



OCTOBER 2017 EDITION



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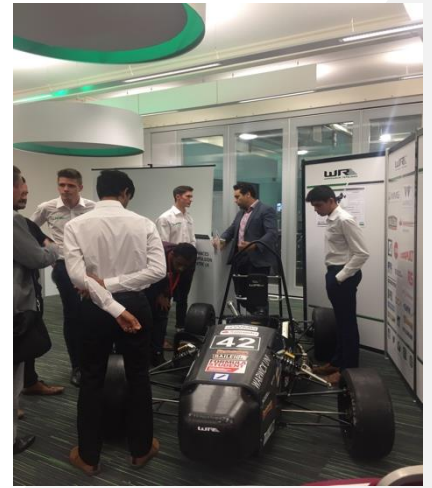


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AN INTRODUCTORY WORD

The new academic year has now begun and Warwick Racing have started strong with a new wave of members from a range of degrees, keen to get involved and learn through the unique opportunity that Formula Student provides. The team has already been looking ahead towards the competition in the summer by attending the IMechE Learn to Win Event, gaining valuable knowledge first-hand from this year's judges. Warwick Racing have also been promoting STEM subjects in the local community, with members running a two-stroke engine workshop at an open day at WMG Academy. The Pits are now a hive of activity with technical members starting work on new projects and closing in on having the IC (internal combustion) car ready for testing! Meanwhile, the business team have started work on our Speaker Series, YouTube channel and business logic case for the competition. There is a whole lot going on, so find out more about what's been happening in this edition of our newsletter!

- Harvey Cumming, Business Development Manager



WARWICK RACING TECHNICAL UPDATE

POWERTRAIN

The Powertrain team had their first meeting last week. The Powertrain manager gave a brief overview of the current powertrain set-up, as well as his views on what he envisages the future WR Powertrain to be. This year, the powertrain team have seven development projects underway, spanning both the current car and our future WR9 vehicle. The biggest development is a highly anticipated *Integrated Airbox and Plenum* design to maximise the airflow into the engine, and improve the quality of the air itself. The project is expected to produce a preliminary design by Christmas, and have a manufactured prototype of the final design built by the end of Term 2. Other projects include looking at a new cooling system, as well as in depth research into the feasibility of either using a form of forced induction or switching to a larger engine in order to achieve a gain in power.



The first Powertrain meeting

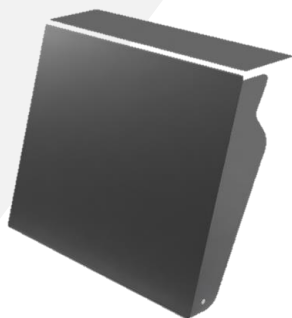
CHASSIS

There has been an overwhelming response from the members of the Chassis sub division, with first, second and even third year students keen to get involved in the projects lined up for this year. The two main tasks handled this week were Chassis Design Verification and Firewall Redesign.

The people involved in the design verification project were engaged in studying the 175 page regulation book from Formula Student (FSAE) and ensuring that the tubular steel frame of WR8 was suitable for competition this year.

The firewall redesign for WR8 was hotly contested by the three groups involved, to come up with the best design for a new firewall that passes the FSAE rules. CAD models, followed by professional design reports explaining their design choices, were submitted by teams.

There are exciting times ahead, with an aluminium honeycomb monocoque chassis in the development stage for WR9.



Redesigned Firewall Render

DYNAMICS

The Dynamics team has had a great start this year, with lots of projects taking place to get the car ready for testing. In the first few weeks we have gotten new members working on different research projects including Wheels and Tyres, and Brakes and Suspension for our WR9 car. From this research we will be able to design a whole new suspension system from scratch. Alongside this, Dynamics held the first skills session, with an excellent turn out. These sessions are aimed to give members of the team a basic overview of vehicle dynamics, in order to improve everyone's understanding of the car as a whole, providing a good platform for more innovative design solutions. The plan over the next couple of weeks is to adjust the ride height of the car, implement a front rocker system and install upgraded brakes to make sure the car can run safely for testing.



Dynamics skills session on Tyres



WARWICK RACING ELECTRIC TECHNICAL UPDATE

POWERTRAIN

This year, we plan to build upon the work of teams from previous years to produce a car that can compete in Formula Student Electric 2018 and become the first British university to race an Electric car at the competition which completes all dynamic events.

Previous teams have managed to design a lot of the powertrain and select specific components to use, however not all these components have been acquired/manufactured, so our objective this year is to source all these parts and assemble the powertrain.

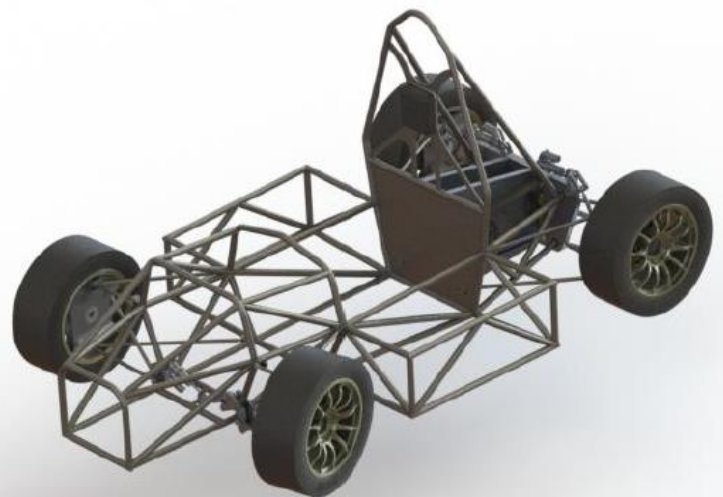
We will have to manufacture a battery pack with a BMS to run the motor we have already obtained. We must also develop the CAN bus and VSC to control the motor. Cooling systems will need to be implemented for the battery, motor and inverter. Finally, all systems must be assembled and tested and run well enough to compete at the competition in 2018.



