

1st July, 2024

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DAL SOLAR CAR NEWSLETTER

RACE EDITION



WHAT'S INSIDE:

FSGP 2024 Preparations

**MECHANICAL
REPORT: New
roll cage and
wheels!**

**ELECTRICAL
REPORT: Battery
charger & motor
controller!**



**MEET THE TEAM!
(pg. 3)**

RECAP OF FSGP 2023



SEEN ABOVE: The DAL Solar car team at race day after earning a 3rd place starting position at FSGP last year.

LOOKING BACK...

Last year the Electrek Formula Sun Grand Prix (FSGP) was held on a 2.5 mile road course at Heartland Motorsports Park in Topeka, Kansas.

After the scrutineering phase, teams drove for 8 hours per day and had additional solar charging time available in the morning and evening.

This grueling event is the ultimate test of engineering design, grit, and teamwork!



SEEN ABOVE: The FSGP 2023 race team posing with NOVA after completing dynamic testing.

SMALL, BUT MIGHTY!

Despite fielding the smallest team in last year's event...

After 3-days of racing, NOVA successfully completed 135 laps with a fastest lap of 4:26!

DAL Solar Car placed 3rd in scrutineering and 4th place in the SOV class by the end of the event!

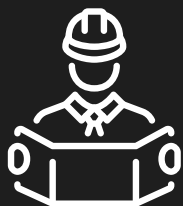
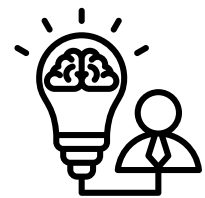
MEET THE TEAM!



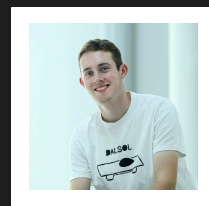
SEEN ABOVE: The DAL Solar car team outside the Heavy Prototype Lab at Sexton campus this past March.



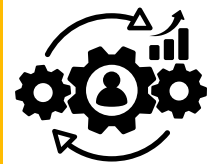
NAME: Gina Park, Electrical (Grad)
POSITION: Dal Solar Car Founder
BIO: Gina founded Dalhousie Solar Car in 2021 and led the team to successfully race at the 2023 Formula Sun Grand Prix!



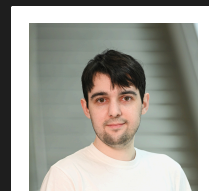
NAME: Noah Bugden, Mechanical (2nd Year)
POSITION: Solar Car Team Lead
BIO: Noah has extensive experience with all major systems and can always be found in the Heavy Prototyping Lab working on the car!



NAME: Michelle Yee, Electrical (Grad)
POSITION: Operations Manager
BIO: Michelle manages the finances, funding applications, and events just to name a few. She is also a master of remembering everyone's birthday!



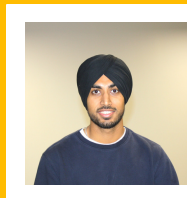
NAME: Owen Stuttard, Electrical (Grad)
POSITION: Electrical Lead
BIO: Owen led the battery pack design and testing and this cycle orchestrated the HV box re-wiring, array optimization, PCB's controls, and much more!



MEET THE TEAM II!



NAME: Grant McCormack, Mechanical (3rd Year)
POSITION: Mechanical Co-Lead
BIO: Grant's specialization is in FEA and CAD modeling carbon-fiber composite aerodynamic shells. Looking for Grant? Check the Sexton Library!



NAME: Arsh Singh, Mechanical (4th Year)
POSITION: Mechanical Co-Lead
BIO: Arsh is responsible for mechanical VDR submissions, and component design, with a focus on FEA simulations and CAD modeling.



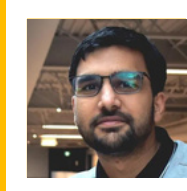
NAME: Kate Arsenault, Electrical (4th Year)
POSITION: Fundraising Lead & Electrical Support
BIO: Kate manages all team fundraising activities and this year was instrumental in integrating the new battery charger. She is also a pro beekeeper!



