

Maximizing Performance with Ground Effect Aerodynamics

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

This year, the Formula Student competition introduced a new regulation limiting the maximum total power of any active devices designed to move air to 500W. This decision was made because some teams were gaining excessive advantages from active aero, and the organizers lacked a clear framework to regulate it effectively. The 500W limit also includes the fans used for cooling the car. It is therefore crucial for the team to determine how to utilize this power optimally, balancing aerodynamic performance and cooling efficiency for the future. This thesis, however, will focus exclusively on the aerodynamic aspect.

The goal of this thesis is to provide the team with insights into how to optimize the use of fans to enhance aerodynamic performance. The primary focus of the thesis is determining the optimal position and geometry of the fans. The first phase of the thesis will involve creating a CAD model of the fan, specifically designed for use in CFD simulations. This CAD model will then be used to develop a comprehensive CFD model, enabling detailed simulations. The second phase of the thesis will focus on exploring various fan locations and evaluating different geometries to determine the most effective configurations.

This thesis will build on previous research conducted by thesis students within the team. However, the prior study did not account for the 500W limitation and did not explore all possible fan locations. Additionally, it was conducted using a different aerodynamic package, making its results less representative for the current setup.

PROFILE

- Basic knowledge of fluid dynamics
- Basic knowledge of CAD
- Interested in CFD 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