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PIONEER IN WIND POWER AND HYDROGEN

Theme: Energy storage | Author: Matthias Altmann

SUSTAINABLE H₂ PRODUCTION AND SUPPLY

CertifHy-ing green hydrogen

EU project CertifHy has started implementing a certificate of origin system for green hydrogen. Pilot tests are said to be conducted in the next 9 to 15 months.



Many see great promise in hydrogen as a fuel for zero-emission transportation and a raw material in the industrial sector. Not only has the number of hydrogen-powered fuel cell vehicles been steadily on the rise. The fulfillment of COP climate targets will eventually require large quantities of the compound, for example, in refineries, steel processing and the basic chemical industry. What is needed is a reliable system to track and certify exactly where the green hydrogen comes from and how it is produced.

A Guarantee of Origin, or GO for short, is currently being devised by a consortium on behalf of the Fuel Cells and Hydrogen 2 Joint Undertaking, a public-private partnership made up of the European Commission and several of the continent's businesses and research organizations. The pilot was named CertifHy and is headed by Hinicio, a strategy consulting firm.

The company in charge of drawing up the documentation and procedures based on the first project stage from 2014 to 2016 is LBST. "Together with 14 industrial suppliers and 500 interested stakeholders, we used the first CertifHy project stage to create a solid foundation for our system. Now, we can begin to discuss its implementation. As many as 650 people will be involved in creating a de facto harmonized European guarantee of origin," Hinicio's Wouter Vanhoudt, CertifHy's project leader, said. Uwe Albrecht, LBST's managing director, added that "green hydrogen has shown great potential in past years' energy scenarios and environmental analyses to thoroughly and sustainably transform the transportation and industrial sector. And with CertifHy, stakeholders will soon have a reliable tool to guarantee its origin."

STAKEHOLDER PLATFORM On Nov. 20 last year, the consortium set up a stakeholder platform. Its first plenary session attracted more than 100 partners from business, industry, politics, standardization committees, associations and research organizations in Europe. It also established four working groups to start tackling issues such as the creation of a system to track hydrogen production, certify manufacturers and pilots, provide user guidance and devise a policy framework. The overall objective of the stakeholder platform is to offer a forum for discussions about how to structure the system and manage the pilot stage. Bart Biebuyck, executive director of the Fuel Cells and Hydrogen 2 Joint Undertaking, said at the start of the session that the intent was to have a "self-sustaining" system by the end of the project. Once this system is set up successfully, plans are to popularize CertifHy among institutions in Europe and incorporate it into European regulations and technical standards starting in 2019.

PILOT STAGE To test and improve the procedures and the system itself, the consortium selected four pilots at locations throughout Europe, each using a different type of H₂ production pathway. In France, industrial gas supplier Air Liquide produces hydrogen through steam reforming natural gas, with subsequent carbon capture and storage. In the Netherlands, chemical company AkzoNobel creates it as a byproduct of chloralkali electrolysis. Belgian retail chain Colruyt, on the other hand, produces the gas on-site to refuel its fleet of vehicles. And energy utility Uniper's wind-sourced electrolysis generated green hydrogen in Falkenhagen, Germany.

These power plants and their low-carbon or zero-emission products will be inspected and certified by TÜV Süd,

so long as they meet CertifHy's requirements. Expressing his delight, Konrad Tausche, head of Carbon Management Service at TÜV Süd Industrie Service, said that "we are seeing the implementation of a uniform European certification system. The standardized production and tracking of eco-friendly hydrogen provides yet another contribution to meeting climate change targets."

HOW IT WORKS Guarantee of origin is a well-known and established concept in green power production. CertifHy will soon provide the industry with a similar system to track hydrogen. The gas can then be certified wherever it meets the requirements for eco-friendly production, with certificates being traded through an electronic registry apart from physical product flow. For example, green hydrogen produced in the wind-rich north of Germany doesn't have to be transported to meet demand in the south, where grey hydrogen may be the only option. The certificate will be transferred instead, turning the grey hydrogen green. Consequently, the green hydrogen total in the north will be reduced by the amount stated on the certificate – a reliable and efficient way to make an eco-friendly alternative available to customers throughout Europe.

The first project stage concluded with a broad consensus on establishing two levels of hydrogen quality. The first designates green hydrogen that is produced from renewables and releases no more than a set amount of carbon dioxide, an important criterion for bio-sourced energy. The second points to non-renewable but low-carbon hydrogen that releases no more carbon dioxide than the first method.

HOW IT CAN BE USED Introducing a guarantee of origin for green hydrogen is intended to provide gas users with reliable information about how environmentally friendly it is. There is more than one conceivable scenario in which guaranteeing the origin of the gas can prove beneficial.

