



Greenpower
INSPIRING ENGINEERS

A Project Approach to Delivery Electric Vehicles and the Greenpower IET Formula 24+ Project

You are to analyse aspects of the electric car, and design and build complementary electrical and electronic circuits.

Your tasks are to apply electrical and electronic engineering concepts to:

- Analyse battery technologies used in electric vehicles.
- Investigate battery charging and battery charging circuits.
- Investigate battery charging using alternative forms of energy.
- Evaluate the application of motors for propulsion.
- Evaluate solid state motor speed control.
- Design, simulate, built and test an electric vehicle speed monitoring system.
- Design, simulate, built and test an electric vehicle warning sound system.
- Investigate and evaluate technologies being used in commercial vehicles.

This work can be undertaken as an individual or within a team. If working within a team learners are expected to contribute to each of the areas (and be able to evidence this contribution) in order to gain the experience and knowledge required to successfully complete the Cambridge Technicals

Engineering Level 3 (Electrical and Electronic Engineering pathway) units.

Electric vehicles (EVs) use electric motors typically powered by rechargeable batteries to provide propulsion. EVs include road and rail vehicles, surface and underwater vehicles. The electric car is one example of a battery electric vehicle (BEV) that is becoming increasingly popular due to its clean quiet operation and environmentally-friendly zero emissions.

The Greenpower project encourages students to design, build and race their own electric car within professionally drafted specifications. Events are arranged at a number of major motor racing circuits. All Greenpower classes use a 24 V, 240 W electric motor and pairs of 12 volt rechargeable batteries. The IET Formula 24+ class is for young people aged 16-25. See <http://www.greenpower.co.uk/> for more details.

Learners will engage with a range of design techniques, including the application of electrical and electronic components and devices. CAD and simulation software will be used to design, simulate and evaluate circuits, and to produce printed circuit boards (PCBs). Learners will develop practical construction and fault finding skills relevant to electrical and electronic engineering.