



THE SPARTAN RACER

GO GREEN! GO WHITE! GO FAST!

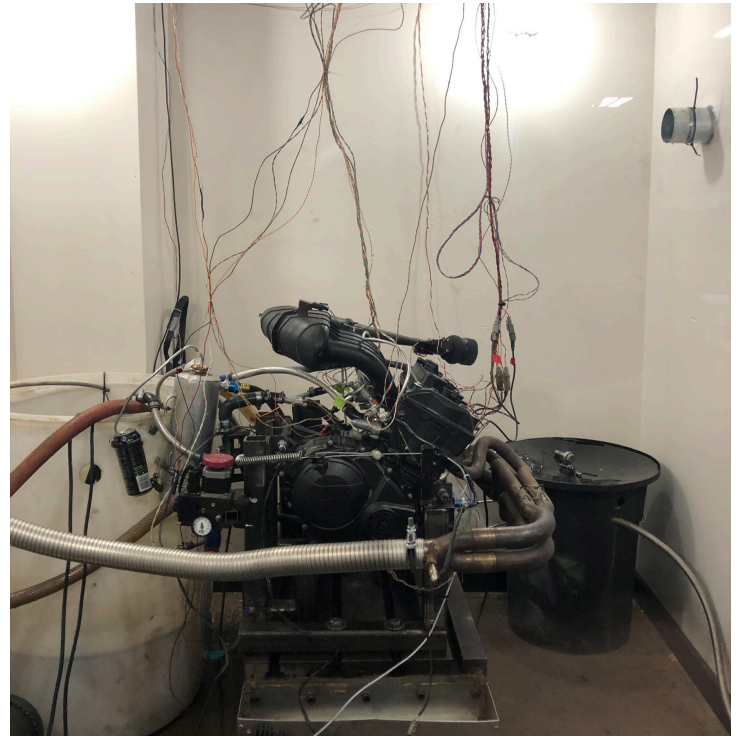


FEBRUARY 2020

Team Updates

The Spring Semester!

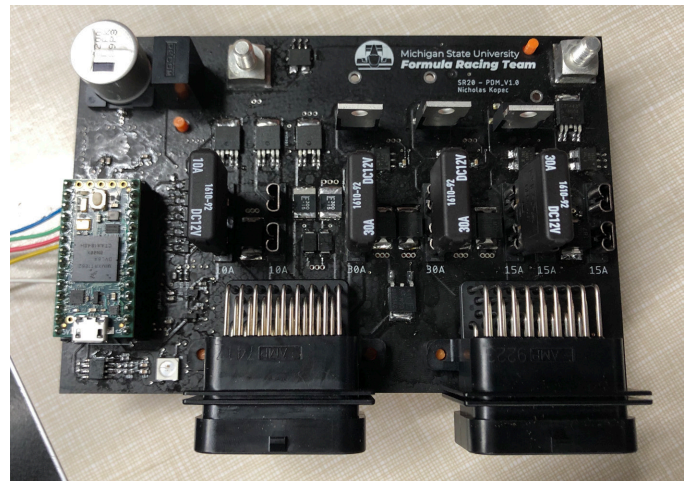
Even though the new semester started a few weeks ago, team members have still been hard at work manufacturing parts for the 2020 vehicle. Major milestones have been hit, such as completing the Honda CBR600RR engine rebuild and testing it on the newly-restored in-house engine dynamometer. Things are going well so far, and the team is working diligently to ensure that the car will be completed for competition with plenty of time for testing.



This year's engine on the in-house dyno



Ford did an amazing job 3D printing our intake this year. We can't thank them enough for their support!



The PCBs have been assembled! Huge thank you to Saturn Electronics for once again printing our student-designed circuit boards.



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Manufacturing Updates



Intake & Exhaust Lead, Olivia Reyes, lays down a layer of release film during the intake diffuser layup

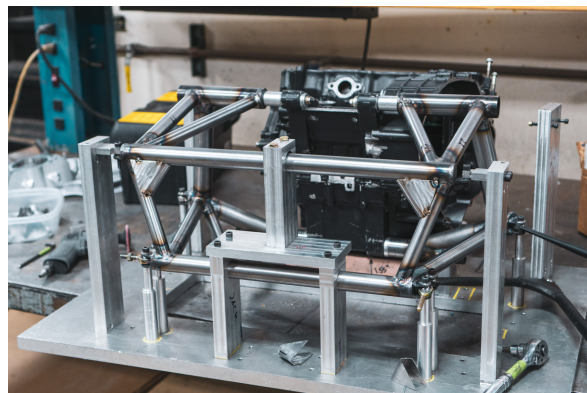


Our custom driver display is always an eye-catcher! This year the hardware and software were both completely redesigned (PCBs manufactured by Saturn Electronics Corporation!)

Suspension new member, Nick Coubard, prepares suspension components for welding.



Justin Yan mills down our engine to fit the rear damper termination mounts



The rear sub-frame is nearing completion.



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Featured Team Members

Name: James Provax
Role: Chief Engineer & Aero Lead
Hometown: Chicago, IL
Major: Mechanical Engineering
Class Standing: Senior
Years on the Team: 4



What do your roles as Chief Engineer and Aerodynamics Team Lead entail?

As Chief Engineer, I oversee the entire design and manufacturing of the vehicle. Additionally, I am responsible for organizing and creating detailed testing plans to ensure objectives are achieved.

As Aerodynamics Team Lead, I am responsible for the design and manufacturing of the entire aerodynamics package. This includes running CFD simulations, building the package, and validating it on car. I am also one of the two drivers for the Endurance and Autocross events at competition.

