Power consumption investigation and reduction for a lighter and more efficient formula student race car

We are looking for motivated master students Engineering Technology Electronics and ICT

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:

This thesis is about the power consumption of our electric race car. We have a battery of 6.1 kWh to power our high voltage system as well as our low voltage system. The former is directly supplied by the 600 V of the battery and consists of 4 motors that are controlled by two drives. The latter is supplied by the DCDC converter and contains the dashboard, the sensors, the electronic control unit, safety systems and the actuators. It is interesting and useful to get a clear view of the biggest power consumers, and see where we can reduce our power consumption. For example an improved control system for the pump and the cooling fans or improved regen capabilities.

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. On the one hand by investigating the power consumption of the car, which is a good engineering practice and will have a positive impact on the design presentation of the car. On the other hand by reducing the power consumption, we should be able to reduce the amount of cells needed in the battery and thus reduce its weight. Since the battery is the heaviest component in our car, this will have a direct effect on the performance of our car.
The goal of the thesis is to create an in-depth overview of the power consumption of the car and develop ways to reduce this consumption.

Profile:

- Interested in electronics
- self-reliant
- 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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