



Team Position	<i>Electrical System Design Member</i>
Project Lead	<i>Kevin Xie (kevin.xie@stonybrook.edu)</i>

Position Summary

The purpose of this team position is to integrate sensors/parts to work under one system. The system should be capable of measuring physical variables such as boat RPM, vehicle speed, motor temperatures, battery voltage, etc. Variables will then be displayed onboard through LCD screens. Ideally, data should be logged from all sensors so that we can study how the variables change over a period of time. This will be critical for benchmarking and continuous improvement purposes. Students interested in test engineering, electrical engineering, and system engineering will benefit from these projects. If you would like to make your own electrical project for the boat, please feel free to let the project lead know.

Duties and responsibilities

- You will need to know/learn how to troubleshoot electrical circuits and create programs for this project position

Preferred Qualifications

Qualifications include:

- Basic circuit building knowledge
- Can draw schematics on PSPICE
- Must be willing to learn and research

Available Projects

DC Booster

- Difficulty: Advanced
- Design a DC-DC booster that will allow the motor to run at a higher voltage than the batteries can supply

RPM meter

- Difficulty: Intermediate
- Design a sensor that tracks the rotations per minute of a spinning shaft and output the value to an LCD screen on the dashboard

Solar Panel Data Logging

- Difficulty: Basic – Intermediate
- The purpose of this project is to collect data on the panels in the shop. The panels were donated to the team years ago and we have no concrete data about their voltage and current output.
- You will learn how to characterize solar panels

Electronic Enclosure

- Difficulty: Basic
- Design an enclosure to fit the entire electrical power system. This includes the three 12V batteries, solar charger, motor controller, supplemental batteries, etc. This involves finding the optimal layout for components.
- Design a cooling system so overheating will not occur

Pictures

