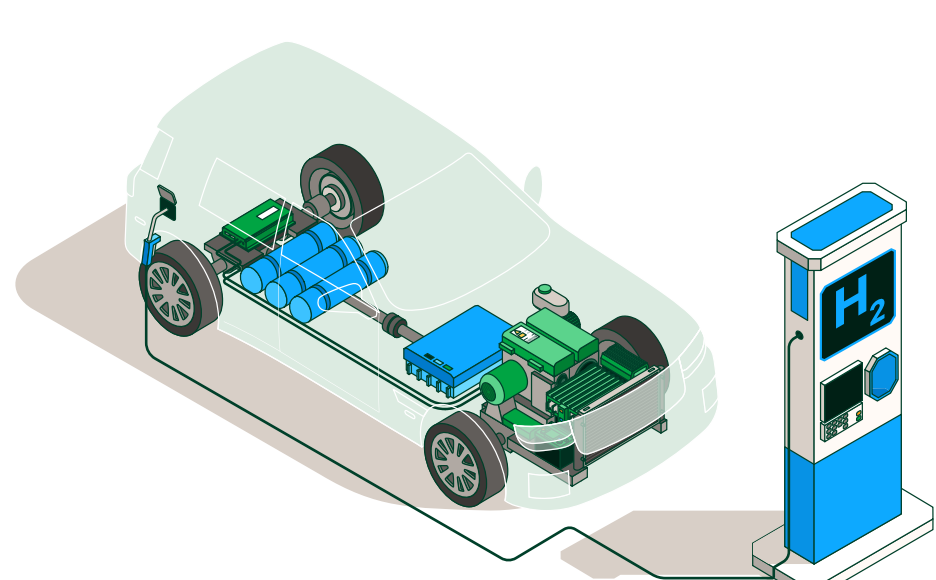


Types of electric vehicles

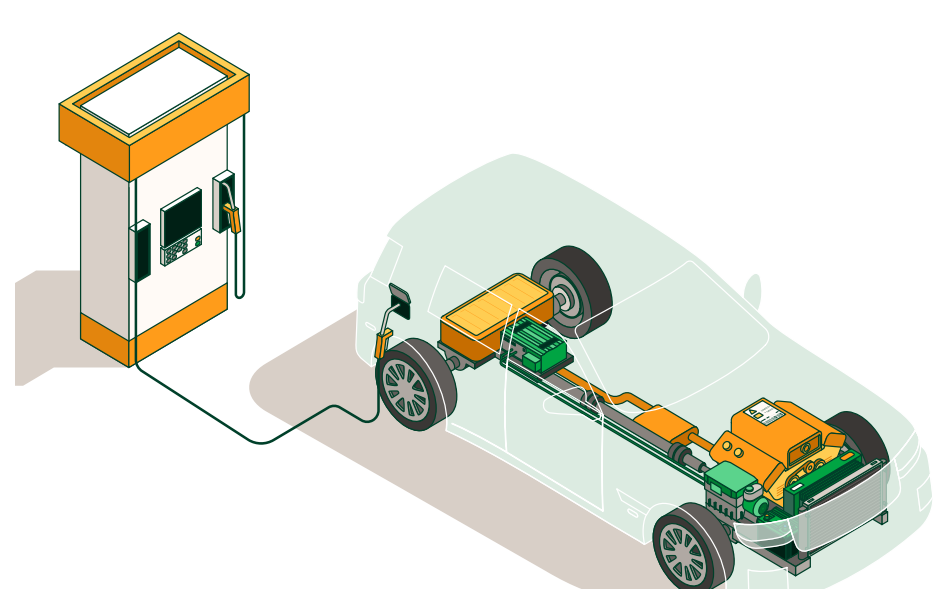
Hydrogen Fuel Cell Electric Vehicles (FCEVs)



Fuel Cell Electric Vehicles (FCEVs) are powered by **renewable energy** sources; they do **not run on batteries, but on hydrogen fuel cells**. This type of vehicle also has an electric motor, but instead of having a battery storing the energy, they have a fuel cell that produces electricity at the desired time. This unit, which is usually a hydrogen cell, generates electricity from a chemical reaction process called electrolysis: the hydrogen is oxidised and loses electrons which are collected to generate the electric current that makes movement possible.

FCEVs are refuelled with compressed hydrogen at hydrogen refuelling stations. Some of their advantages are that they emit only water vapour; they have shorter refuelling times compared to battery electric vehicles; and they have greater range.

