

# **EE / CprE / SE 492 – sdmay20-10**

## **Power Scraping Module**

### **Week 4 Report**

*2/28/2020 -3/12/2020*

*Client: Honeywell FM&T*

*Faculty Advisor: Gary Tuttle*

### **Team Members/Role:**

Jordan Fox — Chief Engineer

Xiangyu Cao — Design Engineer

Andesen Ande — Design Engineer

Ahmed Salem — Test Engineer

Ben Yoko — Test Engineer

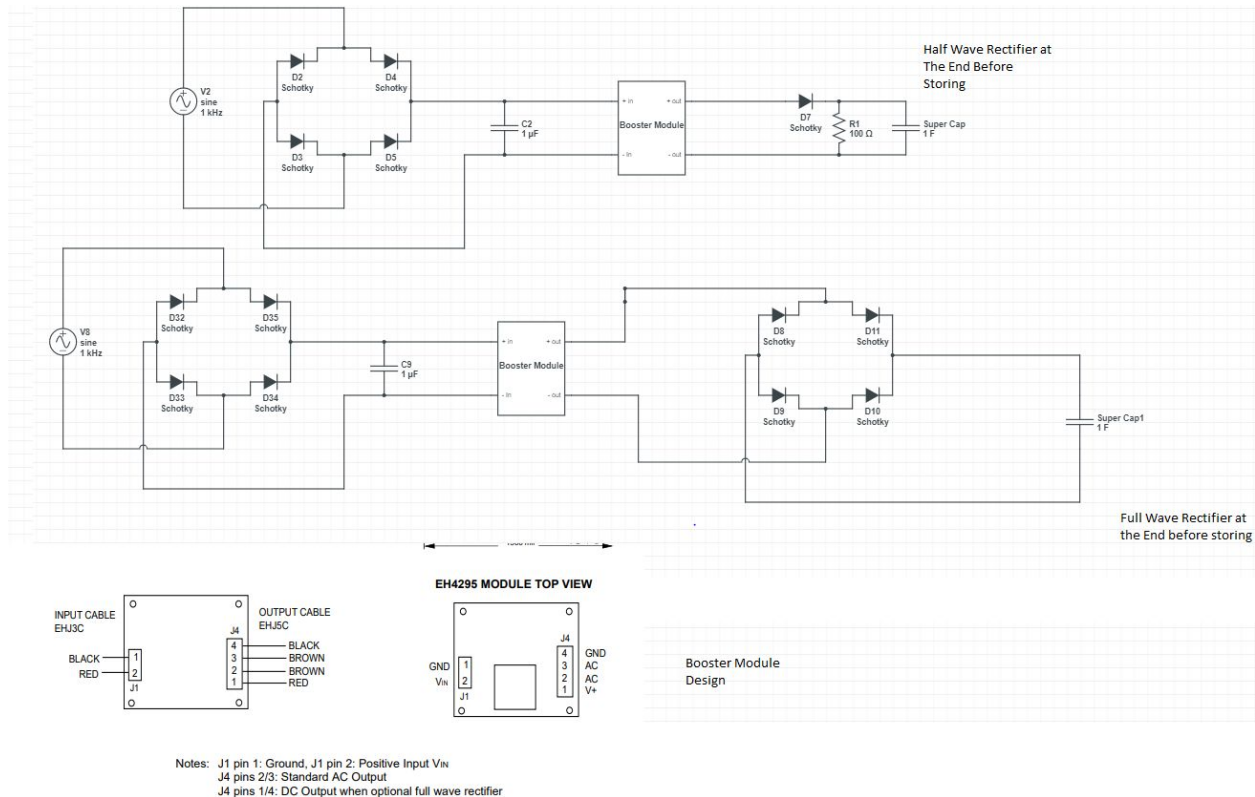
Shahzaib Shahid — *Team Leader*

### **Weekly Summary**

The objective these past two weeks was to get a full understanding of our booster output and find ways to improve the charging rate of the supercapacitor. We tried a couple of different configurations and are thinking of trying one more. Unfortunately we are facing issues with how much the capacitors charge to and are continuing to meet with our professor to understand these issues. After these setbacks we are currently unsure if we will be able to create a PCB.

# Past Week Accomplishments

## System Designs



The figure above shows the two different configurations that we tested these past weeks. The main difference is the later stage being either half-wave rectifier or full-wave rectifier. After testing we determined that the improvement in speed with the half-wave rectifier was minimal. The main update we have right now is that the supercapacitor is 0.3 V and our goal is 3 V. After a lot of testing we suspect that the signal generator cannot provide enough current to go above .3 V. However we need a little bit better understanding of how the booster module works exactly in order to make conclusions. We plan on either contacting the company that designed the module or taking the module apart. This is necessary because the documentation doesn't have a sufficient technical overview.

## Individual Contributions

<u>Name</u>	<u>Estimated Hours this week</u>	<u>Estimated Hours Cumulative</u>
Jordan Fox	4.5	17
Xiangyu Cao	6	20.5
Andesen Ande	5	17.5
Ahmed Salem	3.5	16
Ben Yoko	6	20.5
Shahzaib Shahid	6	20.5

These times reported are estimates based on approximately 3 hours of group work done each week in addition to work done alone. The time spent is over the course of two weeks in which meetings with our advisor and client are not factored in. Our project plan showing our work schedule can be made available upon request.

## Plans for the upcoming week

1. Testing- all team members
  - a. Determine why the supercapacitor won't charge above .3 V
  - b. Get a better understanding of the booster module. Test different frequencies and loads.
2. If the above objectives are met continue integration testing -all team members
  - a. Determine the charge rate.
  - b. Determine the total time it takes to charge the capacitor to 3.3 V.
3. Meeting with client - all team members
  - a. Will discuss our technical issues and ways to solve
4. Contact booster module design company - Ahmed

## Summary of weekly advisor meeting

We had a detailed meeting with our advisor this week and conducted testing in his office. We showed him our setup. We are not completely confident in the testing results and concluded we all need to learn more about this booster module's behavior. We will continue testing and hopefully find out more from contacting the company that designed it. Taking it apart will be tricky given the amount available on digikey and the price per module being relatively expensive. At this moment in time our project is unable to move forward unless we figure out why our system will not store charge above 0.3 V. Every other objective is simply to optimize performance but getting an output of 3 V is critical in having a viable system.