Toyota, Vueling, BP, Airbus and Ficosa are committed to hydrogen as a new source of green energy

Research into new energy sources is essential for the mobility industry to achieve the neutral emissions targets set by the European Commission for 2050

Experts from the aviation sector share at eMobility Expo World Congress the particularities of using hydrogen in aeroplanes and their actions to reduce emissions

Madrid, 23rd March 2023 – According to data from Ficosa, the hydrogen market is set to grow 14-fold in the next 7 years. The characteristics of this element, which has a high energy density and produces clean and safe energy that can be transported over long distances, make it a key energy source for achieving the European Commission's emission neutrality targets. **eMobility Expo World Congress**, the largest European innovation event for the sustainable, autonomous and connected mobility industry, which is being held these days in Valencia (Spain), has brought together experts from Toyota, BP, Airbus, Vueling and Ficosa to analyse the present and future of hydrogen in mobility.

Hydrogen today: pioneering projects

Hydrogen research and the development of compatible mobility systems are contributing to the transformation of the mobility industry. Woven City, a prototype city being built by Toyota in Japan, is an example of a project taking place around the world. This 'living' laboratory will allow the company to develop and innovate in different technologies: autonomous vehicles, personal mobility and robotics, among others. *"Woven City will be a fully connected ecosystem, whose fundamental basis will be hydrogen and which will be replicable in other regions"*, explains **Sandra García**, Hydrogen Senior Manager at **Toyota and Lexus Spain**. Toyota is also involved in several European projects with taxi and VTC associations for the implementation of hydrogen-powered vehicles. *"These initiatives are very important because they give us the opportunity for customers to get to know the technology and lose their fear of it"*, continues the expert.

Also, Ficosa, a global supplier to the automotive industry, has developed a hybrid electric fuel truck in two years with a very low budget of 5 million euros. *"If we continue our research, this could lead to generating our own technology. This is the way to go further, with open innovation"*, says **Carlos Abomailek**, e-Mobility Advanced Engineering Master at **Ficosa**.

Renewable energies and hydrogen, a necessary symbiosis

The mobility industry is already the main energy consumer in both the European Union, with 31% of the final energy consumed, and in Spain, with almost 40%. These data support Sandra García's assertion that *"we will not be able to produce all the renewable energy we will need and consume it in situ"*, and she advocates hydrogen as a possible solution. However, **Xavier Sabaté**, head of environmental projects at the **Port of Barcelona**, points out that hydrogen production also requires a large amount of renewable energy. *"The PNIEC - the government's National Integrated Energy and Climate Plan - is outdated and needs to be updated"*, he stressed,

"because we are going to need quite a few more gigawatts for hydrogen, and even more if we want to become an exporter of green hydrogen".

Hydrogen or fuel cell? The debate continues

There is currently a wide-ranging debate about the suitability of hydrogen engines versus fuel cells, although now investment and research are focused more on the development of the latter, as it is considered more efficient. However, from Ricardo, a company specialised in the provision of sustainability solutions for industry, **Joanna Richart** states that *"fuel cells are 50% more efficient than hydrogen engines only at 25% load and at the beginning of their useful life. If you want to use it for heavy trucks using a full load, then the efficiency will drop, and the two technologies have a similar efficiency performance"*.

Despite this, the technology has become the most widely used by automakers today, and the global fuel cell electric vehicle (FCEV) market is expected to reach a market size of $15 billion by 2027.

Cost and distribution: barriers to hydrogen expansion

Refuelling hydrogen at refuelling stations is as easy as it is to refuel with other fuels and energies. This picture of the future will be the key to establishing the viability of this element. According to Carlos Abomailek of Ficosa, the cost will be fundamental in the adoption of hydrogen. "*At a level of 3 euros/kg, hydrogen is more profitable than diesel; but this will not be possible if there are no reductions in the implementation of renewable energies*", said the expert.

For her part, Sandra García, from Toyota, claims that *"although the hydrogen infrastructure has evolved, we need much more agility to get where we need to be. We must continue promoting hydrogen technology and its infrastructure, which will allow us to transport, distribute and provide access to hydrogen. To this end, the involvement of all the world's governments is essential to innovate and finance the progress towards the hydrogen society we want to have"*, García concluded.

Reducing in-flight emissions and complying with the European Green Pact

According to data provided by BP, 18% of all emissions produced by the aviation industry are produced on long flights, which complicates the use of sustainable fuels. However, the industry is researching how to use hydrogen and working on developing new battery models to find a solution that "*although they would not be cost-effective today, we can develop them with the help of European funds. This would stimulate their implementation to comply with the European Green Pact*", said Estrella Jara, Head of Communications and External Affairs at **BP** during eMobility Expo World Congress.

Silvia Lazcano, Ho Technology Development & Partnerships at **Airbus**, argues that "*it is complicated and very new to use hydrogen as a fuel in an aircraft, so we need to join aviation associations, regulators, airports, civil aviation managers, etc. to realize real and tangible projects to see hydrogen in airports*".

An example of the progress the airline industry is making in this area is Vueling's sustainable flight, *"in which we have reduced emissions by 72%"*, says **Franc Sanmarti**, Director of

Sustainability at **Vueling Airlines**, or the reduction of emissions by Airbus, which has made investments worth 2.8 million to develop technologies dedicated to sustainability.

From IATA, **Daniel Chereau** highlighted the need to review policies and operations to meet sustainability goals. *"We have to agree to make travel more efficient in the shortest possible time"*, he said.