NEWSLETTER

WINTER 2020

eTech RACING

FORMULA STUDENT TEAM

TEAM 2020 | 2021

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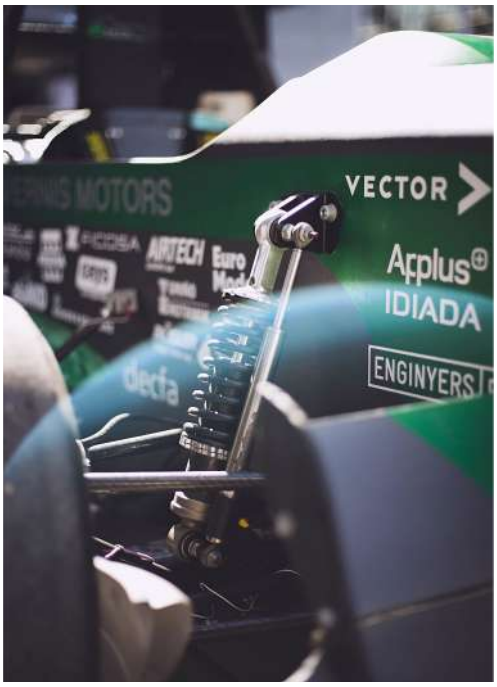
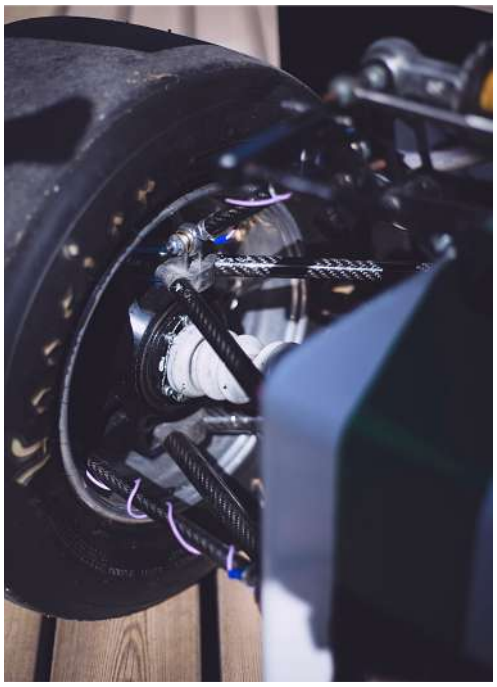
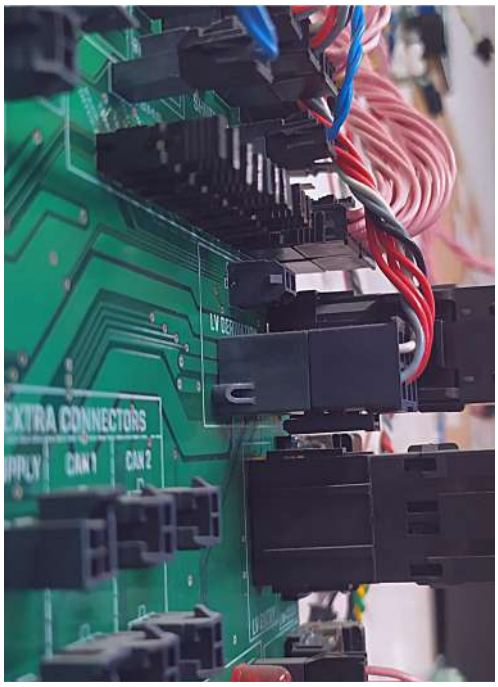


E-TECH RACING: THE TEAM

TEAM MEMBERS

DEPARTMENTS

FORMER MEMBERS

SPONSORS

Dear reader,

e-Tech Racing is a Formula Sutdent team formed by 39 students from Escola de Barcelona Est (EEBE), from Universitat Politècnica de Catalunya (UPC).

Each year, the team's goal is to develop an electric car to compete both nationally and internationally at Formula Student. The team is very excited about the project and ready to face the new challanges that this season has packed.

Fulfilling this goal would not be possible without discipline, effort, humility, generosity, team work and, above all, **PASSION**.

In this newsletter you wil be able to meet all the members and how we organize the team, the sponsors who have joined our family, a little bit of our history over the years, what are we working on currently and read the interview to a former team member who now works at Mercedes - AMG Petronas F1.