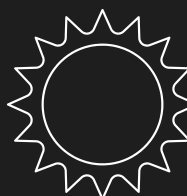
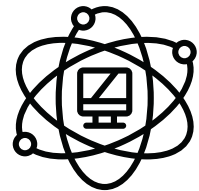
NAME: August Holder, Environmental (2nd Year)
POSITION: Social Media & Branding Director
BIO: August runs all our social media platforms and keeps team spirits high by showcasing creativity through her brilliant branding ideas.



NAME: Joelle Korkomaz, Mechanical (2nd Year)
POSITION: Mechanical Support
BIO: Joelle's recent work has included designing braking system components, re-wiring the solar array, and providing logistical support for FSGP.



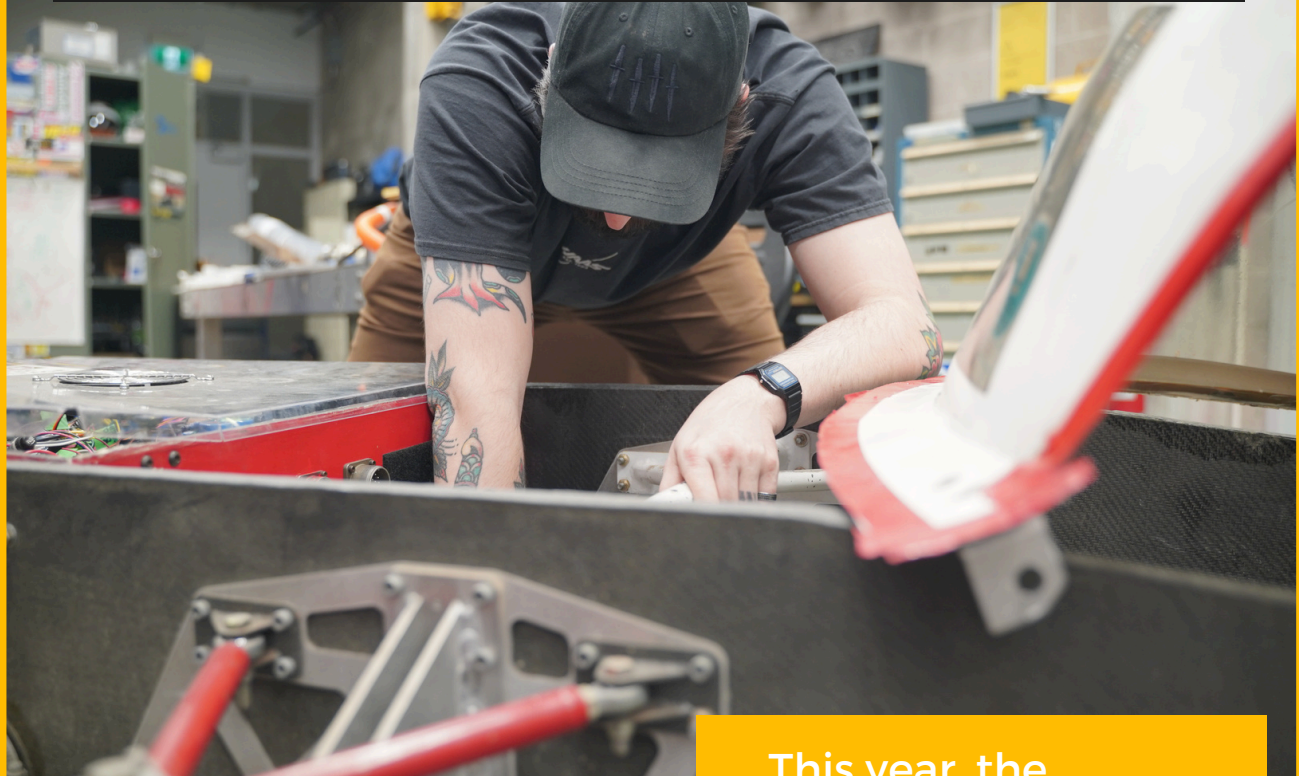
NAME: Sarvang Dave, Master of Applied CS (Grad)
POSITION: Web Master
BIO: Sarvang is responsible for designing, managing, and maintaining our web presence. He always ensures the team is kept up-to-date!



