HYDROGEN has arrived!

Brought to you in partnership with ITM
Hydrogen fuel cell electric vehicles

Shell and Hydrogen

Shell is taking part in several initiatives to encourage the adoption of hydrogen as a transport fuel by adding it to our portfolio of fuels and growing our business in this area.

Shell and its partner ITM Power are working together to make hydrogen fuel available to customers in the South East of England. This motorway service station in Cobham is the first Shell hydrogen station in the UK, with further sites being planned.

**Site statistics**

- **Opened:** 2017
- **Concept:** Gaseous storage with on site production by an electrolyser, reducing the need for large amounts of high pressure storage on-site.
- **Dispensing capacity:** 500 kg/day or 100+ vehicle fills, 350 and 700 bar

What makes hydrogen technology so exciting is its potential to store energy easily.

Energy is stored in compressed hydrogen fuel, rather than a battery. This means hydrogen fuel cell electric vehicles can drive up to 700 kilometres without refuelling and, just like a conventional car, they take only a few minutes to refuel.

The fuel cell in the vehicles generates power for the motor using the hydrogen in the tank and oxygen from the outside air. The only exhaust emission from a fuel cell vehicle is water vapour. No greenhouse gases or other harmful emissions are produced.
How hydrogen is produced
At Cobham, hydrogen is produced on-site. Using power from the electricity grid, an electrolyser splits water into oxygen and hydrogen. The hydrogen is then stored at low pressure (around 20 bar) in a 7 metre high vessel. When the hydrogen is needed, a compressor is used to deliver it under high pressure for refuelling the vehicle, with the rest stored in smaller tanks for future use.

Balancing the electricity grid
Any electricity grid must maintain a balance between production and consumption. If supply exceeds demand – for example from an unexpectedly high amount of energy from renewable sources entering the grid – production has to be limited or consumption must increase.

Since conventional power plants take a long time to adjust, renewable energy sources such as wind turbines are typically shut down first. The production of hydrogen can help to keep the grid balanced by storing this electricity in the form of hydrogen to then be used to power cars. This in turn helps to support the integration of more renewables into the power grid.

At Cobham, certified green energy is used to produce the hydrogen so we can be sure that cars are being refuelled from renewable energy.
WHERE TO GO NEXT?
Find out more on www.shell.com/hydrogen