MIT MOTORSPORTS

SPONSOR HANDBOOK 2023-2024

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OUR MISSION

MIT Motorsports strives to provide students with the best means to learn about the engineering process - by emphasizing rigorous engineering, strong technical expertise, and effective management.

WHAT WE DO

The Formula SAE competition tasks students to design, build, and engineer a racecar. Starting from the ground up, each team constructs a vehicle that is judged on design, cost, business case, and performance. Formula SAE pushes students to apply their classroom knowledge to a real world project. The process prepares students to engineer in many fields, as the project has applications ranging across automotive, aerospace, mechanical, business, and data industries.


278
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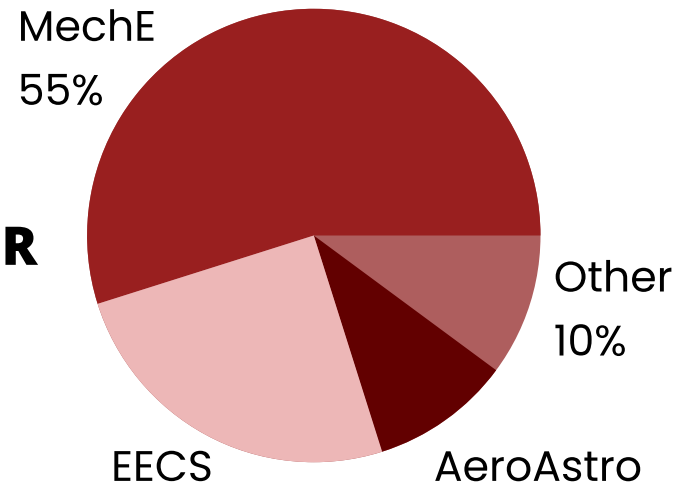
MIT MOTORSPORTS
Red Bull
BLUE ORIGIN

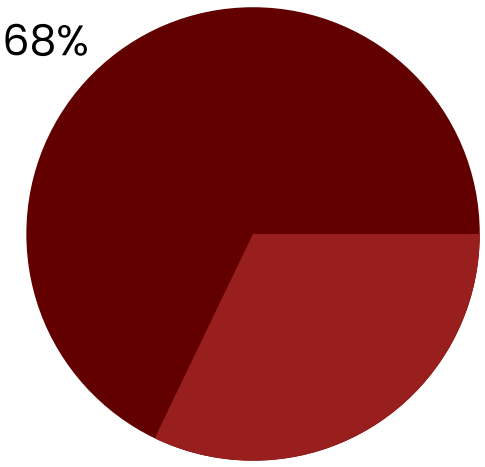
ABOUT THE TEAM

TEAM STATISTICS

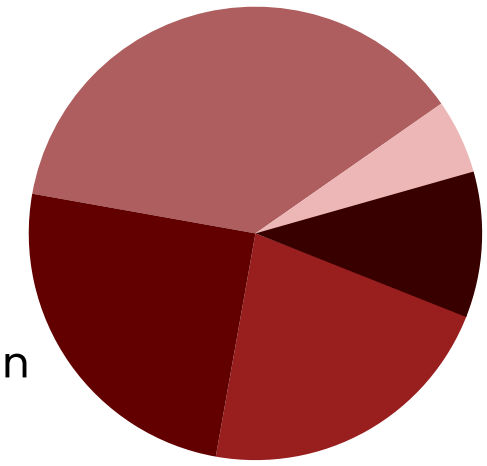
MAJOR



GENDER



ETHNICITY



EXECUTIVE BOARD

Megan Gupta-She
Captain

Henry Smith
Mechanical Lead

Alonso Vela
Electrical Lead

Alex Mendez
Aerodynamics Lead

OUR HISTORY

2001

MIT Motorsports first entered the Formula SAE scene when two freshmen founded the team in 2001. Since our 97th place finish at the first competition in 2003, MIT Motorsports has continued to endlessly evolve.

