FEBRUARY 2018

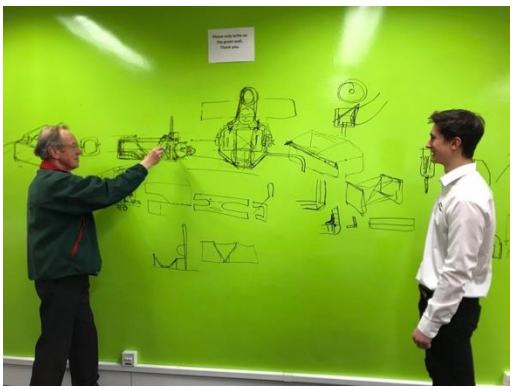
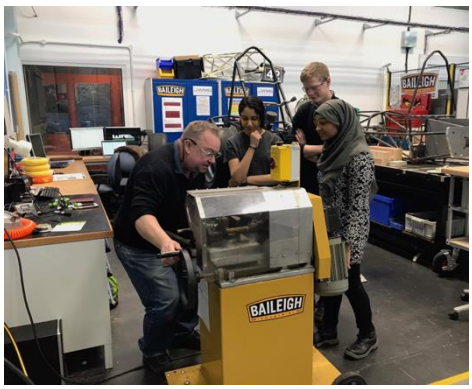
EDITION 2

AN INTRODUCTORY WORD

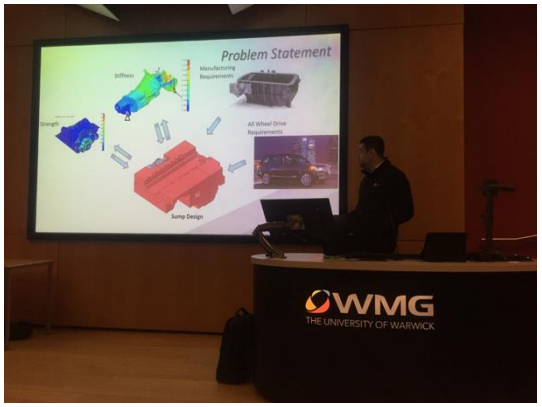
With Term 2 having the biggest push forward on the manufacturing front, this edition contains plenty of updates on our progress with both the IC car and the Electric car. The IC team have been focusing on making changes to reduce the car's weight and re-doing mounting points to improve the packaging of the vehicle. The electric team has begun manufacturing the batteries, following a finalised design of the accumulator.

The outreach team has begun its series of open day events, showcasing the opportunities for personal development available in the project to prospective students. This week we also look forward to our first collaboration with the Engineering Society, hosting a breakout session for the Connectivity conference with a focus on Autonomous vehicles.

-Disha Naik, Project Manager







warwick-racing.ac.uk @WarwickRacing @WarwickRacing @WarwickRacing

TECHNICAL UPDATE

MANUFACTURING

The manufacturing division of the team has been busy ensuring that all the subsystems on the internal combustion car are up to working order. This started with ensuring that the brackets for the new lightweight aluminium honeycomb flooring was welded onto the chassis. In order to improve serviceability and performance, the packaging of the vehicle has been improved by changing the mounting system used to hold the fuel tank. The new brackets have been water cut from aluminium and steel, which will be welded by our expert technicians to both the steel fuel tank and the aluminium fuel tank; both components will then be joined by bolts.

Furthermore, the manufacturing division is working alongside the electronic department to replace our current lead acid battery with a lightweight high-performance unit: as this requires considerable changes to the systems and mounting, a new mounting mechanism is currently being developed.

DATA ACQUISITION (DAQ)

The electronics team has had a wonderful start to the term. We have successfully tested our Daw's speed sensing circuit and are working to test our suspension displacement design.
At the same time, we are also pushing ourselves to design new systems. Personally, the most exciting of them is roll, pitch and yaw sensing. With the testing we are doing now and the designs we are working on, it's a thrilling time. I hope we get more opportunities to push our boundaries and be the best that we can be.

