



# MARKETING BROCHURE 2023

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**FORMULA STUDENT ELECTRIC TEAM**

Vellore Institute of Technology, Vellore

# CHANCELLOR'S MESSAGE

Dr. G Viswanathan  
Founder and Chancellor  
Former Member of Parliament  
Former Minister, Govt. of Tamil Nadu  
President, Education Promotion Society of India, New Delhi



Dear Sir,

It is with pride that I inform you, that Team OJAS is the only official Formula Electric Team of VIT University.

Team OJAS has shown undeterred will since the time of its inception when it was amongst the only 2 Formula Electric teams in India.

Having qualified and being one of the only 3 electric teams from Asia in Formula Student Germany 2015 was another feather in their hat amongst the other accolades they've brought to the country and the University.

This year the team has set for itself bigger goals which require extensive technical and financial support from the government and industries. Your support shall not only go a long way in aiding their endeavours but also add to the international recognition of your brand.

Moreover, your association with Team OJAS will bring forth a new pool of industry ready engineers to the engineering sector.

Therefore, I humbly seek your generous support for Team OJAS to help them achieve what they set out to

Thanking You,









# FORMULA STUDENT

**Formula Student** is an International engineering competition conducted by the Society of Automotive Engineers with the goal to develop and provide a platform for student engineers to experience, build, and learn. It offers a unique way to test students' theoretical knowledge in a practical context. Students gain and develop skills such as engineering, project management and teamwork.



## The Event

Points are earned in a series of off track, "Static" events, and on track, "Dynamic" events. The team with the most points at the end of the competition wins. The growing popularity of the competition is proven by the rapidly rising number of participants and the establishment of new events.

### Static events:

1. Business presentation 75
2. Engineering design 150
3. Cost Analysis 100

### Dynamic Events:

1. Acceleration 75
2. Skid-pad 50
3. Autocross 150
4. Endurance 300

# OUR MISSION



## **INNOVATE**

Reinvent EV Technology



## **GROW**

Bring about vigor and enthusiasm in engineering



## **IMPACT**

Venture into new domains and perfect the definition of EV

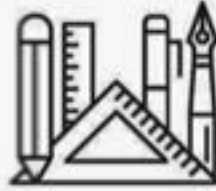


## **ACHIEVE**

Improve upon designs and top the charts every year

# OUR TIMELINE

**DESIGN**



**PROCUREMENT**



**MANUFACTURING**



**ASSEMBLY**



**TESTING**





# ABOUT OUR TEAM



Team Ojas's ultimate objective is to stand on the podium amongst the best Formula Student Electric teams in India. We as a team believe it's high time since a change was brought into the sport and now the need stands stronger than ever with age-old combustion vehicles causing uncontrollable pollution and degrading the environment. Driving the wheel of revolution. Team Ojas's motto is the 3S's - Speed, Safety, and Sustainability.

# OUR DEPARTMENTS

Powertrain  
Department

Vehicle Dynamics  
& Brakes Department

Battery Pack  
Department

Chassis  
Department



Composites and  
Aerodynamics  
Department

Communications  
and Control  
Department

Design and  
Management  
Department

Autonomous  
Department

Transmission  
Department





# MEET OUR TEAM



**Priyam Mehta**  
**Vehicle Performance**  
**Head**



**Mirza Haider Ali**  
**Manufacturing Head**



**Saran DB**  
**Electrical Head**  
**ESO Design**



**Roopreet Saluja**  
**Autonomous systems**  
**Officer**



**Krish Lulla**  
**Team Captain**



**Lakshya Agarwal**  
**Chief Technical**  
**Officer [CTO]**



**Chirag Sadana**  
**Transmission Head**



**Ankit Parashar**  
**Electrical Systems Officer**  
**ESO Management**

# HALL OF FAME

## FORMULA GREEN COIMBATORE

2nd Overall  
1st Business Presentation  
Best Design  
2nd Acceleration  
2nd Autocross  
2nd Skid Pad

**2017**

## FORMULA GREEN COIMBATORE

2nd Overall  
1st Cost Report  
3rd Business Presentation  
6th Engineering Design  
Report

**2018**

## FORMULA GREEN COIMBATORE

1st Overall  
2nd Business Presentation  
Best Design  
1st Acceleration

**2018**

## FSEV

7th Overall  
Best Battery Design  
Best Powertrain Design

**2019**



# HALL OF FAME

## FSEV

19th Overall  
15th FMEA  
25th Procurement  
20th Management  
13th Battery Design  
14th Powertrain Package  
Design  
11th EV Presentation

**2020**

## FORMULA BHARAT

8th Overall  
7th Engineering Design  
12th Business Plan

**2021**

## FORMULA ELECTRIC ITALY

4th Overall  
4th Cost Report  
5th Business Presentation  
4th Engineering Design  
Report

**2022**

## Pi-EV

6th Overall

**2022**

# STEERING AND SUSPENSION

- Rack and Pinion steering system.
- Double A-Arm suspension push rod actuated.
- Race spec dampers: Ohlin's TTX - 25.
- Carbon Fiber A-Arms and pushrods.
- CNC machined Aluminium is used for custom designed wheel hubs & uprights. Suspension Modelling & Structural Analysis using Lotus Shark & Ansys.