2015

MY15 was the team's first completed running electric vehicle (EV). It also had the first aerodynamics package in team history.

2017

MY17 finished in second place. The aero package, custom battery, novel wheel package design, and other improvements pushed the team to a new level.

2021

Out 20 registered teams, we were one of eight who passed battery inspection. Despite the impact of COVID-19, MIT Motorsports placed among the strongest competitive teams in the nation.

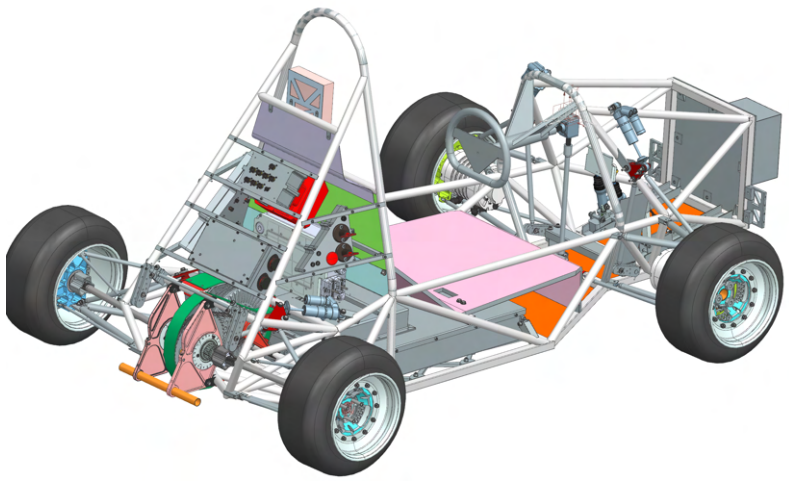
2023+

Our team continues to value innovation and competitiveness, all the while building a sustainable team and engineering community. MY24 will mark the first one-year design cycle since 2019, a challenge our young team is excited to tackle.

THE PROCESS

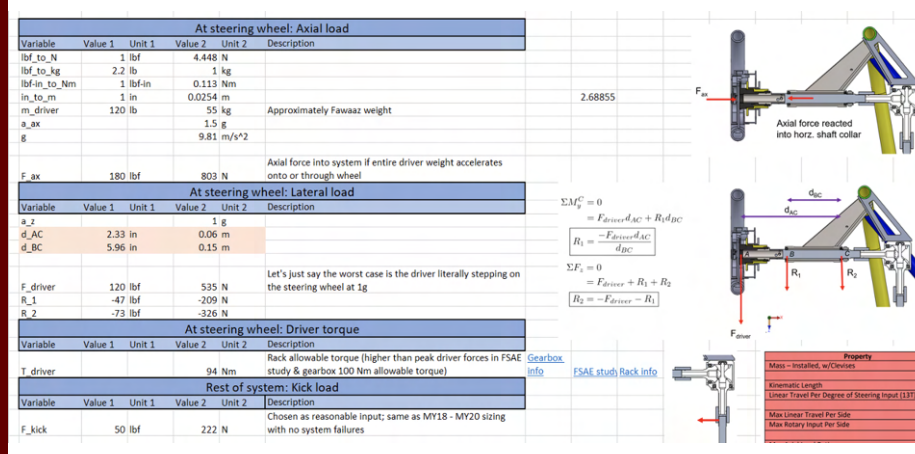
DESIGN

After establishing our team goals, we justify system level requirements using self-developed simulation tools. Next, our design shifts to developing vehicle components and creating a full-car computer model.



DESIGN REVIEWS

Through the design cycle, design reviews offer a formal opportunity for input from peers, alumni, and involved sponsors. These reviews keep us on track and present learning opportunities for newer members.