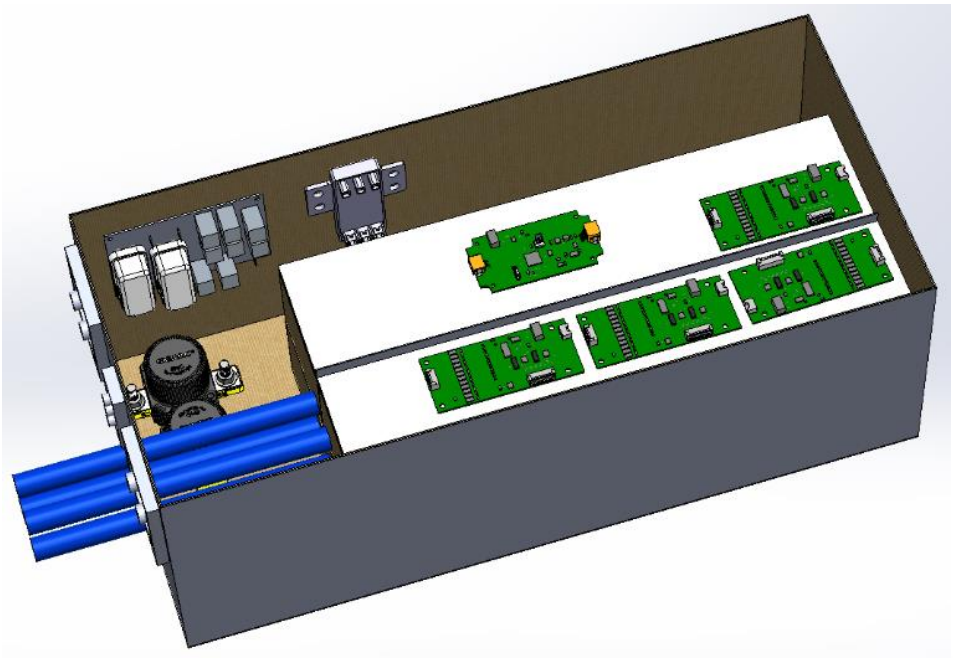
ELECTRIC CAR TECHNICAL UPDATE

BATTERIES/MOTOR

Over the past 2 weeks we have been working on defining the high voltage components and packaging them within the accumulator container boxes. These boxes were designed to be housed within the car chassis crash structure, therefore packaging and mounting solutions were discussed, with restrictions on box volume and formula student guidelines.

The layout of each accumulator container was designed so there would be two pods, one in each container. The master pod would house the BMS and high voltage connection contactors to the inverter and the slave pod was designed to only house cell modules, MCU's and isolation contactors. The master pod accumulator container was specified to contain 3 accumulator isolation relays and the slave pod was designed to house 2, both meeting Formula Student guidelines (**EV3.3.2**). Both pods would also contain a 250A fuse. The contactors were isolated from the battery modules using Mylar insulation to cover the modules.

PCB's were to be housed using standoffs on a plastic sheet, with a layer of air insulation between the module and plastic sheet. An example of the packaging solution for the master pod is given below:



OUTREACH AND EVENTS

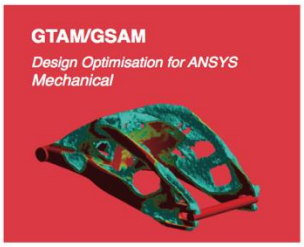
The Outreach team has been busy organising WR's participation in several exciting events. We are currently running the Warwick Racing stand at the Engineering Open Days (there are several Open Days over the course of a few weeks between February and March). Our main task is explaining the team's activities to prospective students, showing them some of the parts for WR8 we have been working on and talking about the various roles available in the team.

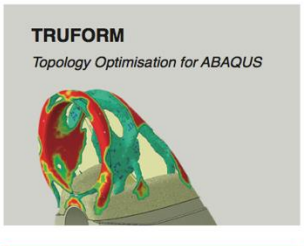
On February 21st, Warwick Racing will be hosting a breaking session at the Connectivity Conference, organised by the Engineering Society. Our special guests for the day will be a few representatives of autonomous vehicle R&D company "StreetDrone"; we are hoping they will deliver talks about the company, challenges facing the autonomous vehicle industry, and their student ambassador programme. There is a possibility they might bring the autonomous vehicle they are currently working on to the conference for attendees to see.

GRM OPTIMISED ENGINEERING DESIGN

GRM CONSULTING'S ADVANCED DESIGN OPTIMISATION SUITE

Optimisation is a necessary part of engineering design. Whether you want to make your designs stronger, lighter, or cheaper, there's almost always going to be an iterative development process to improve the design. You could do this manually, of course, but why would you when it can be done automatically? GRM's software generates theoretically optimal designs using the finite element method, and is available either as standalone programs or embedded into your existing design and analysis systems.





SOLIDWORKS TruForm SW
ANSYS GTAM/GSAM
VR&D Genesis
SIMULIA TruForm Abaqus

+44(0)1926 889300
grm-consulting.co.uk
info@grm-consulting.co.uk

warwick-racing.ac.uk
@WarwickRacing
@WarwickRacing
@WarwickRacing

warwick-racing.ac.uk @WarwickRacing @WarwickRacing @WarwickRacing