Our history

E79

A concept car where aesthetics and rules compilance went hand in hand. Although manufacturing was not completed, the team participated in static events in order to get feedback from the judges.

WILL - E

This was the first functional car. After a lot of work during the season, it arrived at Formula Student Spain: we got a very good feedback from the judges, but we could not compete in the dynamic events. In order to improve the car was tested later on.

EV-A

It was the first car to compete in a dynamic event. A new design was developed with two main objectives: weight reduction and improved reliability. In addition to competing at dynamic events, very good results were achieved in statics events.

STEV-E

STEV-E vas the first car to participate in an international competition: the Czech Republic. A faster car with custom-made motors. We finished two endurances with this car, in FS Spain and in FS Czech Republic.

JULIET

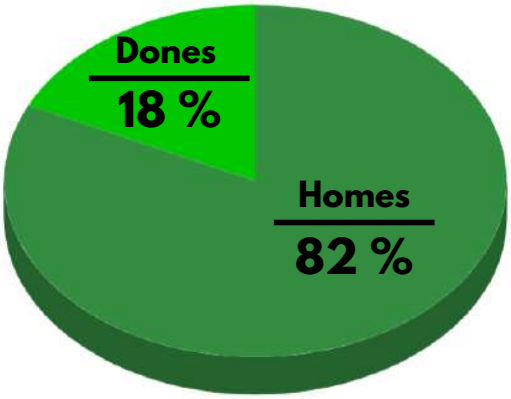
An extremely ambitius project: changes in the monocoque, aerodynamics, transmission, suspensions... It was a very difficult season in terms of manufacturing, which made it difficult to participate in competitions, participating only in the static events of FS Spain.

ROMEO

After the previous season's experience, reliability and improved design were prioritzed, both mechanical and electronic. This car competed in FS Italy, finishing in 12th place and participating in the endurance event in FS Spain.

39 students

32 engineers
7 engineers



5 engineerings

Mechanical

Energy

Materials

Biomedical

Industrial Electronics & Automation

2 projects

ETR 06 Manufacturing

Design ETR 07

Reorganization

Creation of the Management department

e-Tech Racing today

After the sudden end of last season, where we could not enjoy the competitions as we used to, the team faces the strangest season ever, with a situation of constant uncertainty but with great projects to carry out.

This season we are presented with the challenge of working on two cars at the same time: manufacturing the ETR-06 and designing the ETR-07. The team is aware of the difficulty of the challenge and the great work that need to be done, but we are confident that with effort, enthusiasm and responsibility, the objectives will be achieved.

To achieve these goals, it was decided to reestructure the organizational chart of the team. In addition, at the beginning of the season 15 new members joined to participate in the projects after attending informative talks and conducting interviews to enter the team, this year made online. We are a total of 39 engineers.