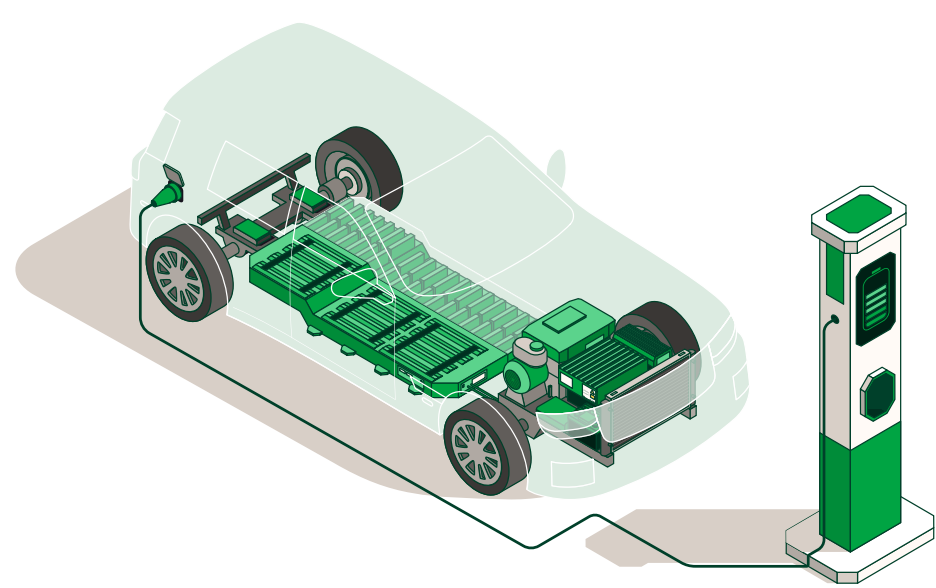
Mild-Hybrid Electric Vehicles (MHEVs)



Micro-hybrid cars are known by different names, such as MHEVs (Mild Hybrid Electric Vehicles) or its abbreviation – **mild hybrid or 48V hybrid**. **These vehicles have a mild hybrid system, which means they have an internal combustion engine and a small electric motor to assist the internal combustion engine**. The battery is smaller than that of a conventional 48V hybrid and cannot power the vehicle independently. The electric power therefore serves to back up the internal combustion engine in acceleration phases or in less complex systems such as lighting or navigation, among others.

This type of vehicle requires fuel to move. The battery, on the other hand, is charged through energy generated during driving, especially during deceleration and braking – when the electric motor acts as a generator to recover energy and store it in the battery.

Battery Electric Vehicles (BEVs)

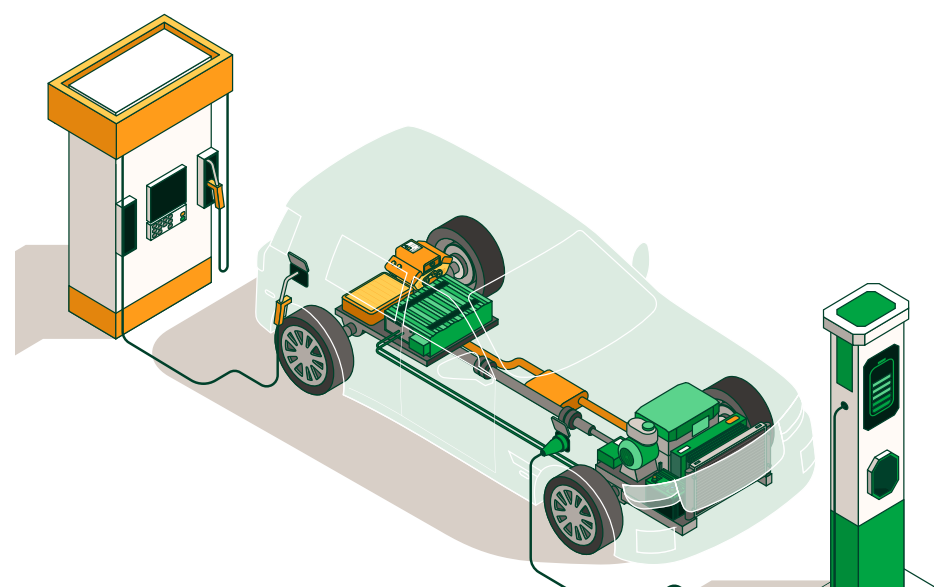


These models are **entirely electrically powered and use rechargeable batteries to store electricity and power the electric motor that drives the vehicle**. To charge this type of vehicle, as with any electric device, it needs to be connected to an electricity source, such as a household electrical outlet or charging stations. The charging speed depends on the power of the chargers to which it can be connected, known as maximum supported power.

In addition, most models have a braking and deceleration energy recovery system, which functions as a current generator capable of "self-recharging" the battery.

These vehicles are more eco-friendly than combustion vehicles, require lower maintenance costs due to mechanical simplicity and offer a smooth and quiet driving.

