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International companies join forces to fuel buses and cars in Rennerod, Germany

Next year, buses in the Rennerod, Germany (north of Frankfurt), will be powered by an advanced, environmentally friendly hydrogen energy system designed and implemented by an international team of companies using technology that is now commercially available.

Denmark's GreenHydrogen, Spain's Clantech and Calvera, and Rennerod-based Gesellschaft für Windenergieanlagen GmbH (GFW) & Co KG have devised a solution that makes hydrogen production green and local to minimize environmental impact and expense.



GFW, which provides electrical power from wind turbine farms, will produce hydrogen fuel using advanced alkaline electrolyzers from GreenHydrogen, which convert electricity into hydrogen, at two different locations.

One electrolyser will be placed next to an existing Fuhrländer FL1000 wind turbine. It will produce green hydrogen when the wind is blowing rather than selling it to the grid. The clean hydrogen then will be



compressed using a Clantech containerized solution, compressing the hydrogen to 300 bar before it is stored in a "H2Pod Virtual Pipe Line" from Calvera.

This solution facilitates the easy distribution of green hydrogen to customers, the first of which is the Rennerod bus system, which operates neighbourhood buses powered by fuel cells. It also allows the fuel to be produced and consumed locally, which eliminates transportation costs and any carbon footprint.

Another electrolyser will be installed at the GFW facility, where it will be powered by an existing solar farm. There will be 15 additional tracker systems installed in the solar farm that will deliver 300 kW. The hydrogen produced by GreenHydrogen's alkaline electrolyzers will then be stored in Calvera units at different pressure (300/450/900 bar) and, finally, be distributed from the hydrogen refuelling station (SIDE H HRS) supplied by Clantech – at 350 and 700 bar.

The vision for this innovative hydrogen delivery system came from GFW owner Jürgen Fuhrländer, who says, "Wind turbines and solar farms that soon will, or already have, run out of guaranteed feed-in tariff need to be revitalized and turned into future profit machines – not just being dismantled when the tariff is too low."

Furhländer found that green hydrogen was just the solution he needed to profitably transport, store and use the energy created from existing renewable energy sources.

GFW, a forward-looking company, already has several hydrogen-fuelled vehicles in its car fleet. Now, it will be able to make its own fuel from green energy on its own premises. The HRS will be made publicly available in order to support the increasingly use of all hydrogen-powered vehicles.

“The ability to actually produce your own green hydrogen from existing (or new) renewable energy sources and then use this as the basis for business is a very interesting and advanced concept,” says Henrik Steen Pedersen, GreenHydrogen’s Executive Vice President of Sales.

“Upgrading pure green electricity to green fuel in the shape of hydrogen will be a key factor in the future energy eco-system, and will help decrease dependency on imported fossil fuel.”

GFW says it is open to supplying the “hydrogen option” to its existing and new clients – anyone who wants to board the hydrogen train and secure the future of renewable energy systems. GFW plans to continue working as a supplier of similar solutions, as well as working with local governments to obtain the necessary approvals.



About Greenhydrogen.dk:

Based in Denmark, GreenHydrogen (www.greenhydrogen.dk) is among the global pioneers in the hydrogen field and have – for more than a decade – been offering innovative energy solutions to public and private clients in Denmark, as well as internationally. GreenHydrogen provides advanced electrolysers and hydrogen solutions for renewable energy applications and on-site industry use. Applications range from automotive, industrial, power-to-gas and power-to-power. GreenHydrogen cooperates with leading industry and technology partners, universities and infrastructure providers, who are leaders and experts in their field of operation. Since 2007 GreenHydrogen has delivered hydrogen solutions and participated in numerous publicly and privately funded renewable energy projects in Denmark and internationally, and is approved for participation in Danish energy projects under EUDP, FORSK-El and Innovation Fund Denmark as well as under the EU’s Horizon Program. In 2017 GreenHydrogen launched a new series of CE approved electrolysers for commercial sales.

About GFW:

GFW (www.gfw-windenergie.de) is a company based in Rennerod, Germany and has been active for more than 20 years in the area of wind energy. Founder Jürgen Furhländer and his team are highly qualified partners for all aspects of wind power installations – from constructing power plants and getting them up and running via servicing to after-sales.



GREENHYDROGEN

clantech N_2O_2



About Clantech:

Clan Tecnologica, SL (www.clantech.eu) is an engineering, procurement and commissioning company specialized in the design, development and implementation of on site gas generation systems, with its own technical service for implementation and maintenance of the facilities. Clantech is based in Seville, Spain and has been active in delivering hydrogen solutions since 2006.

About Calvera:

The Calvera Group (www.calvera.es) was founded in 1954. It integrates all processes for the manufacture of transport and storage equipment of high-pressure compressed gas: engineering, design, calculation, complete manufacture and international certification. With more than 40 years making Hydrogen mobile high pressure solutions. It offers the maximum guarantee of quality and safety on the market. Based in Zaragoza, Spain (with headquarters and two manufacturing plants) Calvera also has an international presence with engineering equipment, qualified technicians and automated facilities.

To learn more, feel free to contact:

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