

An FSUK2018 Review

81 Teams across all classes from over 35 countries competed this year at the British home of the Grand Prix – Silverstone Circuit. Congratulations to Monash University, Australia who took overall 1st in class 1 with their IC car and 3rd with their EV.

Also, congratulations to Oxford Brookes University who took overall 2nd place but were the highest ranking UK team.

It was also fantastic to see the Texans from UTA Racing bring over their original winning car from the 1998 year – a turbocharged, meth-injected 250cc 4-cylinder Honda engine producing around 80bhp with the, still used today, 20mm restrictor.

For us, the UPR-10 proved to be a year full of high highs and a few lows but I can gladly announce that for the first time in my knowledge we encountered a zero point penalty where 70 other teams did. Points were awarded similarly to previous years – coming from 8 disciplines^[1]. Feedback was well received in the Static Events consisting of the Cost Report, Design Report and the Business Presentation. UPRacing placed an overall 49th position with a total 144.9 points.

Cost Report

With a maximum of 100 points achievable awarded were an honourable 68 points to UPRacing – a 40.3 point improvement over our 2017 score. Judges were impressed with the overall thorough report where every assembly, part, nut, bolt, machining process and turn of a screwdriver must be accounted for and presented as if the car would be produced as 100 units. Points were lost for lack of consideration of labour rates and some minor oversight formatting such as the use of unspecified file names in documents. I see a relatively easy score for improvement and no reason why we cannot nearly obtain the extra 32 points. This would have moved us up 2 places in overall rankings putting UPRacing just behind the University of Cambridge!

Design Report

Respectably, 60 Design points out of 150 were awarded giving us an edge over top 25 ranked teams. Although this was a shortfall of 10 over previous years the team experienced some unforeseen major changes in the Design team management structure late into the year. This forced us to make large design changes with little time. However, overall the Design judges, all current and retired industry experts of different fields, were very complimentary as we presented design justification for current and future systems including a potential and effective Aerodynamics package.

Business Presentation

Unfortunately, the team suffered with a mere 7.4 points in the business presentation. This calculates as just 20% achieved at FSUK2017. Due to a late change of team members to conduct the presentation the presentation was weakened. Nevertheless, this leaves us large scope for improvement and with some technical liaising and a little more preparation time I will personally be pushing for a 40 point improvement bringing us much closer to the maximum 75 points in the coming year.

Dynamic Events Overview

The 4 dynamic events scoreable include;

- Acceleration
- Skid Pad
- Sprint
- Endurance

Points are also available for Fuel Efficiency across the Endurance event where you must complete at least 11 out of 22 laps, complete the halfway driver change within 5 minutes and get back onto the track to qualify for.

Large setbacks in noise and brake scrutineering meant we didn't make the cut off times for Acceleration or Skid events, sacrificing all points for those.

Our first dynamic event, the Sprint, bought us in 4.5 points with all drivers successfully completing their runs.

After experiencing some drive-chain stretch and ultimately tension issues from the hard accelerating in the Sprints, the team spent a long night repairing and preparing the car for the final Endurance. As the old Head of Manufacture and Maintenance I am ecstatic to say the UPR10 performed brilliantly as it was pushed hard through its paces by Ben Spurge – our semi-professional racing driver. Unfortunately, an oversight in Cooling Fan specification meant the electrical fuse blew on lap 5 causing water temperatures to rocket to over 125°C and steam to appear via the cars water catch can and consequently a Marshalls flag to end our event.

After an hour of cooling system and electrical checks back in the Paddock the car was given the all clear with no long term damage however our single attempt of the Endurance had been used and thus forfeiting up to 17 lap points plus Fuel Efficiency scores.

[1] FSUK2018 Results - www.imeche.org/docs/default-source/1-oscar/formula-student/2018/2018-results/fs_uk_2018--overall.pdf?sfvrsn=2

Forecast

As with any product testing is paramount. The UPR11 aims to be a highly reliable car instantly making it competitive in a Formula series where it really is anyone's to take. Comments from sponsors and alumni stated that the chassis was one of the straightest ever which we can thank the use of advanced manufacturing methods such as Laser Notching for. This gives us a great base to work from meaning minimal chassis design changes required and more efforts concentrated on weaker but critical systems such as drivetrain to improve slackening and stretching of chain drive, cooling system specification and importantly electronics.

With chassis partners suspension systems. Geometry proved to be effective with the addition of a more simple adjustment procedure to be implemented alongside the potential use of more composite materials and other manufacturing methods.

UPRacing will be boldly aiming for a top 30 position at Formula Student UK for the 2019 year, achievable collectively with advice and support from you, our sponsors and supporters, alongside thorough engineering and by utilising all of the resources available to us.

On behalf of the team, we really look forward to working with you once again this year.