

# MCMMASTER SOLAR CAR PROJECT



2023 FALL SOLAR CAR SRA  
PRESENTATION



# ABOUT MCMASTER SOLAR CAR PROJECT

**MAC** SOLAR CAR  
PROJECT

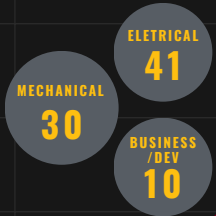
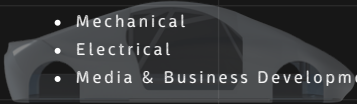
- We build and race solar cars
- Represent McMaster at international solar racing competitions
- Provide technical experience for students within McMaster through recruitment workshops and regular training
- Promote Use of Solar energy
- Avenue for students to develop leadership & teamwork experience



# OUR TEAM

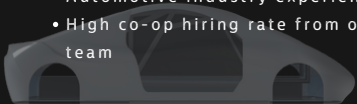
Currently 81 members divided into 3 main teams:

- Mechanical
- Electrical
- Media & Business Development



# WHAT STUDENTS GET FROM SOLAR CAR

- Leadership experience
- Framework Problem Solving
- Automotive industry experience
- High co-op hiring rate from our team



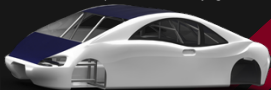
## 2023 SUMMER PLACEMENTS

# OUR CURRENT VEHICLE

## WHAT WE ARE PROUD OF

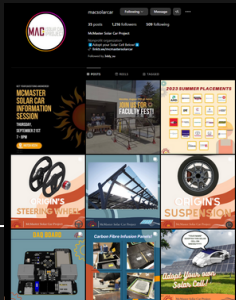
- The Origin is McMaster's first multi-passenger solar-powered vehicle
- Weighing around 500 kg and made entirely of 4130 steel, the vehicle chassis is designed to provide comparable strength at a fraction of the weight
- The Origin's electrical system is fully made in-house to help with costs and provide experience to our members.
- SunPower (TM) C60 solar cells are integrated with maximum power point tracking technology to draw maximal solar power at any given time



# OUTREACH AND RECRUITMENT

- Instagram followers: 1200+ (76% follower count increase since Oct 2022)
- Instagram postings on progress updates
- 2023 Summer + Fall Recruitment
  - 404 applications
- Info sessions
- 16 Sponsors Obtained

1 Professor Advisor (Prof. Rafael Kleiman - Director, Laboratory for Advanced Photovoltaic Research)



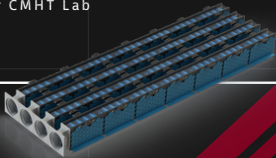
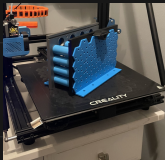
# BATTERY

Made with 972 21700 Samsung 50E cells

17.7 kWh Battery Capacity

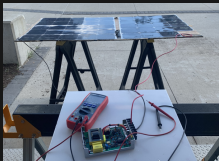
With an active air cooling system and modular design made completely in-house

In active manufacturing in collaboration with the McMaster Automotive Research Center CMHT Lab



# SOLAR CELLS

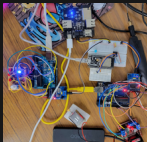
- Curved panel prototype and refinement of the installation procedure.
- Finished the design of a power measurement PCB to aid the MPPT solar cell controller
- MPPT Wiring, installation and testing





# MOTOR AND FIRMWARE

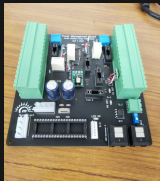
- Wiring and Installation of Motor and Controller Unit
- Design of Pedal Control Board
- Motor Characteristic Attainment
- CAN BUS communications system development
- Firmware generation for each circuit board



# OUR OTHER CIRCUITS

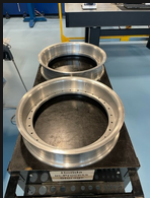
The remaining electrical teams each in charge of their own systems have been diligently working on their projects and have been able to produce their boards

- Power Management
- Low Voltage
- Data Acquisition
- Precharge



# SUSPENSION TEAM

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Our mechanical team has successfully manufactured our rims, finalized the design, and conducted rigorous FEA testing for our full front and back suspension system. Currently, we are making steps towards manufacturing suspension components so we can start assembly.



# AEROSHELL & CHASSIS TEAM **MAC** SOLAR CAR PROJECT

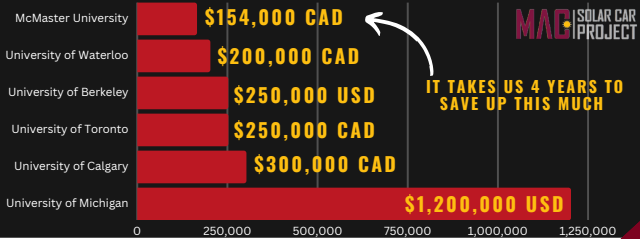


We're currently perfecting the resin infusion technique for our carbon fiber aeroshell.

We've been working on testing and production of the Front and Back Crash Boxes to ensure safety for our driver.

We're in the process of installing seats, along with the steering and speed control systems.

# TOTAL VEHICLE BUDGETS COMPARED



# 2024 RACE

WHAT WE PLAN TO USE OUR MONEY FOR



2024 Formula Sun Grand Prix and North American Solar Challenge



**THANK YOU**



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PROJECT