Sustainable Hydrogen: A Viable Solution for Taxi Fleets

Virya Energy and Taxis Verts unveil the results of their sustainable hydrogen taxi pilot project after a year of testing on the streets of Brussels.

After a year of testing on the streets of Brussels, the hydrogen taxi project initiated by Virya Energy and Taxis Verts provides real-world data on the use of sustainable hydrogen vehicles within an intensive-use fleet. This is the first initiative of its kind in Belgium.

This project allows for a detailed comparison between hydrogen fuel cell technology, diesel engines, and battery electric vehicles in terms of operating costs, carbon emissions, and ease of use for taxi operators. This comparison is of particular importance as of 2025, all new taxis in the capital must be carbon-neutral. Currently, the transportation sector accounts for 21.5% of CO2 emissions in Belgium, highlighting the urgency of finding viable alternatives such as hydrogen mobility, which is being tested in this pilot project.

The Project

Virya Energy and Taxis Verts joined forces to put the very first hydrogen taxi on the road in Belgium. This trial period of implementing an innovative technology aimed to assess its suitability for taxi fleets. Close communication between the project partners and the taxi operator throughout the project allowed for real-world feedback to be collected.

With over 55,000 kilometers covered and more than 2,700 passengers transported, the test results demonstrate the relevance of hydrogen for intensive-use captive fleets such as taxis. In order to complete over 2,500 trips, the hydrogen taxi, with an effective range of 470 kilometers, was integrated into the Taxis Verts fleet. It sourced over 660 kilograms of hydrogen produced on-site from renewable electricity (wind and solar) and distributed via DATS24 stations. A diesel vehicle would have emitted approximately 11 tons of CO2 over the same distance.

Two drivers took turns collecting quantitative data, such as actual consumption, range, and vehicle operating costs, as well as qualitative data, such as refueling ease and the driving experience.

Encouraging Results

The data collected in the field through the use of hydrogen vehicles in real-world conditions allows for a comparison of this technology with diesel and electric alternatives in terms of emissions saved through sustainable fuel, driving experience, and the total cost of vehicle ownership.

Beyond the technical aspect, it is crucial that these innovative zero-emission technologies are accessible to the industry. The pilot project revealed that the operating cost of a hydrogen vehicle (total cost of ownership) is comparable to that of a premium diesel vehicle (Mercedes Class E, Audi A6) and an electric battery vehicle in the same range (Mercedes EQE).

Virya Energy NV/SA
Villalaan, 96
1500 Halle
Belgium

T + 32 (0)2 352 89 59
info@virya-energy.com

VAT BE 739 804 548
RPR Brussels
IBAN BE38001876190972
BIC GEBABEBB

Throughout the 12 months of intensive testing, the vehicle experienced no breakdowns, and refueling with green hydrogen at the DATS24 station in Hal went smoothly. The hydrogen vehicle was able to fulfill its role as a taxi within a similar budget to market alternatives, with no CO2 emissions.

A hydrogen vehicle offers an interesting compromise between the benefits of battery electric and combustion vehicles. Like a combustion vehicle, a hydrogen fuel cell vehicle does not require long charging periods to be operational. Hydrogen refueling takes less than 5 minutes at a station equipped with hydrogen pumps. Once refueled, the vehicle offers a 470 km range regardless of weather conditions.

Additionally, like a battery electric car, a hydrogen vehicle provides a quiet, smooth, comfortable drive with no CO2 emissions. This is made possible by the electric motor powered by a battery, which is, in turn, recharged by a fuel cell using hydrogen from the tank. This combination of features makes hydrogen vehicles a promising option for taxis. Integrating such vehicles into the Brussels taxi fleet would contribute to Brussels' carbon neutrality ambitions without revenue loss for operators.

Future Developments

Upcoming regulations clearly show that the transition to more environmentally friendly vehicles is inevitable. By 2030, diesel vehicles will no longer be allowed to circulate in the Brussels region. For taxis, the deadline is 2025, when all new taxi vehicles must be zero-emission.

To enable the deployment of hydrogen vehicles and contribute to climate goals, the pilot project results highlight the following needs:

1. Develop hydrogen mobility infrastructure: Installing green hydrogen stations in the capital would support the development of a hydrogen vehicle fleet. Through the AFIR (Alternative Fuel Infrastructure Regulation), Europe requires its member countries to have at least one hydrogen station in their urban nodes by 2030. Currently, there are only 7 hydrogen stations in Belgium, with 5 in the DATS24 network, all located outside Brussels.
2. Support all transition technologies equitably: In the race for carbon neutrality, battery electric vehicles and hydrogen vehicles are complementary for intensive use or heavy transport. In this context, battery electric vehicles are not the panacea. Sustainable hydrogen provides a welcome addition to green mobility alongside electric vehicles. These two technologies should be considered together without delay to offer Brussels residents cleaner air, quieter mobility, and a sustainable future.