

EE/CprE/SE 492 BIWEEKLY REPORT 3 SDDec21-10

Iowa State BESS (Lithium-Ion Battery Energy Storage System)

Sept 27th – Oct 11th

Client: Burns & McDonnell (Point of Contact: Chris Ruckman)

Faculty Advisor: Dr. Venkataramana Ajjarapu

Team Members/Role:

Aisha Alzaabi- Client Communicatory

Hussein Abbakar- Load flow analysis and one-line diagram

Gregory Bizoff - Webmaster and Assistant Circuits Specialist

Matthew Pfeiffer - CAD Design Specialist, Site Layout Engineer, and Project Manager

Chase Stahl - Secondary CAD Designer

Julia Zhang - Circuits Specialist and Assistant Webmaster

Biweekly Summary

- *Weekly client meetings held on Thursdays from 3:30 - 4:30*
 - *9/30/2021 meeting:*
 - *We discussed ETAP and worked with our client to get familiar with the software and tried to find solutions and a way to access the software.*
 - *10/07/2021 meeting:*
 - *We discussed cable sizing with our client. We also discussed the pending issues that we are facing and tried to find solutions in order to complete the project.*
- *12-week design schedule to learn materials and present deliverables that include but are not limited to grounding diagrams, load flow analysis, short circuit analysis, and circuit sizing and scheduling.*
- *Review faculty panel year-end presentation (Spring 21 semester) and touch base on where the last semester ended.*

Accomplishments

- Contacted ETAP representative for a fully-functional version of ETAP software (needed for load flow and short circuit analysis)
- We did our first PIRM Review and got feedback from the other groups
- Developed approaches to create a grounding diagram and a load flow for the ISU BESS
- During our client meeting, we discussed Cable sizing and how to approach it.

Pending

- Site layout re-evaluation
 - We kept our site more general to provide more flexibility to our project
- Grounding Diagram - Matt
 - Develop and overlay grounding materials on initial site layout design per NEC 2020 code
- BESS Load Flow Study - Hussein/ Julia
 - We are facing challenges of getting a license of ETAP
 - Submitted the requirements ETAP asked us to do and waiting for their response
 - If we don't get this challenge solved we might need to look for alternatives otherwise we will struggle to finish our project
- Cable Sizing - Chase
 - Still need to work out a free way to obtain a fully functional version of ETAP. Response from the representative is asking for too much from the team. The following was the email received:” Here are the requirements in order to qualify:
 - “A formal letter on how you will be using ETAP at your University on a University Letterhead
 - Computer lab to set up the Power Lab license
 - Course syllabus with power engineering courses
 - Introduction to your facilities department (if applicable)
 - Recognition on your university website or Engineering department”

Individual contributions

NAME	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative Spring</u>
Aisha Alzaabi	Site Layout review	2	6

Hussein Abbakar	BESS Load flow study	3	8
Gregory Bizoff	Site Layout review	2	6
Matthew Pfeiffer	Grounding plan	3	9
Chase Stahl	Site Layout review	2	6
Julia Zhang	BESS Load flow study	3	8

Plans for the upcoming week

- Grounding Plan - Matt
 - Overlay Grounding wire, grounding rod, and connection points to site layout
 - Refresh and learn NEC 2020 grounding code to ensure everything is up to standards and ensure safety.
- Site Layout review - All
 - Review site layout for a new placement
 - Determine if the site layout needs to be reworked entirely or just moved to a new location
- BESS Load Flow Study - Hussein/ Julia
 - Getting the for ETAP
- BESS Connection Diagrams - All
- BESS Cables/Sizing/Cable Schedules - Chase