TEAM MEMBERS

CHIEFS

Jordi Chaparro

Conrad Galli

Ariadna Madorell

Ricardo Marquina

Víctor Muñoz

María Regalado

Mario Sánchez

DYNAMICS

SUSPENSION

Miguel Fernández

Víctor Muñoz

Raúl Pozas

Iván Trigueros

STEERING

Sergi Rojo

Dani Serna

BRAKES & WHEELS

Pablo Arias

Víctor Batlle

Oriol Grasas

Ernest Martínez

Sergi Martínez

Alessandro Sergio

TRANSMISSION

AERODYNAMICS

Paula Cabra

Eric Delgado

Álvaro Altamirano

David Crespo

VDC

Mario Sánchez

Ona Folch

Pol Lezcano

BODY

Jordi Chaparro

Xavier Delgado

Jan Chamoun

PACKAGING

Sergi Marín

COMPOSITES

ACCUMULATOR

Ariadna Madorell

David Redondo

POWERTRAIN

Miguel Ángel García

Arnau Gil

Ricardo Marquina

COOLING SISTEMS

Toni Adrover

Néstor Canadell

MOTORS & INVERTERS

ELECTRIC & ELECTRONIC

SENSORICS

Anna Creus

Guillem Giraldo

María Regalado

PCB'S

Mar Bueno

Raúl Rodríguez

BMS

Stephanie Arana

Conrad Galli

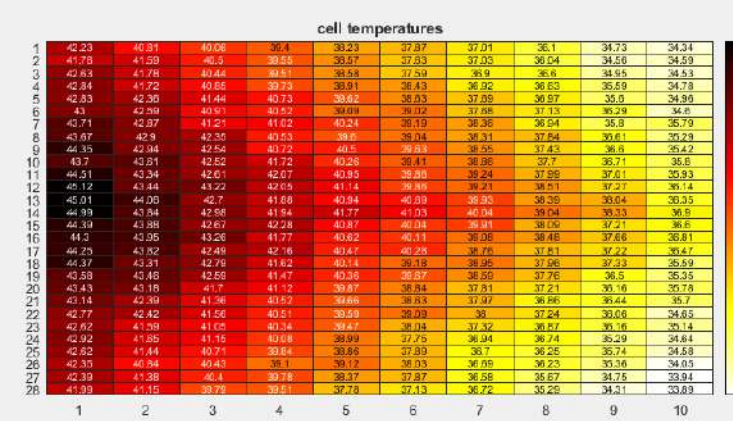
HARNESS

Gerard Pérez

Dannes Ramón

Alex Tolosa

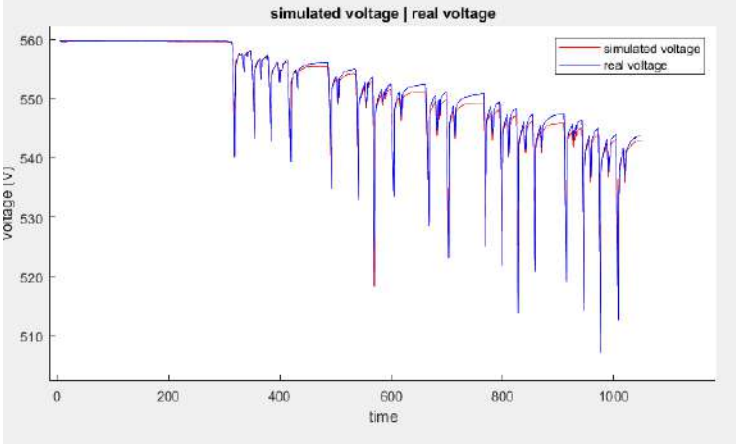
MAIN ECU



ACCUMULATOR

The battery pack has been mathematically modeled to simulate power requests in different scenarios.

The department has also begun to conduct studies to implement regenerative braking in the ETR-07 car.



COOLING SYSTEMS

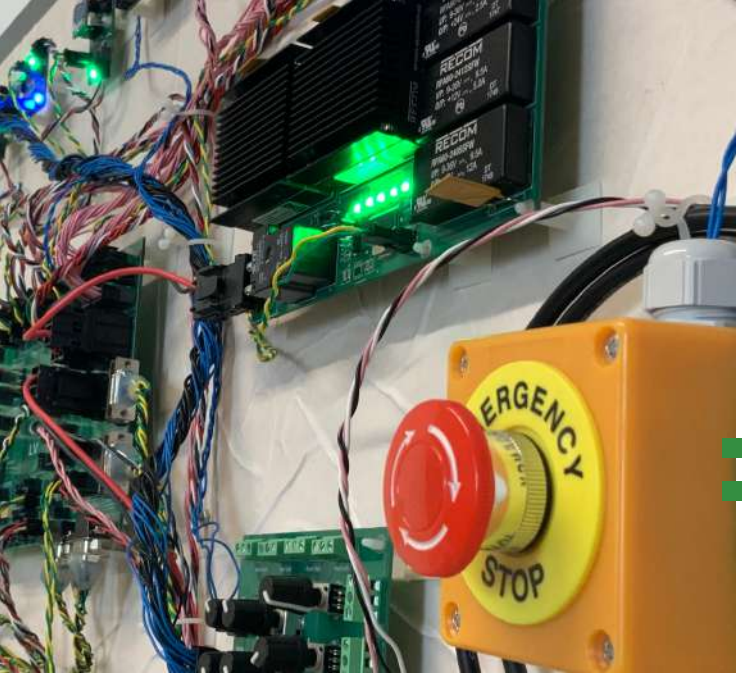
The department is manufacturing the sidepods and the parts that compose the new cooling circuit for the accumulator, inverters and motors for the ETR-06.

For the ETR-07, studies and simulations are being carried out to design the cooling circuit that will be used on the new in-wheel motors and their inverters

MOTORS & INVERTERS

The M&I department is working to optimize the operation of both the motors and of the inverters that will be used in the ETR-06.

