

Development of the powerstage to drive the motors of a formula student race-car.



We are looking for two motivated master students Electronics and ICT 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:

Formula Electric Belgium's car will next year use self-designed motors. However to drive these we need to design our own motor controllers to gain maximum performance. The foundations to do this have already been laid. The logic step of the drives is already designed. To convert the signals from the logic step to high power we need a power stage. This has to be able to efficiently switch 600V at 20kHz. It is possible to have currents flowing of more than 120A.

Thesis objective:

The goal is to have a fully working motor drive before March. This contains the design and production of a power stage as well as the integration of the logic step. After this deadline there is a lot of time to test and optimize performance.

The motor that has to be controlled is a PMAC motor.

Profile:

- Knowledge and interest in hardware architecture.
- Interest in power electronics.
- Make and follow a tight time schedule.
- Motivated team player that dares to take responsibility.

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