NAME: Photovoltaic Phil (Perpetual)
POSITION: Team Mascot
BIO: When Phil isn't busy supervising the team, he enjoys providing everyone with free, clean energy, and getting caught in the rain!



FSGP 2024 PREPARATIONS



SEEN ABOVE: Mechanical Team Member - Justin Thornhill, working on seat mounts in the driver compartment.

The American Solar Challenge (ASC) and the Formula Sun Grand Prix (FSGP) originated in 1990 with Sunrayce USA, the start of organized solar car “raycing” in the United States. Sunrayce was born as a result of GM’s Sunraycer solar car winning the first World Solar Challenge.

Today, ASC & FSGP has continued to attract teams from leading institutions all across North America including MIT, Berkley, and Dalhousie!

This year, the Electrek Formula Sun Grand Prix 2024 and scrutineering will take place at the National Corvette Museum Motorsports Park in Bowling Green, Kentucky using the 3.15 mile full course.

The event begins on **July 12th!**



ASC & FSGP
Collegiate solar car competition

FSGP 2024 PREPARATIONS II

TEAM	CLASS	1	2	3	4	5	6	7	8	9
1 - Purdue	SOV	G	G	Y	G	Y	Y	G	G	G
2 - Michigan	SOV	G	G	G	G	G	G	G	G	Y
3 - Kentucky	SOV	G	G	G	G	G		G	G	G
4 - MIT	MOV	G	G	R	G	G	G	G	G	G
5 - Florida	SOV	G	R	R	G	G	R	G	G	G
6 - Berkeley	SOV	G	G	G	G	G		G	G	Y
7 - Dalhousie	SOV	G	G	G	G	G		G	G	G
8 - UT Austin	SOV	G	G	G	G	Y		R	R	R
9 - Iowa State	MOV	G	G	G	G	G	G	G	G	G
12 - Texas A&M	SOV	G	G	B	G	G	G	G	G	R

GOOD TO GO: The Dalhousie Solar team achieved all green on the FSGP status board for the event this summer!

DESIGN CYCLE AT A GLANCE

There are several steps required for teams to complete before they can successfully be admitted to participate at FSGP each year including:

1. Registration fee payment.
2. Mechanical & Electrical PVDR submission.
3. Mechanical, Electrical, Battery, Battery Protection, and Solar Cell report VDR submissions.
4. Design & Build reviews.

