

Development of a custom ECU using Raspberry Pi 5 Compute Module 5

OUR PROJECT

Formula Electric Belgium is a student-run electric race team which competes in Formula Student, the world's largest competition for engineering students. We aim to push the limits of performance, innovation and sustainability within electric racing every year, which is only possible with the help of our Thesis students. These pioneers are responsible for performance-defining innovations within the team, and we would love for you to join our team of highly ambitious and motivated engineers. As a Thesis student, you will research, design, prototype and test your innovations alongside the full-time members which make sure the team pushes itself and the car to new heights.

AIM AND OBJECTIVE

Our current ECU (Electronic Control Unit) is based on a Raspberry Pi 5, but it includes many unnecessary interfaces while lacking key features such as additional IO and CAN interfaces. To optimize the ECU for our specific application, we aim to develop a custom PCB that integrates a Raspberry Pi Compute Module 5 (CM5) with the required interfaces. Once the hardware is complete, our existing ECU software stack, built on ROS2, should be able to operate seamlessly on this new platform.

To achieve this aim, the project focuses on the following key objectives:

- Designing a custom PCB that hosts the CM5 and incorporates the necessary interfaces
- Prototyping and validating the custom ECU hardware
- Ensuring compatibility of the new ECU with our existing ROS2-based software stack
- Conducting performance tests to compare the new ECU with the current Raspberry Pi 5-based system

PROFILE

- Willingness to learn new technologies
- Education in electronics and ICT
- Experience with C++ and/or ROS is a bonus
- Experience with PCB design (preferably within Altium)
- Experience with the Raspberry Pi platform is a bonus

RETURNS

- Practical experience in a high-end engineering context
- Work with the newest technologies and innovative companies
- Developing your hard- and soft-skills in a company-like environment
- Participation in the biggest student competition in the world

INTERESTED?



Send us your contact details and field of interest to

recruitment@formulaelectric.be