Simultaneously, the selection of inverters is being carried out for the ETR-07, based on the parameters of the new engines that our principal sponsor, Vernis, is designing.



MAIN ECU

In the beginning of this season, the Main ECU department has focused on the upgrade, codification and programming of the signals and the ECUs of the ETR-06 software.

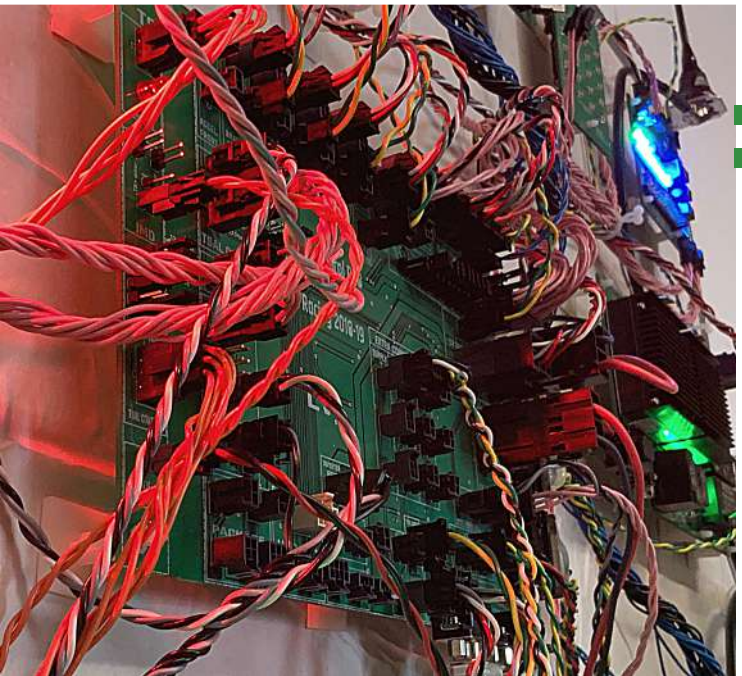
PCB

The PCBs department has been learning concepts related to the boards' software and testing of them.

SENSORICS

The sensorics department is improving the functioning of its boards, the ADCAN and the accelerometer, as well as the proper maintenance of all the sensors.

For the ETR-07, a new telemetry systtem is being studied as well as new other sensors like a GPS and a gyroscope.



HARNESS

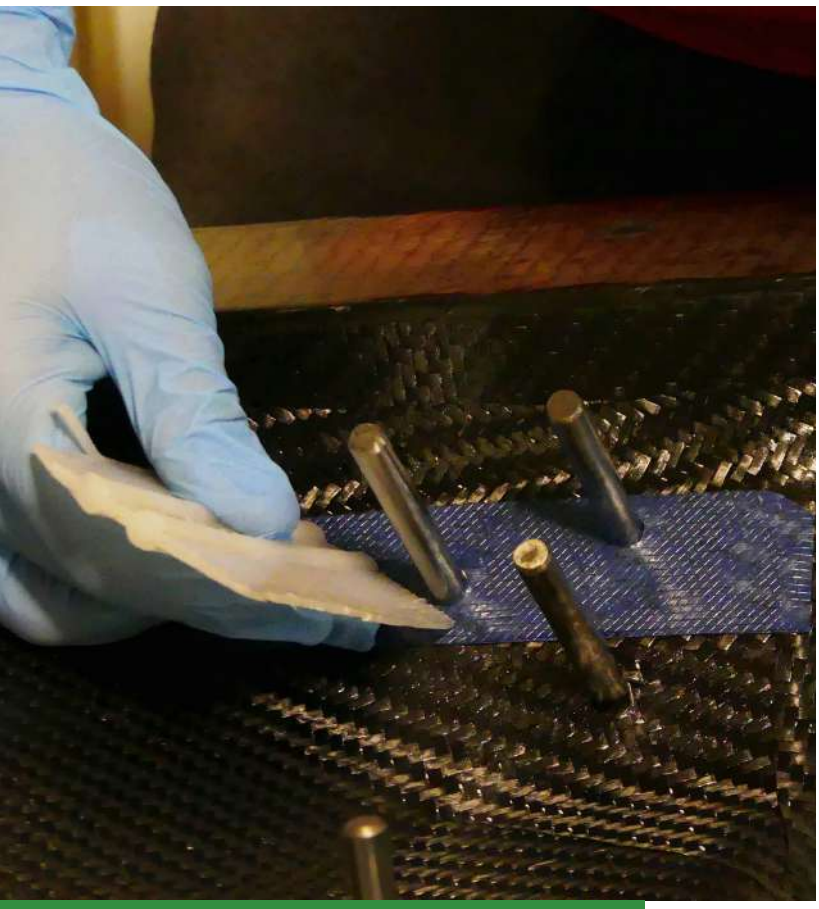
The harness department has been working on the 2D design of the ETR-06 in order to make the manufacturing process easier and specify all connections.