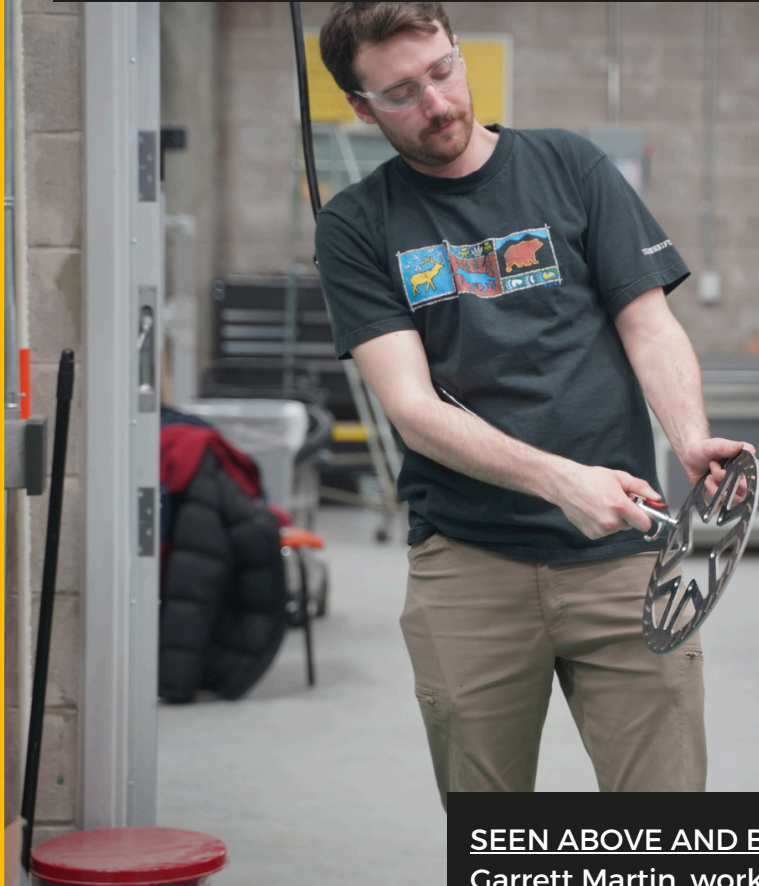


SEEN ABOVE: Electrical Lead - Owen Stuttard, and Electrical Team Member - Grace Yu, printing custom PCB boards for the car's light controls.

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MECHANICAL REPORT



SEEN ABOVE AND BELOW: Mechanical Team Member - Garrett Martin, working on installing custom rotors and tires from one of our sponsors, Michelin!

Some of the major mechanical upgrades done to the car this cycle included:

1. Upgrading brake rotors & wheels.
2. Design and install of a new roll cage.
3. Design and install of new parking brake and pedal.
4. Relocation of HV box.
5. New ballast box support.
6. Construction of a new canopy.



The front brake rotors were increased by about 2 inches in diameter. This helped improve braking torque significantly! - Garrett Martin



MECHANICAL REPORT II



This year the team was required to fully replace the existing roll cage in order to ensure proper clearance and safety regulations were met.

This involved coordination between both electrical and mechanical teams to adjust the positioning of the dashboard before finally bolting the new cage in place.

SEEN ABOVE: Team Lead - Noah Bugden, and Mechanical Co-lead - Grant MacCormack, double checking the new roll cage for race regulation compliance.



It has been a very busy cycle for the team this year. We are pushing hard to complete all upgrades in time for the race!

- Noah Bugden,
Team Lead



SEEN ABOVE: Dynamic testing of the parking break. Regulations require it to handle at least 10% of the car's total weight, or approx. 60lbs.

ELECTRICAL REPORT

NEW BATTERY
CHARGER!!



SEEN ABOVE: Team mascot Photovoltaic Phil hanging out in the dashboard electrical box.

SEEN BELOW: Leads Noah and Grant verifying the output of NOVA's custom-built battery pack.



The electrical team has been busy this year conducting revisions and additions to a number of critical systems including:

1. Revisions to the existing battery pack.
2. Design and testing of new battery charger.
3. Rewiring of dashboard high voltage box.
4. Integration of new motor controller.
5. Design and population of PCB's for light controls.

ELECTRICAL REPORT II



SEEN ABOVE: Operations Manager - Michelle Yee, Electrical Team Member - Aaliyah Raza, and Team Lead - Noah Bugden, wiring dash components and HV box connections.



SEEN ABOVE: Electrical Team Member - Jessica Durham and Team Lead - Noah Bugden, inspecting wiring in the HV box.

