



THE SPARTAN RACER

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SEPTEMBER 2020

Team Updates

Summer Competition Recap & SAE's New Hybrid Competition Plan

Even though in-person competitions were cancelled this summer, the team still participated in SAE's virtual event. New leaders for the 2021 season used this as an opportunity to get comfortable presenting the system designs that they would soon be responsible for.



The partially complete SR-20

This was a move that will likely pay off in a year's time, as SAE just announced their hybrid competition plan for the summer of 2021. With this plan, all static events will remain virtual like the previous year, while dynamic events will be a separate competition. We appreciate SAE's efforts to remain flexible in their planning of the 2021 competition season, as there's still a great deal of uncertainty for many teams including ours.

We intend to complete manufacturing for last year's car, SR-20, as soon as we regain access to the shop. Until then, team members have been busy undergoing a complete vehicle re-design.

Vehicle Platform Redesign

As previously mentioned, team members haven't been sitting around all summer—they've been busy working on a complete vehicle platform redesign! This has allowed the team to touch just about every part of the car, with major changes to the chassis, suspension, aerodynamics, and electronics.

Most significant changes stem from a chassis redesign. Before any CAD models were sketched, or FEA was ran, the driver was measured and positioned to maximize comfort and safety.



A brand-new driver jig, built from T-slotted aluminum, allows for infinite adjustability and reusability for many years to come!



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Featured Team Members

Name: Nicholas Coubard
Role: Outboard Assemblies Leas
Hometown: Armada, MI
Major: Mechanical Engineering
Class Standing: Sophomore
Year on the Team: 2nd



Why did you choose to join the MSU Formula Racing Team?

I chose to join the team because I have a passion for racing and competition, which is exactly what fuels the team to build the fastest car on track.

What is your favorite memory from your time on the team so far?

My favorite memory is being able to put my fabrication skills to use in making the control arms during our final assembly.

What do you find most challenging about being a member of the team?

I find it most challenging to balance the time I spend on schoolwork and the time I spend on formula work. Both things require a strong work ethic and an impressive amount of time management so spending enough time on each is certainly difficult.

What are some of your favorite hobbies or activities outside of the racing team?

Outside of the team, I ride motocross and am interested in all kinds of motorsports. I also love to watch college sports- especially in Spartan Stadium and the Breslin Center.

Name: Ronald Hodge
Role: Electronics R&D Lead
Hometown: Grand Have, MI
Major: Electrical Engineering
Class Standing: Junior
Year on the Team: 2nd



What does your role of Electronics R&D Lead entail?

I investigate new technologies we're thinking about implementing in the vehicle. A lot of the current work that I'm doing revolves around telemetry and wireless communication.

What is your favorite memory from your time on the team so far?

The day of the first start, we stayed up all night to get the car to work before heading to Florida. Hearing the car finally run well was an amazing feeling, and it's one that I'll never forget.

Why did you choose Michigan State University?

I've been a lifelong fan of MSU, and I've been coming to campus since I was in 8th grade to participate in Science Olympiad. MSU was always a home away from home, even before enrolling.

What's your dream job upon graduation?

I would love to be an electrical engineer for an IndyCar team.

What is your favorite part about being a member of the team?

The team is a large family, and I know there are always people to help answer questions and teach me new skills.



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Featured Team Alumni

Name: Andy Gryczan
Hometown: Grand Rapids, MI
Degree: BS Mechanical Engineering (2008)
Years on the Team: 2005-2008
Roles: Powertrain Member (2005)
Powertrain Leader (2006-2008)
Driver (2006-2008)

How did you contribute to the advancement of MSU Formula Racing?

The work we did as a team on the engine package from 2006-2007 was pretty incredible. For the first time ever, we went from a wet sump to a dry sump oil system with an in-house designed scavenge pump. The intake and exhaust concepts had a number of physical iterations with significant dyno testing to validate them, ending up with a much larger plenum size to boost power output with unequal length runners to help with drivability. Some of the designs that came out of those years such as the restrictor/diffuser largely carry over to this day.

What is your favorite memory from the team?

Too many to count! I would say the culmination of those years for me was winning the design portion of the competition at FSAE West in Fontana in 2008 with the engine package that we developed. A close 2nd might be winning acceleration for the first time as a team in 2007 FSAE West. Outside of that all the testing trips to Florida and Texas we took as a team were a blast.

What is your current professional role?

I am the chief calibration engineer for the Chevy IndyCar engine program, working for Ilmor Engineering in Plymouth, MI. My job is to oversee the performance



and reliability of the engines at the racetrack and manage a team of trackside engineers who are each assigned to a racecar/driver. We work closely with the race teams and drivers to get them running up front!

How did your experience as a member of Michigan State Formula Racing help shape your future?

I would say being a part of the team provided me an ideal environment to learn the basics of race engine development that greatly helped my prospects in my career. Both in the knowledge base/resume building and the networking that naturally occurred through meeting design judges and other teams. I would not be in my position in racing without being on the team through those years.



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Featured Sponsors



Name: Framing Technology
Location: Rochester, NY

Framing Tech is a manufacturer, designer, distributor, fabricator, and installer of modular aluminum extrusion and accessories, to both commercial industry and individuals. They offer structural aluminum framing in metric and inch sizes. Additionally, Framing Tech stocks a full range of profile component products that complete or accessorize your framing solution.

Framing Tech was nice enough to donate the aluminum extrusion and hardware required to build our driver-jig featured on page 1. Their support during these strange times has allowed us to be more confident in our chassis design than ever before. Thank you, Framing Tech!



Name: Altair
Location: Troy, MI

Altair has been an amazing sponsor of the MSU Formula Racing Team for many years. Out of their expansive list of engineering tools and capabilities, our team primarily uses Altair HyperMesh for some of our most complicated composites development projects. These include our carbon fiber monocoque, aerodynamic elements, and carbon-fiber suspension components.

Altair's comprehensive, open-architecture solutions for computer-aided engineering, high-performance computing (HPC), and data analytics, enable design and optimization for high performance, innovative, and sustainable products and processes in an increasingly connected world.



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