ELECTRONICS DEPARTMENT

BODY & COMPOSITES

In the Body department, the number of fiber layers for the monocoque has been optimized to the maximum. Not only that, the design of a part of the car's components has also been improved, such as the pedal assembly and the driver's seat, components that are in direct contact with our driver to improve their comfort and safety.

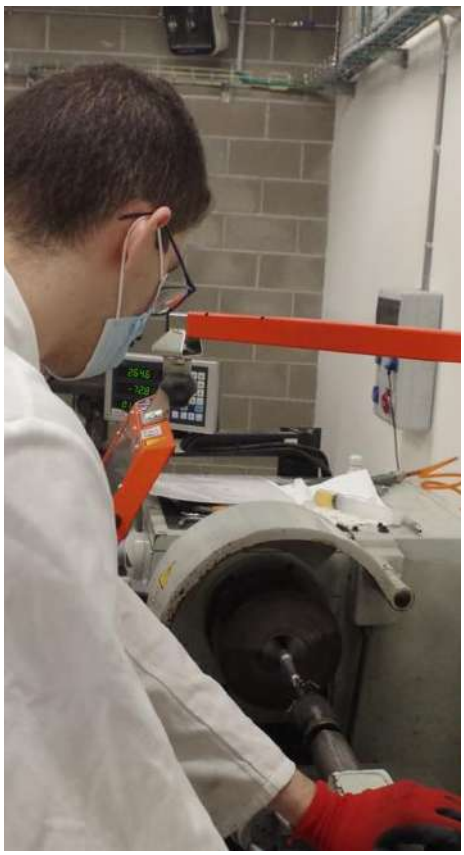
As for the Composites department, an attempt is being made to optimize both the carbon fiber calculations and their knowledge in order to obtain better performance in simulations and to continue improving the monocoque.

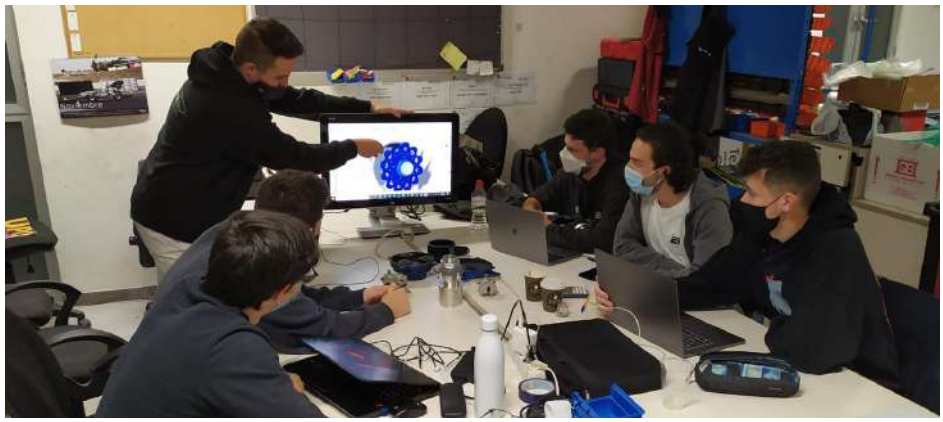


PACKAGING

Currently, the department of packaging is in the final manufacturing phase and during the next few weeks they'll finish off the 3D printed parts and will send the aluminium package to be welded together. With the completion of these tasks, the department will be ready for the assembly of ETR-06 racing car.

At the same time, new ideas and designs have started to be considered to optimize the packaging set that will be used in the next racing car.





SUSPENSIONS

At the suspensions department we are currently focusing on the design of the suspension geometry for the 2021/22 season single-seater, facing alongside the Transmission and Brakes & Wheels department the challenge of assembling the motors directly onto the rear wheels. Moreover, we are optimizing the dynamic and mechanical design of our future car.

