SULTAN ALHAZAWBAR **GABRIEL MARTIN**

EE Solar Flyers

Weekly Updates Sept. 2nd - Dec. 9th, 2022

Project Client: David Willy
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Project Advisors: Robert Severinghaus, Ph. D & Alexander Dahlmann GTA
Project Partners: ME 476C Team

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Entries:

Week 1 (Sept 2nd)

- This week was a recollection week for our team. After the long summer, the EE and ME teams met up to discuss goals and the next steps for the new semester.

Week 2 (Sept 9th)

- This week, we began to review a list of materials that we would need to assemble our first prototype. We also drafted a recap presentation of our work in the EE476C course shell.

Week 3 (Sept 16th)

- This week, we purchased the materials that we would need to assemble our first prototype. Sultan was also tasked with finding a lighter charge controller to place inside the plane.

Week 4 (Sept 23rd)

- This week, we awaited the arrival of our materials and researched possible faults with our design and their respective solutions. We also monitored the construction of the mechanical engineering team's first iteration of the UAV.

Week 5 (Sept 30th)

- This week we received the materials needed to build our prototype. We also observed the Mechanical engineering teams' 1st iteration unsuccessfully fly, and get destroyed in the process.

Week 6 (Oct 7th)

- This week, we began soldering solar cells together and successfully soldered an array. Unfortunately, we found a considerable voltage loss from our array. The mechanical engineering team began to build their 2nd iteration of the UAV.

Week 7 (Oct 14th)

- This week, we gave a progress presentation to our advisors. We got feedback on alternative approaches to avoid the voltage drop in our array. We also ordered and received a PWM charge controller.

Week 8 (Oct 21st)

- This week, we soldered a few panels together, and made the decision to order another set of solar cells based on their durability. We also observed the Mechanical engineering teams' 2nd iteration unsuccessfully fly. It was too heavy.

Week 9 (Oct 28th)

- This week we gave individual presentations and peer evaluations and updated our website as well. The mechanical engineering team began to build their 3rd iteration of the UAV.

Week 10 (Nov 4th)

- This week we gave another update presentation on our progress. We also took to a more careful soldering approach, as we tried to build another array based on the mechanical engineering team's new iteration, and readjusted our solar system.

Week 11 (Nov 11th)

- This week we discovered that the main reason for our voltage drop was the resistivity in our tabbing wire, the wire used to array connection. We have begun to research solutions to this matter. We also made another website update.

Week 12 (Nov 18th)

- This week we soldered the full array. The output we received was well within the output we expected. We also received the charge controller and connected it to our array and got a reading.

Week 13 (Nov 25th)

- Our team is currently waiting on our new charge controller, so we may continue with our attempts to charge a battery. A concern that we have is if we can actually charge the battery that the ME has given us, which is rated at 24V. A general rule is that your PV system voltage should be larger than the battery's nominal voltage. However, the charge controller shows that the charging voltage is 30V, despite the PV input being about 13V. So that should account for that particular requirement. Monday is our full integration date.

Week 14 (Dec 2nd)

- This week we fully integrated the plane. We will be presenting our project at the UGRADS Symposium.

Week 15 (Dec 9th)

- This week we finished up all deliverable work and will be concluding our project.