

Optimization of the lay-up of a carbon fiber monocoque for 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 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:

The carbon fiber monocoque is the largest component of the whole race car, spanning over 2m. The weight of this component exceeds 25kg, which is a significant portion of the total weight of the car. Lay-up optimization allows us to decrease the weight, and increase the performance.

During this thesis, you will look at the different zones in the monocoque and their mechanical requirements. You will critically investigate and evaluate the lay-up and the influence of geometry on the total strength and stiffness. Additionally, you will evaluate the implementation and design of the hardpoints.

Thesis objective:

The global goal of a Formula Student competition is to win the competition through good design and performance. This thesis will contribute to both aspects. You will critically investigate and evaluate the lay-up of the whole monocoque, as well as the hardpoints, and ensure that it is compliant with both the rules and mechanical requirements.

Profile:

- Interested in mechanical design
- Passion for green innovation
- Knowledge of materials engineering/composites is a plus
- Creative and critical

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.
- A practical thesis that will be implemented in later cars
- Create added value for your curriculum and the team

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

recruitment@formulaelectric.be

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