

Electropulsion Systems (EP-201)

MARBELLA INSTITUTE OF TECHNOLOGY

COURSE OUTLINE

The *Electropulsion Systems* course is intended for people who wish to work in the fields of electric vehicle manufacturing, maintenance or sales. It clarifies what is needed to perform in a safe, efficient and effective way, all top qualities of a professional in the Electropulsion Technology field.

It also creates understanding of other areas where the same type of components are needed, like automation, solar energy, wind power, marine transport, robotics, energy back-up systems, ventilation and many more industrial and house-hold professions.

This course covers the systems found in electric cars. The flow of energy from a source, going thru the charger, batteries, power cables, protections fuses, current limiters, contactors, controller, all the way to the electric motor.

Practical lab time is included in the course, where students can be involved in the design, manufacturing installing and testing of components.

Its purpose is to give advice and uncover the key secrets for building an electric vehicle, or to convert an ordinary car into an electric car. Troubleshoot complementary systems like contact power, dc-dc converters, power brakes, power steering, air heating and refrigeration.

Learn to optimize in battery type, size, aerodynamics and power, so that your vehicle becomes the ideal prototype.

This course is a requirement for the ELECTROPROPULSION TECHNOLOGY programme.

Electric vehicle components

Operation of an electric vehicle
The charger
Lead acid batteries
Wiring
Fuse protection
Circuit breaker
Contactors
Controller
Electric motor
Key switch input (KSI)
DC-DC converter
Power breakes
Power steering
Heater
Air conditioning
Lithium batteries
Battery Pack construction
BMS system

Theory of electric propulsion

Aerodynamics
Rolling resistance
Mechanical Power
Range

European legislation concerning electric vehicles

Field of application
Definitions
Conformity request application
Conformity
Specifications and rehearsals
Modifications and extensions to conformity of vehicle type
Conformity of production
Relevant addresses