and what their power standards and ratings are.   | 7.5 | 13.5 |
| Matt Miner     | Discussion with Nick David. Meeting with Prof. Zickefoose. Looked up wind turbines and how they work. Got some basic information. About how there is a range of speed that works well.  | 2   | 6    |
| David Clark    | Discussion with Lee Harker for a discussion on AutoCad class and safety training. Meeting with Prof. Zickefoose. Working on the redesign of the existing microcontroller system. The existing system uses a proprietary programming language, would like to use a system that uses a more commonly used language such as C or Java.   | 6   | 15   |

Comments and Extended Discussion

Students need additional safety training to access the "Maintenance Shop" in Coover. Lee Harker conducts the safety training.

Plan for Coming Week

Continue research. Meeting with advisor Nick David on Monday 09/18. Try narrowing down a specific time for Lee Harker to conduct his class on Autodesk Inventor. Additional meeting in the wind lab to discuss the testing needs for the motor.

Summary of Advisor Meeting

Meeting scheduled for Monday 09/18.