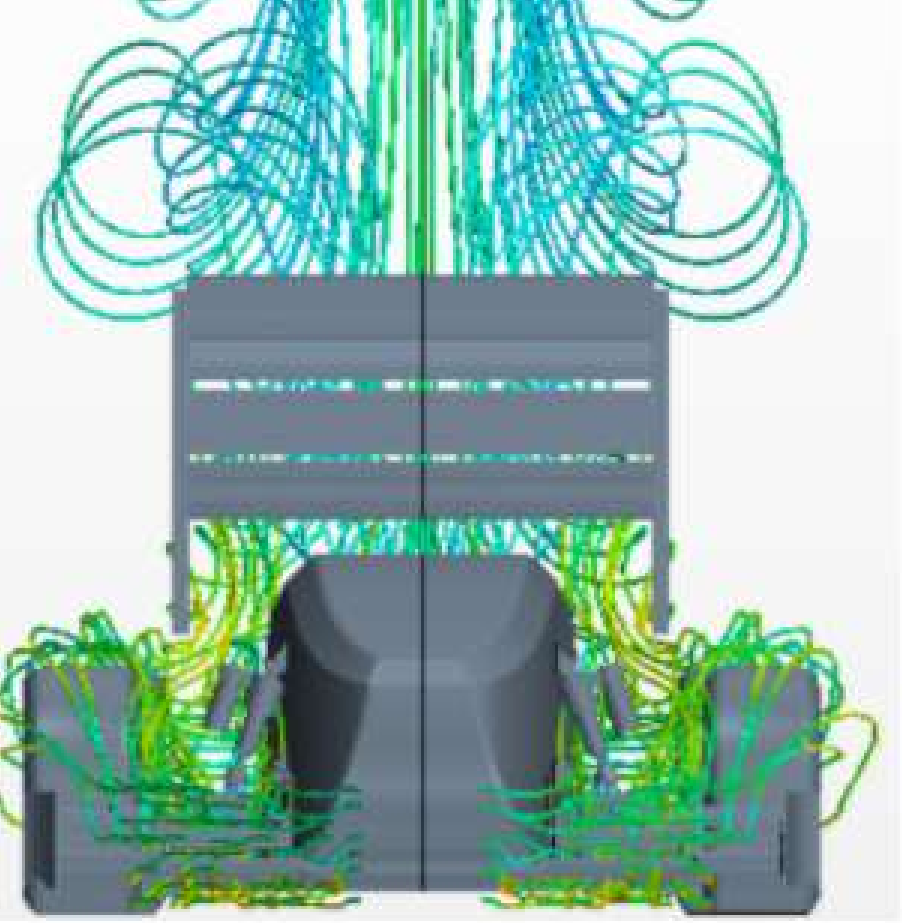
At the same time, with all the parts manufactured, we are assembling the wishbones of last season's designed car.

STEERING

For these last weeks, the steering department has been working simultaneously on the manufacturing of the ETR-06 and on the development of the 07. From the tubes provided by the Schröder Group, we turned them into the ones which will later be part of the supports. In addition, the different carbon fiber tubes provided by Clip Carbono have been cut to the necessary size. As far as 07 is concerned, the department is working on the tyre study in order to optimize vehicle dynamics.

BRAKES & WHEELS - TRANSMISSION

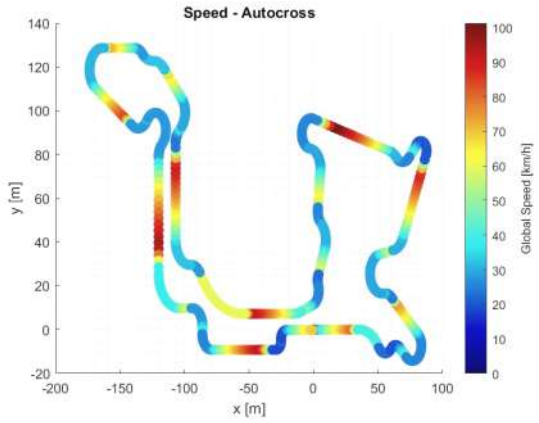
Currently, the Brakes&Wheels and Transmission department is working in the last run in order to finish the manufacturing process for the ETR-06 car. Moreover, they are already working on the design of the new wheel and transmission system. This system is the main upgrade between the ETR-06 and the ETR-07, because it will mount the electric motors directly onto the rear wheels.



