

Optimising the brake system of a Formula Student car with 3D printed callipers

OUR PROJECT

Formula Electric Belgium is a student-run electric race team which competes in Formula Student, the world's largest competition for engineering students. We aim to push the limits of performance, innovation and sustainability within electric racing every year, which is only possible with the help of our Thesis students. These pioneers are responsible for performance-defining innovations within the team, and we would love for you to join our team of highly ambitious and motivated engineers. As a Thesis student, you will research, design, prototype and test your innovations alongside the full-time members which make sure the team pushes itself and the car to new heights.

AIM AND OBJECTIVE

The goal of this thesis is clear: increase the general performance of our brake system. This consists of two major parts: brake calliper and brake disc optimisation. Depending on the specific students/promotors, one of the parts can have a primary focus.

Having a good brake system is of course essential in a racecar. Furthermore, a Formula Student car should be as light as possible (around 200 kg). To save weight we want to design 3D printed callipers that are as light and as performant as possible. Research about this has already been done but was not a complete success. But still, this information will give you a solid starting point. Furthermore, we switched to a smaller 10 inch rim design so our callipers should become more compact.

Evenly important for the performance of a brake system is the design of the brake disc. This design is something that is kept more or less the same for a few years. Decent research into this will be interesting to optimise for cooling, weight and brake performance.

For both parts, it is also extremely important to keep material choice and manufacturability as primary design factors.

PROFILE

- Experience with CAD/FEA-software
- Knowledge about hydraulic braking systems
- Knowledge about strength of materials and material choice
- Basic knowledge about production processes (3D printing, milling, laser cutting etc)
- Interest in CFD cooling simulations

RETURNS

- Practical experience in a high-end engineering context
- Work with the newest technologies and innovative companies
- Developing your hard- and soft-skills in a company-like environment
- Participation in the biggest student competition in the world

INTERESTED?



Send us your contact details and field of interest to

recruitment@formulaelectric.be