Craft Academy Solar Electric Racing: The Building of a Solar Car

Mentors: Dr. Rachel Rogers, Dr. Joyce Stubbs*, Dr. Steve Stubbs**

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Background

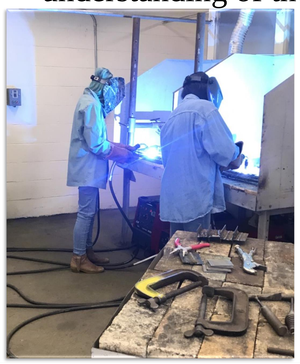
The Solar Car Challenge is a nationwide program in which high school and college students design and build a car powered by solar panels, competing at Texas Motor Speedway or in a cross-country race. In the Spring of 2021, The Craft Academy for Excellence in Science and Mathematics founded a Solar Car Team called Craft Academy Solar Electric Racing (CASER).

Introduction

The CASER team is entirely student-led, with the support of project mentors Dr. Rachel Rogers, Dr. Steve Stubbs, and Dr. Joyce Stubbs. Former CASER teams have passed this project down to a new team each year, allowing for modifications to past designs. It is the job of the team members to research what parts are needed, what quantities and sizes we need, and how they will fit into the Solar Car.

Methodology

Using the engineering design process, the CASER team was able to gain a greater understanding of the principles behind aerodynamics, friction, and power. The team is improving upon previous CASER team designs, such as creating a more aerodynamic structure, redesigning the frame, and adjusting the axle. The team had to make complex decisions, such as deciding between building the car with three wheels or four wheels.



Results

The CASER team ultimately chose three wheels due to a decrease in friction, a more aerodynamic structure, and a reduction in the car weight. The team is currently in the process of finalizing a finished design for the car frame so that they can begin the welding process. All CASER team members have learned how to weld properly and safely.

Conclusion

The team plans to finalize a frame design and begin the welding process by the end of the year. By next year, CASER would like all mechanical parts of the car to be in place and to begin working on electrical components. Additionally, they will be passing the CASER team down to a new group of students so that this new group may improve upon previous designs.

Implications

Throughout this year, the CASER team has learned invaluable skills they can use later in their lives and careers, such as welding, teamwork, and problem-solving. They will continue to use and apply these skills to other aspects of their lives. This project has taught all team members more about the impacts of renewable energy and how renewable energy is affecting our world today. More information about Solar Car Challenge can be found at www.solarcarchallenge.org