At steering wheel: Axial load					
Variable	Value 1	Unit 1	Value 2	Unit 2	Description
lbf_to_N	1	lbf	4.448	N	
lbf_to_kg	2.2	lb	1	kg	
lbf-in_to_Nm	1	lbf-in	0.113	Nm	
in_to_m	1	in	0.0254	m	
m_driver	120	lb	55	kg	Approximately Fawaaz weight
a_ax			1.5	g	
g			9.81	m/s^2	
F_ax	180	lbf	803	N	Axial force into system if entire driver weight accelerates onto or through wheel

At steering wheel: Lateral load					
Variable	Value 1	Unit 1	Value 2	Unit 2	Description
a_z			1	g	
d_AC	2.33	in	0.06	m	
d_BC	5.96	in	0.15	m	
F_driver	120	lbf	535	N	Let's just say the worst case is the driver literally stepping on the steering wheel at 1g
R_1	-47	lbf	-209	N	
R_2	-73	lbf	-326	N	

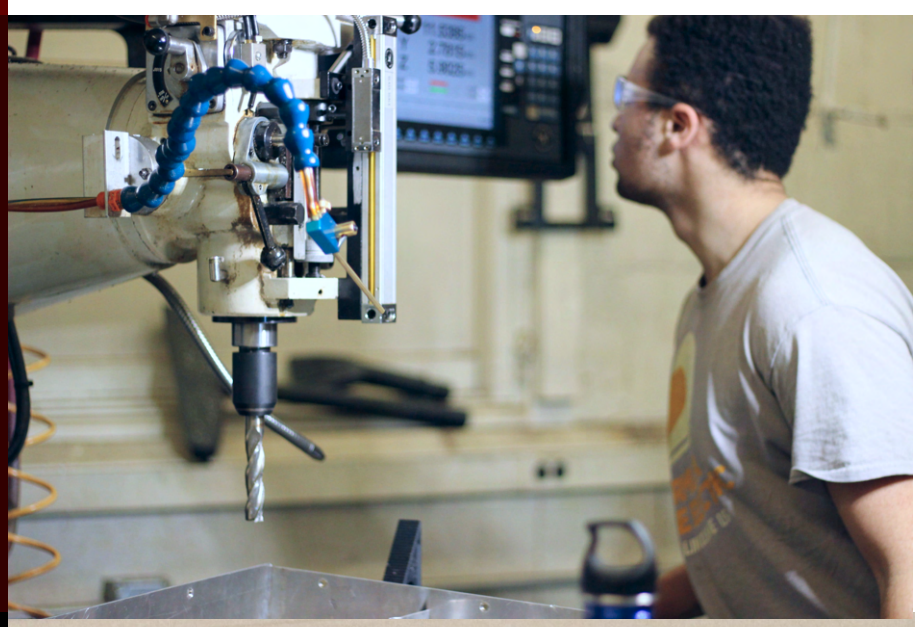
At steering wheel: Driver torque					
Variable	Value 1	Unit 1	Value 2	Unit 2	Description
T_driver			94	Nm	Rack allowable torque (higher than peak driver forces in FSAE study & gearbox 100 Nm allowable torque)

Rest of system: Kick load					
Variable	Value 1	Unit 1	Value 2	Unit 2	Description
F_kick	50	lbf	222	N	Chosen as reasonable input; same as MY18 - MY20 sizing with no system failures

2.68855

$$\Sigma M_B^C = 0$$
$$= F_{driver} d_{AC} + R_1 d_{BC}$$
$$R_1 = \frac{-F_{driver} d_{AC}}{d_{BC}}$$
$$\Sigma F_i = 0$$
$$= F_{driver} + R_1 + R_2$$
$$R_2 = -F_{driver} - R_1$$

Gearbox info FSAE study Rack info



MANUFACTURING

Our car is built in house from the ground up. Team members machine precision components in MIT's Edgerton Center facilities, teaching them to tread the line between innovative geometry optimization and practical designs.

