Toyota Motor Europe, in collaboration with Hydrogen Refuelling Solutions and ENGIE, is rolling out the next generation of hydrogen refuelling systems. Picture credit: Toyota



HYDROGEN REFUELLING UPDATE

Station numbers are growing with technological progress offering the prospect of faster deployment

One of the challenges facing the expansion of hydrogen supply infrastructure is the need for hydrogen dispensers that can refuel both light-duty and heavy-duty fuel cell vehicles faster and more costeffectively.

Earlier this year, Toyota Motor Europe, in collaboration with Hydrogen Refuelling Solutions (HRS) and ENGIE, announced it is rolling out the next generation of hydrogen refuelling systems to address this challenge. The new solution, called Twin Mid Flow Technology, incorporates a higher-flow dual nozzle, allowing the same hydrogen dispenser to refuel both heavy-duty vehicles and light-duty vehicles. This innovation eliminates the need for two different types of dispenser at each refuelling station, and in practice it means that a 40-tonne truck will be able to refuel for a 600km range in just eight minutes and for a 900km range in only 12 minutes. A passenger vehicle will be able to refuel in under five minutes.

The installation cost of these hydrogen refuelling stations will be significantly lower, which will help accelerate their deployment in line with the target set out by European Union's Alternative Fuels Infrastructure Regulation (AFIR). AFIR stipulates the deployment of publicly accessible hydrogen stations at every 200km along the Trans-European Transport Network by 2030.

Through the collaboration, Toyota will provide testing facilities and a truck adapted for the Twin Mid Flow Technology, enabling the truck to be filled with two nozzles at the same time. HRS and ENGIE will develop new generation hydrogen refuelling stations compatible with this innovation.





Global growth

Meanwhile, the latest data from H2stations.org demonstrates that, as at the end of last year, there were around 1,160 hydrogen refuelling stations in operation globally. In 2024, 125 new hydrogen refuelling stations were opened worldwide: 42 in Europe; around 30 in China; 25 in South Korea; 8 in Japan; and 13 in North America, split between four in Canada and nine in the US.

The opening of circa 30 new hydrogen refuelling stations in China last year has brought the country total to an estimated 384. Here, Air Liquide has recently inaugurated China's first 300-bar hydrogen filling station in Shanghai.

With an initial capacity of 12 tonnes of hydrogen per day, the facility is capable of refuelling over 1,000 medium-to-heavy-duty trucks — an impactful move in a region that already deploys approximately 5,000 hydrogen fuel cell electric vehicles (FCEVs) and hosts 18 operational refuelling stations.

Due to its unique chemical and physical properties, platinum is at the forefront of proton exchange membrane (PEM) technology which is crucial to the hydrogen fuel cells used to power FCEVs. PEM technology can also be used to make hydrogen through electrolysis. If the electricity used during electrolysis is obtained from renewable sources, then 'green' hydrogen is produced without emitting carbon dioxide into the atmosphere.

While hydrogen-related demand for platinum is currently relatively small, it is expected to grow substantially through the decade and beyond, reaching as much as 450 koz of annual demand by 2029.

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