FULL STEAM AHEAD
Mobility makes our world go round. Getting out and about is fun. But our tastes are evolving. Most of us would be happy to green our driving habits sooner rather than later – as long as we can get to our destination quickly and comfortably. And with a hydrogen-powered vehicle, we can do just that! Quiet and efficient, their fuel cell electric engines do not emit any climate-noxious emissions. And they don’t require drivers to make any sacrifices in terms of convenience or other creature comforts. Refuelling is essentially the same as putting petrol in a conventional vehicle. And the distance covered on a full tank is comparable, too.

Hydrogen is like petrol – only greener. It’s the fuel of the future.
Toyota MIRAI, Hyundai NEXO, Honda Clarity or the Mercedes-Benz GLC F-Cell – the first generation of hydrogen cars are on our roads, but other automakers are set to launch their own hydrogen-powered vehicles in the years ahead. For all those hydrogen pioneers out there, we are building a nationwide refuelling network that will link up Germany’s key regions. Our plan is to roll out up to ten refuelling stations across the greater metropolitan areas of Hamburg, Frankfurt, Nuremberg, Munich, Rhine-Ruhr and Stuttgart. In addition, we will also be installing numerous fuel-dispensing facilities up and down major trunk roads and motorways.

In total, more than 100 refuelling stations are scheduled to open by the end of 2019.
Our mission – your infrastructure

HYDROGEN PIONEERS

Want to drive a hydrogen-fuelled vehicle in your region, too? Then what are you waiting for? Share your story with us on www.h2.live!

We are building the service station network of the future. Wherever possible, we aim to integrate our hydrogen stations into existing petrol stations. Compact in build, the refuelling points basically use standardised components for the fuel pumps and for hydrogen compression and storage. Hydrogen is usually delivered by tankers and stored at 45 bar. It is then compressed to 700 bar for vehicle refuelling. The technology and logistics are waiting in the wings. As is our team.
If it’s good, why change it? Hydrogen is dispensed in the same way as petrol. Simply open the petrol cap and insert the fuel dispenser — there’s nothing to it. The only difference worth mentioning is that the fuel is a gas not a liquid. Modern refuelling systems operate at 700 bar. That might sound a little surreal or unusual at first, but it’s good news for the driver. Why? Because hydrogen’s high-density storage means the average time needed to fill up a tank is just three minutes. And with 500 to 800 kilometres, the range of a fuel cell vehicle is comparable to that of its petrol-powered peers. Also, from a safety point of view, hydrogen vehicles are no different to conventional vehicles. Germany’s independent safety certification and inspection agency – TÜV – came to the same conclusion in its series of crash tests. More than 100,000 hydrogen refills prove that refuelling is safe.

Life’s too short to spend it charging a battery.

MOVING FORWARD, NATURALLY
Our H2.LIVE app is the go-to option whenever you want to locate a hydrogen filling station or find out where new ones are being built. The app offers real-time status reports on all public hydrogen refuelling stations in Germany. Live. Reliable. And always up to date. Find out where the next station is located. Check out the opening times and current refuelling capability. Use the app to guide you there. Be amongst the first to find out where new stations are planned and when they will be opening. Alternatively, you can read about the latest developments in the hydrogen sector in our news feed!

More also on internet at: www.h2.live
Germany welcomes hydrogen to its service station forecourts:

Hydrogen fuel pumps for Total, OMV and Shell in Cologne-Bonn, Munich and Frankfurt, for example.
Germany’s wind power capacity is constantly increasing. At 16.1 per cent, it accounted for the second largest share of Germany’s energy mix in 2017. This first-time achievement put it ahead of nuclear energy and coal. Good news for Germany’s energy transition? Not entirely. Wind and solar power cannot be steered on demand. If more energy is fed into the system than used, the quickly adjustable wind power plants are the first to be switched off. The upshot: a loss of valuable green power.

The share of renewable energy will continue to grow in future – and with it the volume of surplus electricity. If Germany is to generate at least 80 per cent of its electricity from wind and solar power by the middle of this century, surplus capacity is likely to rise to 220 terawatt hours per year [Comparative analysis of infrastructures: Hydrogen fuelling and electric charging, Forschungszentrum Jülich 2018].

There is another option however. And it comes in the form of hydrogen – the lightest atom in the universe, even lighter than air, non-poisonous and infinite in supply. On earth, hydrogen only ever occurs in a compound form, like water for example. One of several procedures employed to obtain hydrogen is electrolysis. Using energy, ideally from renewable sources such as wind turbines, electrolysis breaks water down into hydrogen and oxygen. Some gas stations are already using this technology to produce their own hydrogen.

Hydrogen can be used in many different ways: for heat and power generation and for green mobility. 90 terawatt hours of hydrogen could power half of Germany’s car fleet – that’s some 20 million vehicles.

NO ENERGY TRANSITION WITHOUT HYDROGEN
EMISSION-FREE DRIVING

Hydrogen helps reduce CO₂ – even when produced using natural gas. Naturally, green hydrogen is the goal, e.g. from surplus wind power. Over the course of its life cycle, a hydrogen engine would then produce just one quarter of the emissions generated by a petrol-powered engine.

Driving as always – but this time with a green conscience

Source: Life Cycle Assessment Report Toyota 2015
ALTERNATIVE OPTIONS

Fuel cell systems are energy converters. While the combustion engine burns fuel to create movement, the fuel cell directly converts hydrogen into electricity – which can power an electric engine. Consequently, all fuel cell vehicles are electric vehicles that operate highly efficiently. Much less energy is lost compared to a conventional engine and even today’s models have twice the efficiency of a vehicle powered by internal combustion. And what’s more, a hydrogen-powered fuel cell vehicle does not emit any noxious tailpipe gases. This is thanks to the controlled hydrogen-oxygen reaction which – alongside electric power – only produces heat and water.

Hydrogen in the tank and a smile on your face.
Hydrogen is a powerful energy carrier. It has three times more energy per kilogram than petroleum. But it does not release any carbon dioxide or nitrous oxide. That’s what makes hydrogen the ideal fuel of the future. Hydrogen not only has the capacity to fuel passenger cars, it can – unlike other purely battery-powered vehicles – also be used to propel buses and lorries and even trains and planes. And it has a high range capability, too.
‘Driving a hydrogen car is almost like flying’, enthuses our Communications Manager Sybille Riepe. Being enthusiastic is part of her job – but outside work she remains just as convinced. ‘We sold our two petrol cars and are now the proud owners of a Toyota Mirai.’ As Sybille sees it, it’s a hydrogen pioneer’s job to convince others.

And this led her to conclude that, ‘If not us, then who?’ But things are changing. More and more people are buying or leasing a hydrogen vehicle for totally pragmatic reasons. Some do it because they appreciate the benefits of electric mobility, including fast and powerful acceleration, low maintenance costs and a positive environmental impact. And also because they don’t want to waste any time recharging.

‘Hydrogen can do everything – except make a noise and produce noxious emissions!’

Sybille Riepe, Communications Manager, H₂ MOBILITY Deutschland GmbH & Co. KG

IF NOT US, THEN WHO?
Air Liquide, Daimler, Linde, OMV, Shell and TOTAL – the companies behind H₂ MOBILITY are sharing their skills to advance the hydrogen infrastructure:
The target for 2018: 100 hydrogen stations.

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