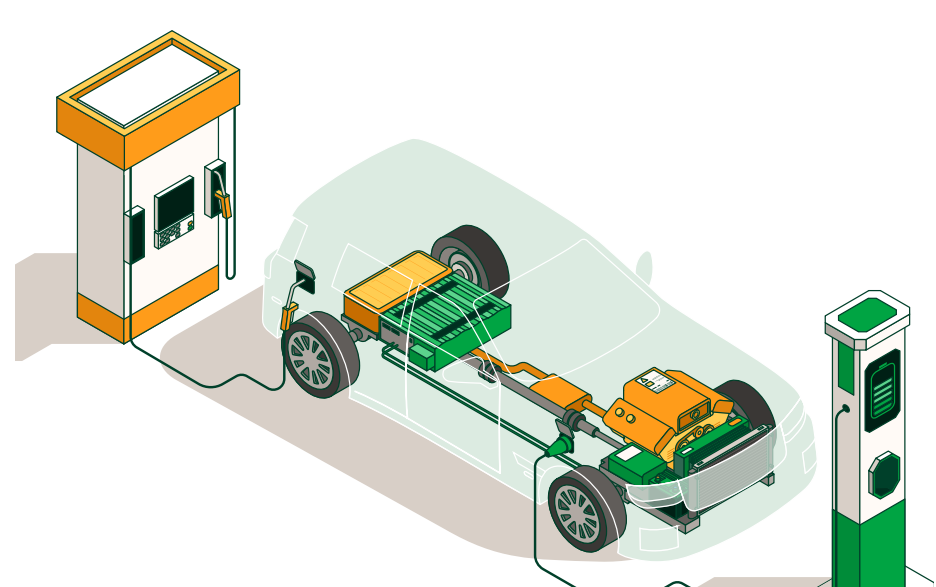
Extended-Range Electric Vehicles (EREVs)



Extended-Range Electric Vehicles (EREVs) combine electric vehicle (EV) and plug-in hybrid vehicle (PHEV) features. **Although the propulsion power is provided by a rechargeable electric unit, they are equipped with an internal combustion motor that acts as a generator to charge the battery when it is depleted**. Unlike hybrids, the combustion engine does not drive the wheels of this type of car at all.

EREVs can be charged either through a connection to an electricity source or by using petrol via the internal combustion engine. EREVs provide the efficiency and reduced emissions of an electric vehicle while overcoming the range limitations of using a combustion engine as a back-up.

Plug-in Hybrid Vehicle (PHEVs)

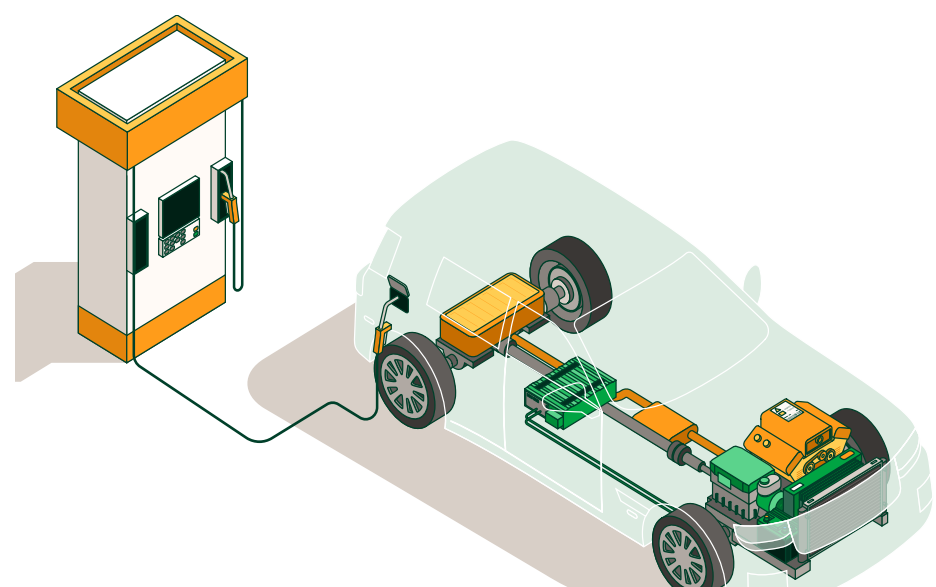


Plug-in Hybrid Electric Vehicles (PHEVs) **combine an internal combustion engine with an electric motor and a battery**. The main feature of these models is that both the combustion engine and the electric motor can drive the wheels of the vehicle, so that it can operate either in electric mode for a certain range of kilometres using the energy stored in the battery, or in hybrid format combining the power of the internal combustion engine with the electric motor.

The battery can be charged from an external power source or charging point and the combustion engine can also be used to charge the electric motor.

Such vehicles offer a longer range than pure battery electric vehicles and provide greater flexibility to use electricity or petrol according to the driver's needs.

Hybrid Electric Vehicles (HEVs)



Hybrid Electric Vehicles (HEVs) combine at least two sources of propulsion energy. They have both a **conventional internal combustion engine (usually petrol or diesel) and an electric motor, and both work together to propel the vehicle**. The electric motor assists the internal combustion engine at times of high demand and allows the internal combustion engine to be de-energised in order to reduce fuel consumption.

Hybrids can drive in all-electric mode, but their range is limited by small batteries. They often rely on regenerative braking and the internal combustion engine to charge the batteries and generate kinetic energy.

The use of HEVs allows for reduced emissions and improved fuel efficiency compared to traditional vehicles, especially in frequent stop-start situations.