

Team: sdmay22-01

Project Title: Hybrid solar/battery for electronic derailleur

Date: October 24, 2021

Members:

- Aydin Bashich - Resistance to vibrations and overlayer
- Connor Davison - Overcharge protection for battery
- Elba Estarellas - Mechanical Constraints: Resistance to vibrations and PV cells
- Mohamed Mohammad - Overcharge protection for battery
- Seth Pierre - Mechanical Constraints: Waterproof and Attachment
- Rachel Vallier - Mechanical Constraints: Temperature and Attachment
- Jack Waskow - Part Selection & Physical Design

What we've accomplished in the past week/what we've been researching

- Aydin Bashich - I have found an article that goes over how to test the robustness of a product, and researched potential options for an overlay material.
- Connor Davison - Researched different methods or designs for a charging and protection circuit
- Elba Estarellas - I have been researching how to test the resistance of vibrations and how it should be applied to our model.
- Mohamed Mohammad - I have been researching. I found that we can use the Zener diodes as overcharging protection for the battery. The Zener diode will detect the cut-off terminal voltage of the battery when the battery reaches the maximum peak or 100 percent charging.
- Seth Pierre - I have been researching how to test our final product against the IP58 guidelines. I will work with the team when building the assembly to pick create a weather sealed product.

-Rachel Vallier - I have been looking into my constraint, which is the temperature constraint. I have found out about the temperature coefficient within solar panels which affects their efficiency.

-Jack Waskow - Researched options for solar cells and batteries that fit within the specifications for the project. Found a good option for our battery, need to come up with a solution to step up solar panel voltage.

What we're planning to do in the coming week

-Aydin Bashich - I plan to read the article and continue researching.

-Connor Davison - Continue researching overcharge protection circuits

-Elba Estarellas - Need to do more research on the size of the PV cell, (width and length), for expected output.

-Mohamed Mohammad - Continue researching on the Zener diode as well.

-Seth Pierre - I plan to research more into testing and what would work the best for our project.

-Rachel Vallier - I plan to look deeper into the temperature coefficient and compare different solar panels since each has a different coefficient.

-Jack Waskow - The client recommended DC-DC converters as a way to step up our solar panel voltage and drop excess current. I will need to look into ways to use these for our design and find a supplier for the parts.

Issues we had in the previous week

-Aydin Bashich - I had trouble finding the article.

-Connor Davison - I missed the scheduled meeting on Monday due to other commitments. I had to read the notes from the meeting and talk with my team members to get caught up.

-Elba Estarellas - I don't have any issues.

-Mohamed Mohammad - I have not faced any issues.

-Seth Pierre - I currently don't have any issues.

-Rachel Vallier - I have not had any issues.

-Jack Waskow - Locating parts sold by larger suppliers (digikey, octopart, etc) was not yielding results, so the parts I was able to find that fit our project may not be the best options, as they come from less reputable sites.