

**HYDROGEN  
IN THE TANK  
AND A SMILE  
ON YOUR FACE**



takes  
me  
further

Modern-day  
motoring is clean  
and smart



# HYDROGEN-POWERED DRIVING

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.**

Nikolas Iwan, Managing Director  
H<sub>2</sub> MOBILITY Deutschland GmbH & Co. KG

” Life's too short to spend it  
charging a battery.



# OUR ROADMAP

The Toyota Mirai and the Hyundai ix35 Fuel Cell were the first, but now other carmakers are gearing up for the launch of their own hydrogen-powered vehicles. For all those hydrogen pioneers out there, we are building a nationwide refuelling network that will link up Germany's key regions. We plan 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 year 2018. And if that's not ambitious enough for you:

**We are planning to have some 400 stations up and running by 2023.**

Good to go –  
our H2 roadmap has clear-cut  
intermediate targets.



2018 / 100 

 Up to 10 H<sub>2</sub>-stations in metropolitan areas

 Unconditional ramp up in metropolitan areas and along trunk roads

2023 / 400 

German wide ramp up, tied to number of fuel cell vehicles



# NATURALLY MOVING FORWARD

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 abstract and 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 700

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. Thanks also to a smart infrared interface that automatically displays and controls the fuel level, pressure and temperature.



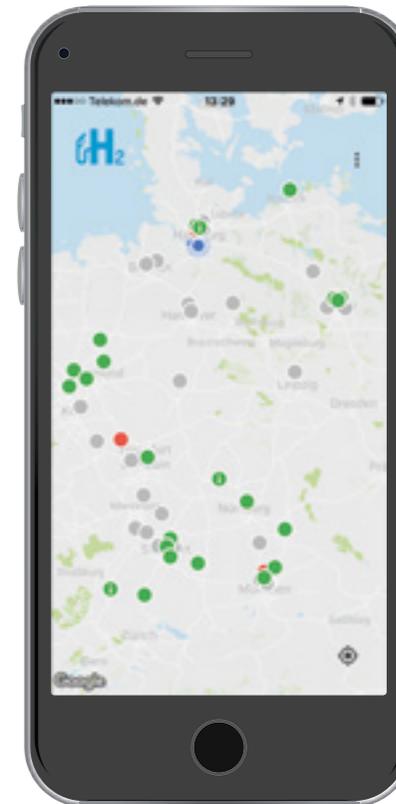
**” Ahead the world,  
behind only steam.**

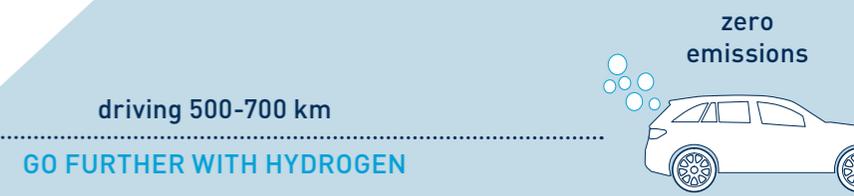
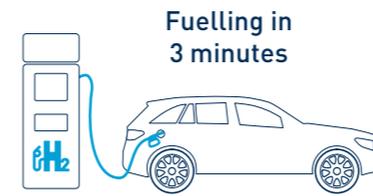
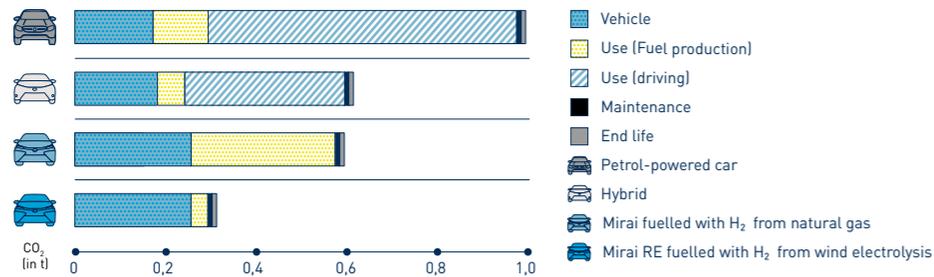
# THE APP – H2.LIVE

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.

**MORE ALSO ON INTERNET AT H2.LIVE**

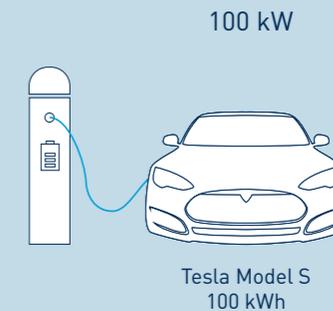
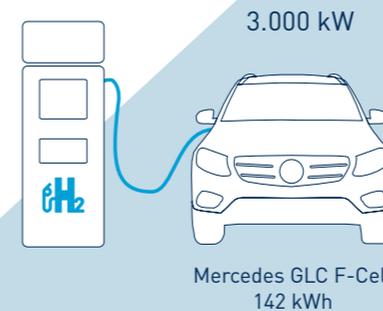
H2.LIVE  
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# EMISSION-FREE DRIVING

Hydrogen helps reduce CO<sub>2</sub> – even when produced using natural gas. Naturally, the aim is to have green hydrogen, 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.



A QUICK REFUEL – AND STRAIGHT BACK ON THE ROAD

# FUEL OF THE FUTURE

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 but – unlike a battery – it can also power buses and lorries and even trains and planes, too. Conversion to energy takes place in the fuel cell. Here is where hydrogen is turned into steam and eliminated via the exhaust – but mainly it's converted into power to drive the electric engine: a thoroughly clean and green affair.

The universe is full of hydrogen (H<sub>2</sub>). In fact, it's by far the most abundant element. On earth, it only occurs as a compound, the most well-known being water. Electrolysis – one of several procedures for harnessing hydrogen – breaks water down into hydrogen and oxygen. This requires energy, ideally from renewable sources like wind turbines. Some gas stations are already using this

technology to produce their own hydrogen. The energy needed for production is not lost but stored in the hydrogen. As a result, this gas can act as a key 'buffer' in the smart power network of the future.



Our mission –  
your infrastructure  
2023 / 400



# HYDROGEN PIONEERS

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 com-

pressed to 700 bar for vehicle refuelling. The technology and logistics are waiting in the wings. As is our team. So why not join us! **»Hydrogen mobility is coming to our roads. We just need more passengers. People with spirit and determination. Daredevils and pioneers.«** Lorenz Jung, Network Delivery Manager, H2 MOBILITY Deutschland GmbH & Co. KG





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Air Liquide, Daimler, Linde, OMV, Shell and TOTAL – the companies behind H<sub>2</sub> MOBILITY are sharing their skills to advance the hydrogen infrastructure: The target for 2018: 100 hydrogen stations.

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**H2.LIVE – the app for clean drivers**  
or on the web: H2.LIVE