## WHEELS

- 13-inch Continental Tires - 205/470 R13 34M (Dry and Wet)
- Tire Modelling using Adams Car
- Carbon fiber wheel rims - reduces the weight by 2 kgs on each wheel assembly.

## Brakes

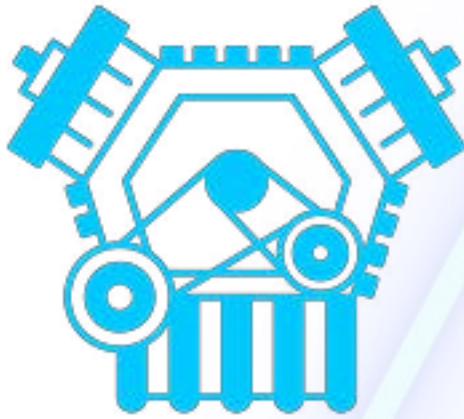
- Stainless steel, semi floating disc brakes on all 4 wheels.
- Hydraulic actuated with steel brake lines
- Dual master cylinder setup: Tilton-78 series
- Brake calipers: Wilwood PS-1
- Thermal & Structural Analysis via Ansys





# AERODYNAMICS

- Reducing the weight of the aerodynamic package to make it more efficient.
- Drag reduction
- Improving Downforce
- Reduction in turbulent flow across side pods to improve cooling.

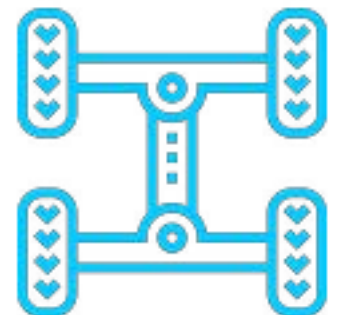


# TRANSMISSION

- Transmission system
- Powertrain
- To increase the efficiency of a motor.
- To limit the energy consumption under 6KWh.
- To complete acceleration event in under 5s.

# DRIVETRAIN

- To decrease the size of transmission system.
- To reduce weight of drivetrain components.



## CHASSIS

- One piece tubular space frame
- Tubes made of chromoly steel
- Wheel base of 1550 mm



## AUTONOMOUS



- 3D depth estimation perception from single stereo camera for the use case with  $>0.85$  precision.
- Produced advanced control systems using Model Predictive Control.
- Integrate and implement all sub-systems in harmony.
- Use ML/AI to improve and optimize all subsystems based on data from all other departments.

## BATTERY PACK

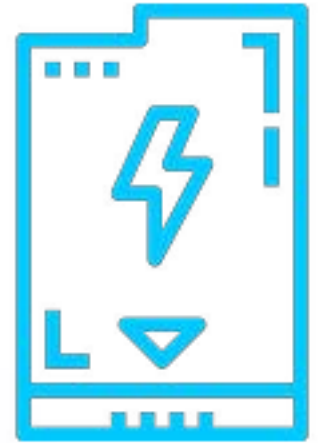
- Designed to accommodate 190 cells of high energy density and power.
- Features a carbon fibre container that is stronger and yet lighter than aluminium and steel.
- Cooled by an active air cooling system that can keep the battery temperature in its safe limits even at its extreme discharge conditions.





## POWERTRAIN

- Minimizing overall energy expenditure of the vehicle.
- Operating EMRAX 228 motor in higher efficiency region by selecting appropriate gear ratio.
- Implementation of parallel regenerative braking in the near future.



