

Design and validation of self designed motors 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 characterised 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:

For a couple of years we have used 4 electric motors to drive our electric race car. The gearboxes are mounted in an upright connecting the motor to the wheel. This setup is called an inwheel design.

Previous year we used some modified motors which were designed by FSAE students, but we want to know the limits of this design/motor. It's up to you to get to know how our current motor works and performs. The next step is to optimise this design of the motor, this combined with a test setup to validate the work. In our scenario the trade off between weight and performance is the key to an outstanding drivetrain design.

Together with a partner of Formula Electric Belgium, who showed interest in guiding this kind of research, we want a new iteration of the motors used in our race car.

Thesis objective:

The goal of this thesis is to validate the current motor that is used by Formula Electric Belgium and optimise or redefine such that there is a better performing iteration, which can be used in the race cars to come. This research is guided by both Formula Electric Belgium and a partner of FEB. At the end they will present the results of the previous motors and compare it with the new ones.

Profile:

- Interested drivetrains and electrical management. Good knowledge of the courses Electric machines (Elektrische machines), machine parts (machineonderdelen) and production technology (Productie technologie)
- Knowledge and interest of Siemens Nx for design and simulations
- Fast learner of different simulation programs
- Make and follow a tight time schedule

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:
recruitment@formulaelectric.be

Diestsesteenweg 692, 3010 Kessel-Lo