CHASSIS

Last year we partially completed the chassis, and as a result were only able to enter it into Class 2 of the Formula Student competition, which meant it was not eligible to compete in any of the dynamic events. Our plan for this year is to begin with the starting block that has been given to us and work our way from there; the ultimate target is to create a finished vehicle that will be eligible to compete in Class 1. A lot of progress has been made so far, but there is still a long way to go.

Among our priorities are the design of the front uprights and the optimisation of the rear uprights and bulkhead; we will focus on these three areas as a starting point for this year's work, as well as addressing the issues related to braking, suspension and the pedal box. We are also considering the possibility of installing anti-roll bars further down the line.



EVENTS**WARWICK RACING AT THE WMG ACADEMY**

Our participation in WMG Academy's Open Day last Saturday was a great success. We managed to draw the attention of many prospective students and parents. When it comes to engineering, we believe the hands-on approach can be one of the best learning methods: our stand featured a couple of two-stroke engines which students could assemble and disassemble to better understand their inner workings.

Aside from engine building, we talked to prospective students about Warwick Racing, Formula One, and engineering in general. We also provided subject and career advice for parents who wanted to know about the potential career paths that studying engineering can give their children access to.

Overall, the team had a great time and were very glad to support the Academy.

**LEARN TO WIN**

Last week the team attended the IMechE's 'Learn to Win' event, where we were able to get guidance and advice from the judges on how we can improve every aspect of our car.

The event consisted of a series of workshops and presentations delivered by senior members of the Formula Student executive, such as veteran judges and scrutineers. They taught us how to maximise our points in each area of the competition.

After a morning of talks, the team split up to attend workshops and one-to-one sessions with experts on topics such as Autonomous and Electric Vehicles, Dynamics, Marketing & Media, and MATLAB. These sessions allowed us to discuss feedback on our design, manufacture and competition documentation in further depth.

We also had the opportunity to network with other Formula Student teams from across the UK and Europe; sharing our experiences and ideas with each other.

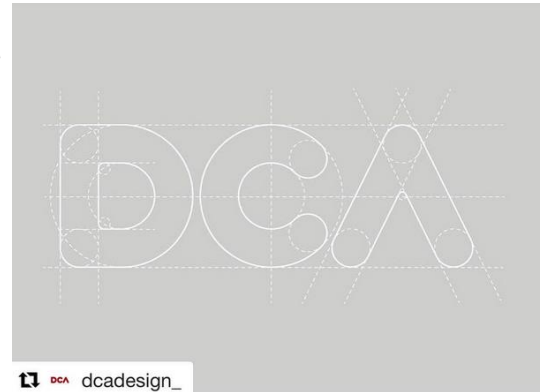


UPCOMING EVENTS

SPEAKER SERIES: DCA DESIGN INTERNATIONAL

Warwick Racing's annual Speaker Series will kick off next month with its first event of the year, featuring a guest speaker from DCA Design International, an award-winning product design consultancy firm. This will be a great opportunity for students to learn about the company and its work: among the many projects in DCA Design's portfolio are the First-Class interiors on Singapore Airlines planes, Stella Artois Glassware and Augmented Reality Cycling Helmets.

The event will consist of a 40-minute talk followed by 20 minutes where attendees will be able to ask questions. It is due to take place in the Oculus, the University's brand new, eco-sustainable multipurpose building, on November 8th at 11 am.



CROWDFUNDING CAMPAIGN

We are proud to announce the launch of our new Crowdfunding campaign! We want to build our best electric car yet ready for Formula Student 2018, but to do that we need further help and support. The crowdfunding goal of £10,000 will allow us to attend UK competition with the best chance of completing all dynamic events. The donations will go towards:

- **Electric powertrain:** The main electronic components are costly with the batteries alone costing almost £10000, along with the low voltage power controller
- **Testing:** In order to ensure that all the electrical components are working safely we need a more sophisticated data acquisition to monitor them
- **Competition:** For the team to go competition we need to afford camping, food and transport for the entire weekend

To support our crowdfunding campaign, please log on to www.spark.warwick.ac.uk/p/WRacingE/ to make a donation.

We'd also like to say a special, heartfelt thank you to the following people for having already donated generously to our campaign:

- Matt Hill
- Jan Cumming
- James Steward
- Shafiu Alam
- Andrea Crowley
- Kat Carter

X2

DOUBLE YOUR DONATION The first £250 donated to this project will be matched by Warwick Alumni & Friends

WARWICK RACING ELECTRIC
A project by: Warwick Racing

Warwick Racing Crowdfund

02.10.17 - 21.12.17

WARWICK RACING CROWDFUND

University of Warwick Sport / Technology

£320
pledged of £10,000 target

3% FUNDED 10 SPONSORS

SPONSOR

61 Days 11 Hours 6 Minutes 13 Seconds

This project will only receive pledges if at least £3,500 is pledged by Thu 21 Dec 2017



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