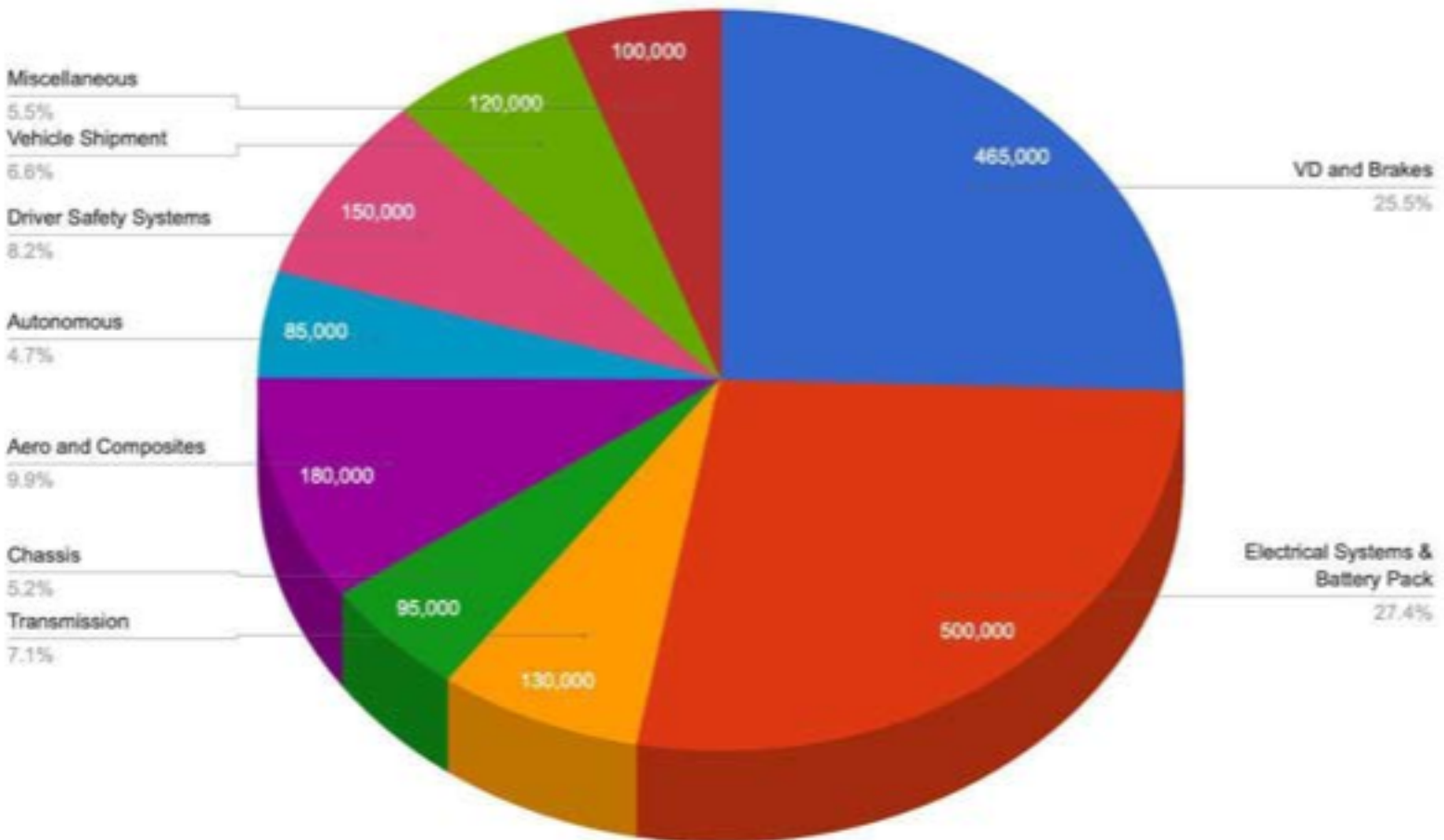
## LOW VOLTAGE

- Increased accuracy in Battery Management System Algorithm
- In-house Data Acquisition System



# BUDGET

## BUDGET



BUDGET	
VD & Brakes	4,65,000
Electrical Systems & Battery Pack	5,00,000
Transmission	1,30,000
Chassis	95,000
Aero & Composites	1,80,000
Autonomous	85,000
Driver Safety Systems	1,50,000
Vehicle Shipment	1,20,000
Miscellaneous	1,00,000
<b>Total</b>	<b>18,25,000</b>

# SPONSORSHIP

As our team is a student team, so majority of our budget comes from the funds collected among the team members. We also get funds or discounts from companies who support us.

The Sponsorship Hierarchy of our team is given below:

## Gold



Sponsor who help us above the range of Rs. 2,50,000/-

### PERKS:

- Company logo in a prominent position on the vehicle & logo on team merch.
- Chance to drive the vehicle.
- Invited as a chief guest to the launch event.
- Chance to display the vehicle at your company events.

## Silver



Sponsors who provide us funds or help in the range of Rs.50,000/- to Rs.1,00,000/-.

### PERKS:

- Your company logo is present in all promotional materials & your company logo on our vehicle (100 mm x 30 mm).
- Get invited to the launch event.

## Bronze



sponsors who provide us funds or help in up to the range of Rs.25,000/-

### PERKS:

- Your company logo on our website & an appreciation post on our socials
- Test data of the material or the item given to the team by your company.



# OUR SPONSORS

## GOLD



## SILVER



## BRONZE



# CONTACT US



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[@ojasracing](https://www.instagram.com/ojasracing)