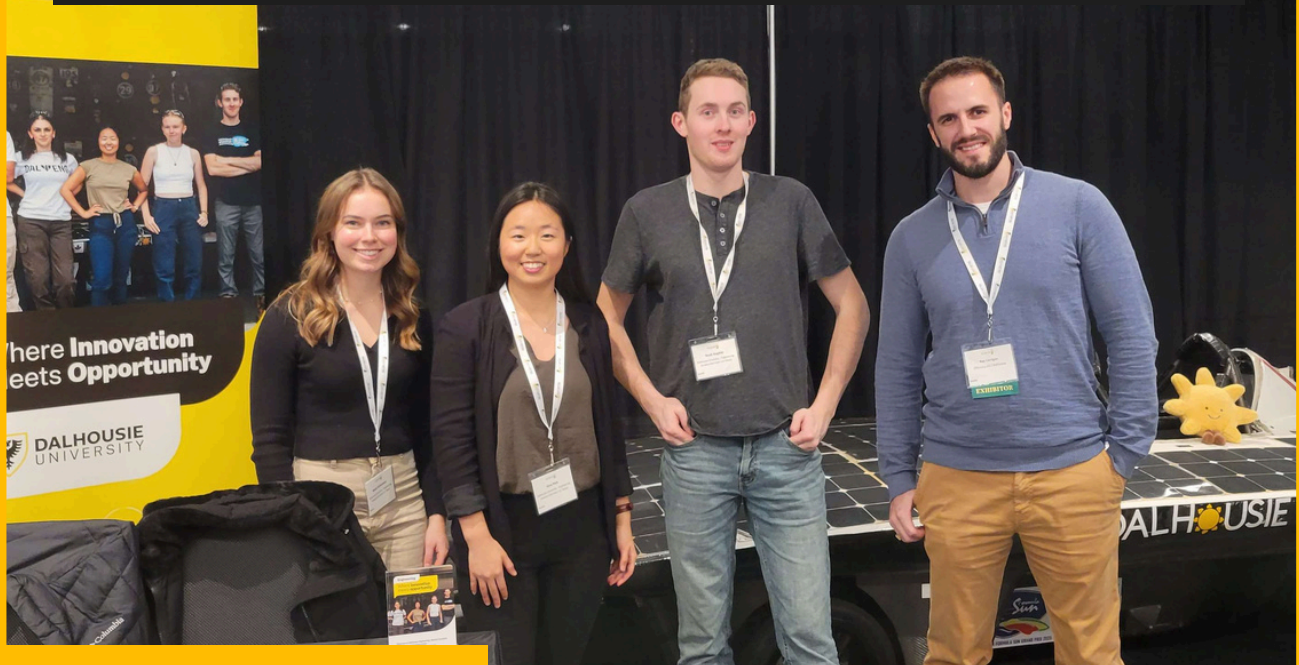
This year the main focus of the electrical team centered around the integration of the new motor controller and wiring diagram of the HV box.

- Owen Stuttard
Electrical Lead



NEW MOTOR
CONTROLLER!!

OPERATIONS REPORT



OPERATION CRITICAL!

This past year, the operations team was instrumental in coordinating the financial planning, team management, and community outreach that kept us involved in over 13 outside events this year!



FROM LEFT TO RIGHT: Electrical Team Member - Molly Richardson, Dal Solar Car Founder - Gina Park, Team Lead - Noah Bugden, and Ray Carrigan from the Dalhousie Office of Sustainability at the 2023 Atlantic Solar Summit.



FROM LEFT TO RIGHT: Operations Manager - Michelle Yee, Social Media & Branding Director - August Holder, Mechanical/Operations Team Member - Daniel Cabral, and Team Lead - Noah Bugden, at Public Engineering Day, March 2024.

OPERATIONS REPORT II



FROM LEFT TO RIGHT: Operations Team Member - Isaiah Brunt, Electrical Team Member, Grace Yu, and Operations Team Member - Kieran Muller, during the Student Experience Showcase.

The Solar Car team is a frequent sight around campus!

It's great to see the Dal community come show their support, whether that would be at an event, bake sale or just stopping by the shop! This initiative not only highlights the potential of solar power, but also demonstrates what can be achieved with passion and teamwork!

- Michelle Yee
Operations Manager



PICTURED ABOVE: Founder - Gina Park, with Mechanical Co-lead - Arsh Singh, at one of the many bake sales put on by the team to raise funds for FSGP 2024.



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Nova Scotia Power believes it's important to invest in programs that create strong, healthy communities across Nova Scotia. They are committed to providing support for programs and initiatives that promote a culture of inclusion, equity and diversity, help remove barriers, and advance education and awareness in Nova Scotian communities.

Find out more at: www.nspower.ca/community



Strum Consulting began operations in early 1995 in Bedford, Nova Scotia. Today, Strum Consulting has grown to over 100 employees with locations throughout Atlantic Canada, and their multi-disciplinary team consists of certified site professionals, engineers, geologists and hydrogeologists, biologists, technologists, legal land surveyors, and masters level environmental specialists.

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OUR
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SPONSORS!**