GOs could be acquired for hydrogen quantities received or generated on-site. This option is of special interest to large-scale consumers, for example, in industry. They could advertise the use of green hydrogen in production to their customers and the public.

If a much smaller amount of hydrogen is involved, for example, when people refuel their private fuel cell vehicles, it is the gas station operators who may want to offer a guarantee of origin. This guarantee can either be obtained separately from the supplier of the physical product or by requesting hydrogen supply that has already been certified.

Commercial fleet managers could choose to get the guarantee themselves. It will ensure that they can demonstrate carbon-neutral fleet operation to customers and the public alike.

Another option would be automakers offering their vehicles with a certain number of GOs and maybe fuel at the point of sale. More scenarios are possible, depending on what the hydrogen is used for, what the relevant supply chain looks like and which regulations need to be observed.

HOW LONG IT WILL TAKE The organizations participating in CertifHy are currently in the process of setting up the GO system. It will then be tested and improved upon during the previously mentioned pilots. If this article has piqued your interest in green hydrogen certificates, please contact the CertifHy consortium as soon as possible, so you can get a head start to prepare for its implementation. This year will

see the creation of the first product certificates based on project outcomes and their inclusion in the electronic registry for trading and purchase.

Green hydrogen manufacturers can likewise get in touch with CertifHy. Once the pilots end, the procedures will have become established and validated enough to be used to certify additional production facilities and quantities and create GOs. ||

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CERTIFHY CONSORTIUM

Consortium members are the international inspection and certification services provider TÜV SÜD from Munich; green energy and transportation consulting firm Ludwig-Bölkow-Systemtechnik from Ottobrunn, near Munich; consortium leader and strategy consulting firm Hinicio, based in Belgium; Dutch research institute ECN and IT systems provider Grexel, based in Finland.
→ www.CertifHy.eu

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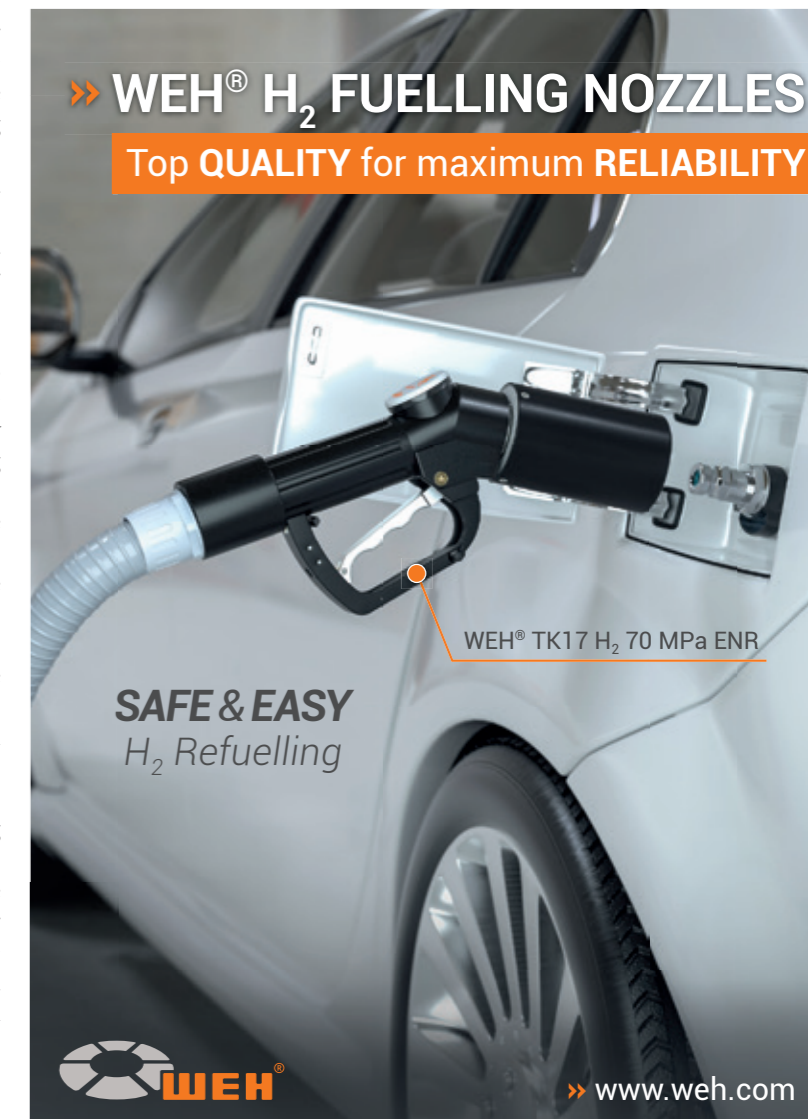
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