VDC

The VDC department is focused on the design of the ETR-07. In order to achieve an optimal dynamic behavior, a study of the distribution of weights is being carried out.

In addition, in order to achieve this distribution, we are working together with the Body and Accumulator departments to reduce weight and find the best driver's and battery position.



AERODYNAMICS

At the beginning of this season, the work is focused at making a monocoque as aerodynamic as possible for the next year. A Side Wing is also being studied to make it work well with the new monocoque.

Moreover, cornering simulations and an Aero Map are being carried out to find out how the car will behave in all possible conditions. Finally, we are manufacturing the car of this season, ETR-06.

Javi is a former team member currently working at Mercedes-AMG Petronas F1 and Project ONE.

What was your role in the team?

I entered the aerodynamics department in June 2015. There, I started during the summer as a rookie, preparing the model of the car to make the bodywork.

The following year I was part of the cooling deparment, which at that time did not exist yet. We were in charge of sizing the radiator and pump for the inverter cooling circuit. At the same time, I was chosen as Management & Marketing Chief, where I was in charge of sposor related activities and, with the help of other chiefs, we coordinated the team.

What's your favorite memory from Formula Student?

Finishing the Endurance event at the Czech Republic FS competition.

What values do you think Formula Student has brought and served you in the Formula 1 world?

Effort, work under pressure, teamwork and practical application of university knowledge.

How is the day-to-day life like in a Formula 1 team?

My day begins with the daily meeting with the managers and team leaders of the project to deal with the problems and priorities. Then, I need to make sure that the established priorities and deadlines are met during the day. I help the assembly, manufacturing, engineering or testing department achieve the daily targets. I do my bast to meet the goals and deadlines.

What's your favorite memory from Formula 1?

Achieve 7 consecutive world constructor championships and have my name in the cars monocoque.

Finally, what advice would you give to the team members?

To take advantage of the time you spend in Formula Student, you will never have the oportunity to develop and make your ideas come true in such an open project again.

On the other hand, we would like to congratulate Jordi Clos, also a former member of the team, in the Motors&Inverters department, since the Sociedad Español de Excelencia Académica has awarded him the first position on the National Ranking 2020.

The Sociedad Español de Excelencia Académica looks for the best academic records, along with the best training activities, and prepares the National Ranking. Both his excellent academic trajectory and his involvement in the team have positioned Jordi at the top of the ranking.

CONGRATULATIONS JORDI!

THE E-TECH RACING FAMILY GROWS LITTLE BY LITTLE, AND THIS YEAR WE CAN RELY ON THE SUPPORT OF 5 NEW SPONSORS!

boloberry

They have provided us with a 3D printer, which allows us to make parts in the workshop with a speed we could not count on until now. In addition, they can give us filaments of different materials, training and use of their printer farm.

GAMB power transmission

We asked them to order the pinion from the direction of the car.

GEDORE

We have been sent a 600N·m torque wrench and a socket, which we will use for our single-nut wheel system.

HYUNDAI POWER PRODUCTS

They have provided us with a welder and a mask that will allow us to do electrode welding, and we will also learn MIG welding, to be able to manufacture different parts of the vehicle such as the chassis tubes or the steering of the vehicle.

KISSsoft Drivetrain Design Solutions

We will use their powerful software, which will allow us to calculate the transmission parameters of our cars and thus be able to obtain an optimal design.

THANK YOU VERY MUCH!

PRINCIPAL

VM MOTORS
VERNIS

PLATINUM

BOSCH
SCHAEFFLER
LEMO
ETAS
NEXUS PROJECTES

GOLD

SIEMENS
CSUC
VECTOR
Applus laboratories
ENGINYERS BCN
Gurit
[z]inkers
INTECH3D
EL PARC del Fòrum
Applus IDIADA

SILVER

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RÜCKER LYPSA
FICOBA
ceys
CITCEA
AIRTECH
Moldea
GRIÑÓ ROTAMIK
aluNID
boloberry
modelfusa
BALENTEC
TRESDENOU
RÖSLER
ROHDE&SCHWARZ
MUR

BRONZE

ScanPrint
Milwaukee
ALEX
SAKAI OVEX
MENAES S.L.
molex
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GJM
HMS
ollé
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