



European Project Semester

PROJECT OUTLINE

Project dates: March - June 2025

Title: Design and testing of systems for retrofitting a competition vehicle (hill climb race)

Project activity areas: Automobile, renewable energy, electricity, electronics, mechanics, mechatronics.

Keywords: Automobile, competition car, electric motor, energy recovery, renewable energies.

Tutor's name and coordinates

Client – End-user: Aurora Racing Technologie
ENIT Technical Supervisor + contact:
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Project origin

Aurora Racing Technologie

Company:

Aurora Racing Technologie is a startup founded in May 2024 with the goal of converting thermal competition vehicles into electric vehicles.



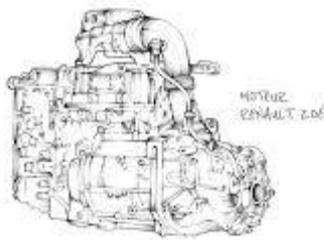
Project technical background:

The ultimate goal of this project is to retrofit a competition vehicle. As we understand it in this project, retrofitting involves replacing a vehicle's thermal components with electric components. At Aurora Racing, we believe that the retrofitting of competition vehicles will account for 15% of amateur and semi-professional motorsport within the next 10 years.



The elements involved in this retrofitting project (batteries, motor, control unit, and transmission) must meet several criteria, particularly being already in use for road vehicles (Renault, Tesla). After selecting the components, students will need to think about their integration within the vehicle, which the company will acquire specifically for this project. If deemed necessary for the vehicle's performance, the integration of an energy recovery system and a gearbox could be considered.

Once all components are chosen and integrated into CAD, the students will be tasked with studying the procurement and assembling these components into the vehicle. Engine mounts and some parts designed by the students could first be produced through 3D printing to verify their proper adaptation to the vehicle.



After confirming the proper adaptability of the components, students, alongside professionals, will carry out the assembly on the vehicle. This will allow them to understand both the theory and practice of motorsports and to see the concrete results of their project.



Following this, and depending on the project's progress, three final tasks will need to be completed: the renovation of the vehicle's dashboard, the implementation of a communication system between the vehicle and the track engineer, and finally, testing and adjusting the vehicle on an approved track. The goal is for the car to be ready for the hill climb race in early August 2025 (Font-Romeu Hill Climb). https://www.youtube.com/watch?v=NKyq0Y0_t5o



Students will travel to southern France to discover various aspects of motorsport competition.

Studied topics:

- Establishing a specification sheet with the client
- Selection and testing of components
- Procurement and CAD integration of components into the vehicle
- Potential implementation of systems (gearbox, energy recovery)
- Assembly of components
- Implementation of a communication system with the vehicle
- Testing and adjusting the vehicle

Recommended skills:

- Mechanics (Computer-aided design, dimensioning, technical drawings)
- Mechanical manufacturing (machining and 3D printing)
- Prototype assembly
- Mechatronics
- Electricity
- Programming
- Interest in automobiles !