



DEAR READERS,

Welcome to the Newsletter of TU Brno Racing! The goal of the following pages is to give you an insight of what is happening in our workshop from the start of the season, through the design phase, to the beginning of the manufacturing phase.

This year's season is particularly focused on maximising the potential of the current concept, deepening our knowledge, developing new systems, and preparing for the long-awaited transition to four-wheel drive in the upcoming season.



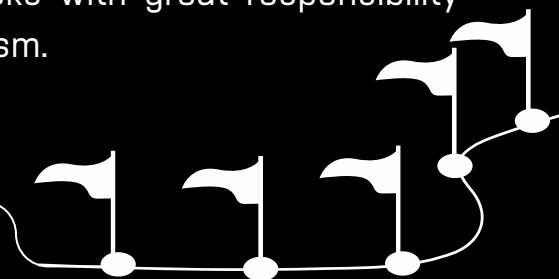
THE START OF THE SEASON 2023/2024

The start of the season is associated with the election of our new team leader, leaders of individual sections and technical leader. We have decided to abandon the system of having two technical leaders, and we have opted to have only one who oversees both mechanical and electrical aspects.

Another change in the team structure was formal, renaming the Business & PR section to Marketing & PR.



In September, we continued with recruiting new members. Dozens of students from various years and faculties have decided to join us. After an initial introduction, each newbie joined a section of their choice, and subsequently they participated in workshops led by our current members. As is often the case, some of the newcomers left the team during the training period. However, those who have stayed with us are very skilled, and some of them have approached their work and tasks with great responsibility and enthusiasm.



THIS YEAR'S CONCEPT

One of the constant stumbling blocks for us is the inadequately tested and unvalidated formula. For this season, we have therefore decided to move the deadlines, shorten the design phase, and thereby extend the final testing part of the year.

We continue with the concept of the Dragon E3, which performed very well for us in the races, but still had its shortcomings. We were able to address these issues during the design phase by analysing race data and extensive post-season testing.

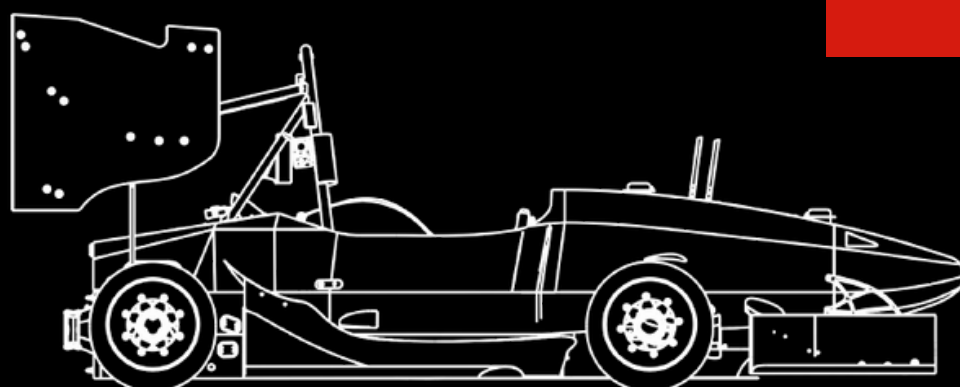
The current Dragon e4 is still undergoing intensive development and preparation for the testing of new systems. These systems will play a critical role in the design of the Dragon e5, with the previously mentioned four-wheel drive and motors integrated into the wheels.

We will diligently continue to work on torque vectoring, the development of recuperation and last but not least on the virtual model of the formula. This model will allow us to make simpler conceptual decisions in the future and save real track time when comparing car setup changes.



CAD FREEZE

The CAD freeze means the completion of the design for the new formula. This year it was earlier than in previous seasons, at the beginning of December. The design was also reviewed by former members during the so-called alumni review, which took place at the end of November.





OUR WORK IN THE PAST FEW MONTHS

During the autumn months, the focus of our work was on post-season testing. In addition to the usual test drives at the Continental or Tatra facilities, we continued with driverless testing, even in unfavourable winter conditions.

In the the cooling circuit, we measured the characteristics of our cooler on the inverter.

We tested the monocoque samples by the three-point bending and shear test cutting, while also validating the extensive optimisation of the monocoque composite.

Finally, we also managed to conduct validation of of aeropackage in cooperation with our long-time partner Škoda Auto.



We also participated in several workshops organized by our partners. Certified people are needed to work with high-voltage electronics at events. Our electricians underwent professional training at Škoda Auto to obtain such a certificate.



Furthermore, we attended trainings provided by SVS FEM, focusing specifically on working with dynamic simulations and optimization software. These will be used, for instance, in the design of the 2nd generation of our composite impact absorber.

At Continental, we attended a workshop focused on project management. We also attended the traditional Formula Student Symposium in Hungary.



WORKING IN A TEAM

The personnel base is one of the most crucial elements of the team. This year we decided to pay more attention to it. We have organised traditional team-building events on Halloween and before Christmas. We also held a volleyball tournament and are planning similar activities and events for our members in the future.

We aim to make the team more cohesive, which should lead to a more pleasant working environment, more effective problem solving and a higher proportion of newcomers who want to stay and develop within the team.





WHERE WE WERE SEEN

One of our goals for this year is to reach as many people as possible. In particular, we are focusing on students who could potentially help expand our number of members, engineering companies who could support us, and the general public. We believe that what we're doing is meaningful and brings significant benefits, whether it's the opportunity for students to gain valuable experience or the involvement of companies in the project for mutual cooperation.



During the first week of school, we displayed our formula and simulator in front of the faculties and presented our project to the students. We also participated in Gaudeams, Science Festival, Researchers' Night and Open Day organised by the school. In order to get in touch with potential sponsors, we also visited several events such as the International Engineering Fair, the E-salon in Nitra, Slovakia and the Open Day in Valeo, where we demonstrated our progress in terms of autonomous driving.



MANUFACTURING

Now we have several months of manufacturing ahead of us. We have already started milling positive moulds for the monocoque, which had to be remodelled due to rule changes. The chassis section is also working on testing and simulation of the reinforcement of inserts transferring critical loads from the suspension to the monocoque, as well as manufacturing test structural noses for drop test.

Once the monocoque is completed, the parts of the other sections will be assembled. We know from last year that one of the problems in finalizing the formula was the long delivery times for wiring material. Therefore, this year we have pushed the deadlines for designs and orders to avoid a similar problem and to get the formula on the track as soon as possible.



FUTURE PLANS

Before the new formula becomes operational, we have planned test drives with Dragon e3. In addition, we have prepared a series of static and dynamic tests, ranging from tire longitudinal characteristics and engine braking to strain gauge testing, and measuring the internal resistance of battery cells. We will keep you updated on these developments on our website and social media platforms.

As for the driver training, it is also in full swing. Since the beginning of January, the candidates have started with running and weight training. The next steps include training on our simulator and test drives on go-karts. This will be followed by driving the Dragon e4.



You can read more about the manufacturing process and how we are progressing with the new design in the next newsletter. In the meantime, you can follow us on social media to see what we are currently working on.

Thank you for your support!

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