TESTING

We place high emphasis on testing, aiming to spend just as much time on testing as design. To build a robust and reliable electric vehicle, we go on weekly testing trips, honing our vehicle's performance, controls and training our drivers.

SPONSORSHIP OPPORTUNITIES

While the Institute provides us with laboratory space in the Edgerton Center, we rely on fundraising to support our activities. We welcome both cash and in-kind donation. Fair market value of materials and equipment will be used to determine the level of support. Interested in sponsoring for Model Year 2024? Please see sponsorship benefits on the next page. Tax deductible gifts can also be given to both the MIT Motorsports Expendable and Endowed fund but don't include benefits, in compliance with federal guidelines. Reach out at fsae@mit.edu

2023 NUMBER OF IN-KIND AND MONETARY SPONSORS: 40

2024 BUDGET PROJECTION: $152,000

WHY JOIN US?

VISIBILITY

Your logo and branding will appear on our website, social media, team shirts, and race car.

RECRUITING

You will have the opportunity to recruit experienced and talented student from our team through recruitment events or our resume book.

ENGAGEMENT

Enable younger generations to grow and develop through engaging in design reviews, shop tours and sponsor events.

BENEFITS

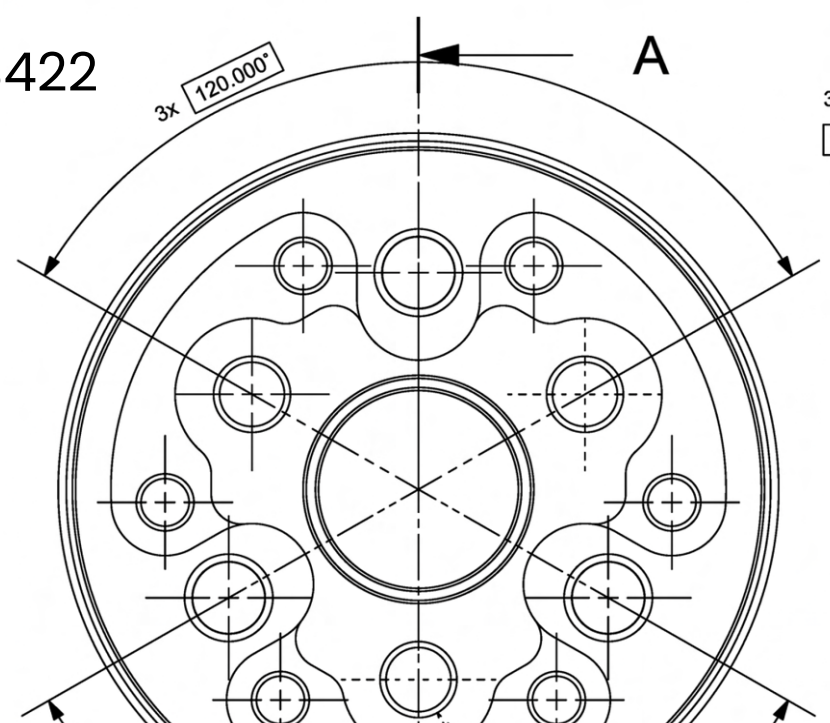
	AFFILIATE $100-2500	BRONZE $2500+	SILVER $5000+	GOLD $10,000+	PLATINUM $20,000+
HONORED ON OUR WEBSITE	✓	✓	✓	✓	✓
LOGO ON TEAM APPAREL		✓	✓	✓	✓
LOGO ON CAR			SMALL	MED.	LARGE
FEATURED ON OUR SOCIAL MEDIA				1X	3X
ACCESS TO RESUME BOOK				✓	✓
WEBSITE PROFILE					✓

CONTACT US

ADDRESS 265 Massachusetts Ave, Cambridge, MA 02139

TELEPHONE (603)978-8422

EMAIL fsae@mit.edu



Thanks to our MY23 Sponsors

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- MIT Edgerton Center
- palmer motorsportspark

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BLUE ORIGIN

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