# Aerodynamic optimisation of the undertray and diffuser of a Formula student race car

We are looking for motivated master students Engineering Technology

## Project description:

Formula Electric Belgium (**FEB**) is a team of highly motivated engineering students that build an electric formula student race car. Just like Formula 1 the team builds a brand-new car each year to compete in multiple international competitions during the race season. Formula Student is the largest international engineering and design competition in the world. The competition is characterized by combustion vehicles, electric vehicles and since recently also autonomous vehicles. Formula Electric Belgium strives towards innovations and the raw performance of technologies. It is for this reason that the team will focus on the autonomous/electric race cars. Research and development applications will be made by postgraduate students in collaboration with thesis students from the KU Leuven and bachelor students from Thomas More.

## Thesis description:

Each year the aerodynamic department strives to improve the aerodynamic efficiency of the car. Increasing the downforce improves the cornering speed of the car and thus improving the lap time. However, it is important that this increased downforce does not disproportionately increase the drag of the car.

For the past few years the undertray was just a flat plate mounted to the underside of the monocoque. The diffuser was never strong enough to comply with the rules of the competition and thus never used. This year the undertray en diffuser have been redesigned to a stronger and more complex design. It consists of multiple venturi channels to increase the downforce of the car. This new concept for the formula student race car needs further research to optimize the generated downforce.

## Thesis objective:

The objective is to optimize the undertray and diffuser or recheart for new concepts (like double diffuser, influence nose on the undertray) to improve the downforce. This optimization includes the production method and reducing the cost and production time of the undertray and diffuser. CFD simulations are to be made to check the effectiveness and analyse the concepts with the existing design .

## Profile:

- Interested in CFD
- Interested in aerodynamics
- Creative
- Teamplayer

## What do you gain?

- A unique engineering– and team experience where hard work and team atmosphere are central.
- Work with innovative technologies in a realistic environment/application.
- Create added value for your curriculum and the team

Are you interested? Please send your resume with accompanying motivation to:
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