



Vehicle Dynamics

Vehicle parameter sensitivity analysis

Green Innovation meets performance

Our Project

Formula Electric Belgium is a team of engineering students who build a **Formula-Student racecar** to compete in international competitions. We design and build a brand-new car every year and compete with other teams in multiple worldwide competitions during the summer months. Formula Student is by far the biggest **engineering competition** in the world and continues to grow. From next year on, we will be competing in both the **electrical** and **driverless** competition. You can join the project as a volunteer. This allows you to contribute to the next race car whilst keeping a flexible schedule.

Tasks

Simulations are an essential part of the design phase. They allow us to predict how the car will behave when specific parameters are changed.

The goal of this case is to figure out which **parameters** of the car are most crucial to **performance**. This way we know what to focus on next year to maximize our **competitiveness**.

Simulations will be made in **IPG CarMaker** (simulated laps with a racing driver). Each simulation will adjust one parameter (e.g. total mass, height of center of gravity, wheelbase, etc.). The lap times and other **relevant data** will be exported from the simulations and imported into **MATLAB** for post-processing.

The **results** will then be compiled and the most **critical parameters** will be identified (e.g. we gain 2 seconds/lap if total mass is reduced by 10 kg).

Profile

- Basic knowledge about vehicle dynamics
- Experience with MATLAB

Returns

- A unique engineering experience
- Applying your engineering skills on a real case
- Work in a team of young and motivated engineering students
- Learn about vehicle dynamics and current simulation software

Up for the challenge?



Want to do a similar case within the team? Submit your **resume** and **motivation letter** (one page) to volunteers@formulaelectric.be