Solar Car

Paving the Road for Sustainable Transportation

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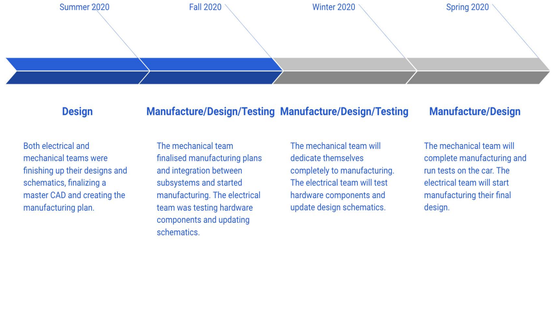
BACKGROUND

The American Solar Challenge (ASC) is a 2000 mile endurance race across America. The Formula Sun Grand Prix (FSGP) is a qualifier race that occurs every year, where teams must travel 330 km in one day. The SolEaters, formed in November of 2016, will be the first team at UC Irvine to design, build, and compete with a car completely powered by the sun in this trek across America.

GOALS & OBJECTIVES

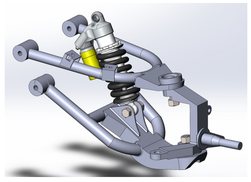
The SolEaters must design, construct, and raise funds for a fully powered solar racecar that surmounts the scrutineering process for FSGP in June of 2022. In our journey to competing in the Grand Prix, we hope to build a solid foundation for a solar racing team that will continue to engineer sustainable vehicles for many years to come.



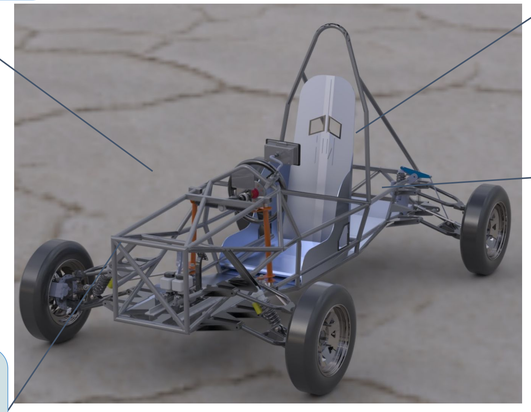
ZotSun: UCI's First Solar Racecar

Recycled Delta Chassis
Chassis, steering system, and roll cage recycled and modified

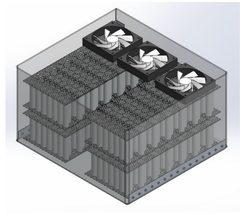
Motor
Operating a 96V, the vehicle's DC brushless motor will produce 2hp



Double A-arm Suspension
Both the front and rear suspension will use OTS Honda ATV components



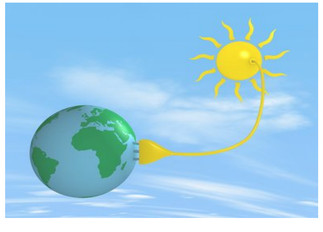
Battery Pack
448 18650 Lithium Ion Cells storing about 4.5kWh of energy



At 125kg, ZotSun will be UC Irvine's first ever fully solar powered car. ZotSun features a double A-arm suspension system and a chromoly tubular spaceframe chassis. The fiberglass aerodynamic body is designed to have 20N drag at 35 mph.

The electrical system will be powered by 900 W of energy from the sun - less than a typical household hair dryer! By using highly efficient and highly specialized components, we will be approximately 85% efficient from our solar array to the motors.

THE BIGGER PICTURE



The most abundant renewable energy source is the sun. The SolEaters have a passion for renewable energy and the impact its use in place of fossil fuels would have on the Earth. This project isn't just about competing in the challenge, but also making the leap to a cleaner future by engaging in the design and innovation of solar technology and becoming leaders in the renewable energy industry.

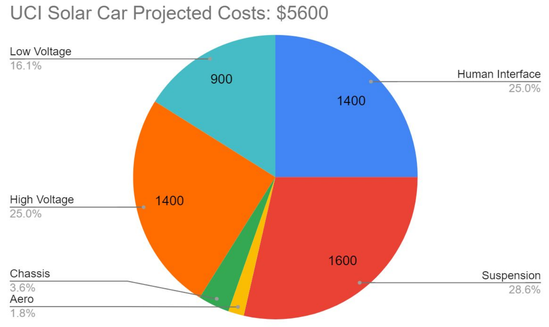
REQUIREMENTS

ZotSun is designed to meet the 2021 rev A ASC Regulations.

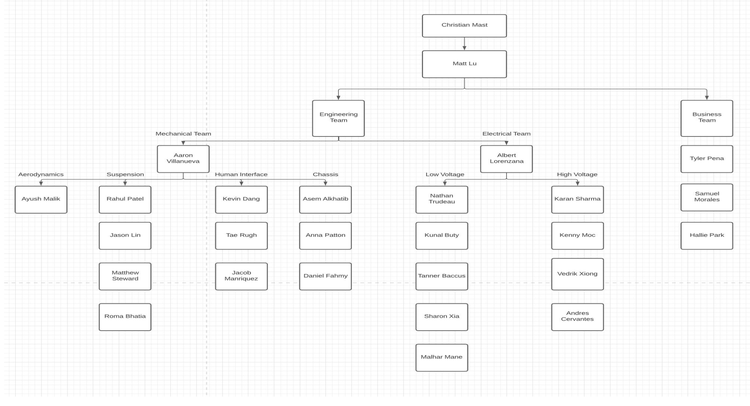
The mechanical components of ZotSun must be able to withstand 5G loads from all directions and survive a 1G turn, 1G braking, and 2G bump applied at the contact patch.

The electrical system must be powered by 4 m^2 of solar cells and 20 kg of batteries, while being completely safe from all electrical and battery failures.

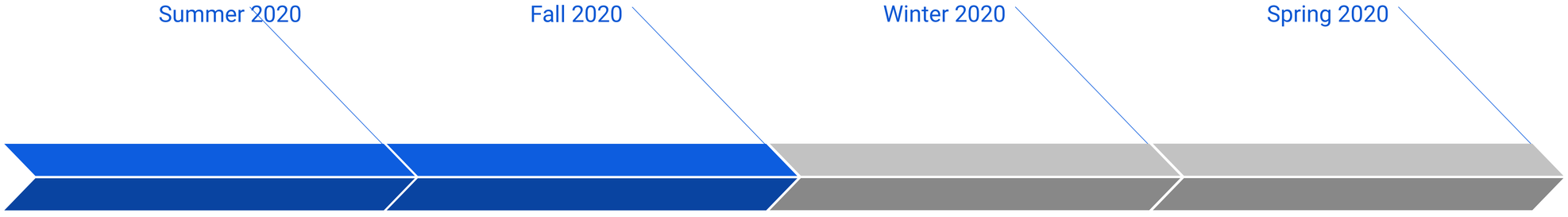
BUDGET



MEET THE TEAM



Timeline (When finished, we can copy to the poster)



Design

Both electrical and mechanical teams were finishing up their designs and schematics, finalizing a master CAD and creating the manufacturing plan.

Manufacture/Design/Testing

The mechanical team finalised manufacturing plans and integration between subsystems and started manufacturing. The electrical team was testing hardware components and updating schematics.

Manufacture/Design/Testing

The mechanical team will dedicate themselves completely to manufacturing. The electrical team will test hardware components and update design schematics.

Manufacture/Design

The mechanical team will complete manufacturing and run tests on the car. The electrical team will start manufacturing their final design.