What are you most excited for this season?

I am most excited to see how this team performs at competition after improving pre-competition preparation and so many different aspects of the car. This is the most experienced and focused team we have had in a long time, so I am confident that we will do well.

What is your dream job upon graduation?

My dream job is to be an aerodynamicist for a motorsports team or an automotive company. I want to continue to work in a formula-like environment where I can be challenged by my work, while still developing lifelong friendships with my colleagues.

Name: Minir Jakupi
Role: Kinematics Lead
Hometown: Troy, MI
Major: Mechanical Engineering
Class Standing: Senior
Years on the Team: 4



What does your role as Kinematics Lead entail?

As kinematics lead, my job was to locate "hard points" that govern the performance and drivability of the vehicle. I designed the suspension system around the maximum lateral and longitudinal grip capabilities of the tires. Front-end kinematics were designed to optimize steering geometry and vehicle response. Hard point locations were selected to obtain values for caster, mechanical trail, king pin inclination, bump steer, roll steer, anti-dive/squat, roll centers, and ride height.

What has been your favorite memory so far?

The couple days before FSAE Michigan 2019 were by far the most memorable for me. Everyone was awake for days putting the car together and getting it ready to take to competition. The entire team was at the shop, blasting our favorite music, and working together to put the finishing touches on the car.

What are you most excited for this season?

I am excited and anxious to finally finish building the car and see it drive this spring. My favorite time of the year is testing season, and I cannot wait to start testing and tuning the car to compete with the best this May at MIS.



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Featured Team Alumni

Name: Paul Strefling
Hometown: Manistee, MI
Degree: BA Mechanical Engineering
MA Mechanical & Electrical Engineering
Years on the Team: 2005-2008
Roles: Chassis Lead, Chief Engineer

Why did you choose to join MSU FSAE?

I grew up racing autocross with a e30 318s and was always building things in the garage (think potato guns and go carts). FSAE felt like a good fit and it turned out to be one of the best decisions of my life. Not only did I improve my engineering skills, but I learned how to be successful in a machine shop and ended up finding a group of friends that I am still close with today.

How did you contribute to the advancement of the formula racing team?

My largest contribution to the team is without a doubt the forum and the wiki. Before that, we used stone tablets.

While in my role as chief engineer I pushed the team to use more FEA and set the stage for optimization techniques.

What is your favorite memory from the team?

After a hard winter's work, we took the car down to Florida for spring break and just cleaned house. The car was fast, reliable, and predictable. It went on to be a very competitive year for MSU FSAE.



What is your current professional role?

I am a Guidance, Navigation, and Control Engineer for Boeing Commercial Airplanes. I design fly-by-wire primary flight controllers for twin aisle airplanes.

I am currently working on the 777X which had its first flight on January 5th, 2020. It's the cumulative effort of 10s of thousands of people over the last 7 years. There is little public information about what we do, but you can search Google for c-star-u, p-beta, and vertical modal suppression to get an understanding of what I am up to.



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Featured Sponsors



Name: Saturn Electronics Corporation
Location: Romulus, MI

Saturn has been a reliable sponsor of our team for several years now. They graciously donate their circuit board printing services to our electrical team. This year's PCBs turned out great, and you can see an example of a completed one on the front page of this newsletter!

Saturn is a Top 30 domestic PWB Fabricator managing the nuances between Quick-Turn Prototype Boards and High-Volume PCB Production while offering industry-leading Lead-Free circuit boards that meet RoHS compliance. They have order sizes from five to tens-of-thousands of pieces, with delivery times ranging from one day to three weeks.



FIAT CHRYSLER AUTOMOBILES

Name: Fiat Chrysler Automobiles
Location: Auburn Hills, MI

FCA is a long-standing platinum sponsor of our team. Not only do they generously provide critical financial support, but they also host a test-and-tune event which is a huge help in getting the team's car ready for competition in May.

FCA designs, engineers, manufactures and sells vehicles and related parts, services and production systems worldwide. The Group operates 102 manufacturing facilities and 46 R&D centers; and it sells through dealers and distributors in more than 135 countries. FCA's automotive brands include Abarth, Alfa Romeo, Chrysler, Dodge, Fiat, Fiat Professional, Jeep, Lancia, Ram, Maserati.



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Name: High Caliber Karting
Location: Okemos, MI

Earlier this year the team had the pleasure of attending High Caliber's grand opening inside of the Meridian Mall, only a 10-minute drive from the machine shop. Now, we are extremely happy to have them on board as our newest platinum sponsor!

We can build the fastest car FSAE has ever seen, but if our drivers aren't in tip-top shape, we'll never win. Now, with the help of High Caliber's indoor karting, our drivers will be able to have valuable seat time year-round. Not to mention, High Caliber is seriously a blast! If you're looking for a great team building experience, a competitive training regimen, or just a bunch of fun, check out High Caliber!



Name: Airtech
Location: Huntington Beach, CA

Airtech has provided the MSU Formula Racing Team with the consumables necessary to produce our carbon-fiber monocoque, aerodynamic elements, and various other composite components. We thank them for their continued support of our team!

Airtech International, Inc. is a division of Airtech Advanced Materials Group, the largest manufacturer of vacuum bagging and composite tooling materials for prepreg/autoclave, resin infusion, and wet lay-up processes up to 799°F. All six of their facilities offer technical assistance and are ready to meet your composite production challenges.



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THANK YOU!

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SIEMENS **WOOLF** **Axiom MATERIALS**  **EVONIK**  **Altair**
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