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H2FUTURE
Green Hydrogen

H2FUTURE: World's largest "green" hydrogen pilot facility successfully commences operation

What is currently the world's largest pilot plant for the CO₂-neutral production of hydrogen has successfully commenced operation at the voestalpine site in Linz, simultaneously setting an international milestone in the advancement of new energy supply options. As part of the EU-funded H2FUTURE project, partners voestalpine, VERBUND, Siemens, Austrian Power Grid, K1-MET and TNO are researching into the industrial production of green hydrogen as a means of replacing fossil fuels in steel production over the long term.

Linz, November 11, 2019

Global climate goals aim to almost completely eliminate CO₂ emissions by 2050. This poses challenges for industrial enterprises and energy suppliers, and demands new technological solutions in both sectors. In this context, CO₂-neutral ("green") hydrogen is regarded as the most promising future option for facilitating the energy transition. Now the world's largest and most advanced electrolyser has commenced production of green hydrogen at the voestalpine premises in Linz. The new plant has a capacity of over 6 megawatts, and is currently regarded as the most effective and state-of-the-art facility of its type. It will be used to test whether the technology deployed to produce green hydrogen is suitable for use on an industrial scale. Furthermore, the project, which receives EUR 18 million in EU funding, will investigate the potential to provide network services, and potentially compensate for fluctuations in the power grid.

voestalpine leads the way in decarbonizing steel production

As an industry pioneer in environmental protection, voestalpine is following a consistent, long-term strategy of decarbonizing the steel production process. "We have set ourselves a clear goal of greater direct avoidance of CO₂ emissions in steel manufacturing over the coming years. With the start of operations at the world's largest hydrogen pilot plant at our site in Linz, we have succeeded in taking a significant step towards driving this technological transformation," says Herbert Eibensteiner, Chairman of the Management Board of voestalpine AG. In light of global climate targets, voestalpine is currently investigating the practicality of a hybrid technology to bridge between the existing coke/coal-based blast furnace route and electric arc furnaces powered with green electricity partly generated using green hydrogen. If economically feasible, from today's perspective this option would reduce the Group's CO₂ emissions by around a third sometime between 2030 and 2035. Over the long-term, voestalpine is striving to successively increase the use of green hydrogen in the steel production process, allowing the Group to reduce its CO₂ emissions by a total of over 80% by 2050.

"The most important precondition for scenario planning based on green electricity and green hydrogen is, however, sufficient quantities of renewable energy available at commercially realistic prices. This is the only way in which we can apply tomorrow's technologies in a truly competitive manner," Eibensteiner adds.

Siemens regards hydrogen as an essential element in a climate-neutral industrial society

Decarbonizing the economic and energy system is a key challenge for the future. For that reason, industry requires new processes and novel technologies, such as using electrolysis to generate green hydrogen from renewable energies, in order to achieve the long-term climate goals. "This plant uses renewable energy to split water into its constituent parts, hydrogen and oxygen. The process creates a huge potential to decarbonize the energy and economic system and make it more flexible," explains Wolfgang Hesoun, Chairman of the Management Board of Siemens AG Österreich (Siemens Austria).



This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No 735503. This Joint Undertaking receives support from the European Union's Horizon2020 research and innovation programme and Hydrogen Europe and N.ERGHY.



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In addition, electrolysis can also be used to support the power grid, by extracting excess power from the grid as required. This is an important factor in view of the increasing fluctuations in power generated by renewables. “Siemens has a history of focusing on clean energy, including its generation, distribution, and application. Efficient technologies are a key element in curbing climate change with its dramatic consequences,” Hesoun explains.

The high-tech heart of the plant, the Siemens Silyzer 300, has a capacity of six megawatts, and can generate 1,200 cubic meters of green hydrogen. H2FUTURE is an important milestone for the industrial application of electrolysis as a cornerstone for future industrial applications in the steel industry, in refineries, the manufacture of fertilizers, and other industrial sectors requiring large volumes of hydrogen. It creates the basis for future projects on an industrial scale. Hesoun continues: “We are delighted to see this new technology in use for the first time as part of this project. This outstanding project is an important step towards global decarbonization.”

VERBUND: Sector coupling through electrification

“Hydrogen is green, i.e., CO₂-neutral, when produced using electricity generated from renewables. It allows us to store intermittent and volatile supplies of electricity generated from renewables such as wind and sun, allowing them to be better utilized,” explains VERBUND CEO Wolfgang Anzengruber. As a raw material, energy source, and storage medium, green hydrogen could contribute significantly to decarbonizing energy and CO₂-intensive processes. There are extremely interesting potential applications in the industrial sector as well as transport, especially for freight and rail transport. Furthermore, responsive electrolysers can be used to provision power grids, offering services for increasingly overloaded transmission networks. H2FUTURE is a prime example of cross-sector cooperation generating added value. “The use of green hydrogen is both a win-win situation for power generation and industry, and a perfect example of sector coupling through electrification.”

FCH JU: European research and demonstration projects as a lever to achieve climate goals and strengthen competitiveness

“The H2Future project is one of the flagship projects of the FCH JU that aim to help European electrolyser OEMs develop products that are of the quality and capacity required by European industry to reduce its CO₂ emissions. Green hydrogen produced through electrolysis, using electricity from renewable energy sources, can be used by industries like steel production, refineries, methanol or ammonia, making their products green.” says Bart Biebuyck, Executive Director of the Fuel Cell Hydrogen Joint Undertaking (FCH JU). The FCH JU is making up to EUR 12 million of research funding available for the project. In doing so, the European Commission is providing substantial support for implementing climate protection-relevant, innovative projects, and enhancing the competitiveness of European players. Bart Biebuyck concludes: “Europe is a world leader in the development and manufacturing of electrolysers, thanks also to FCH JU support. However, our global competitors are only few years behind us. The setting in operation of the H2FUTURE electrolysis plant is proof that European industry is keen to ensure that Europe stays in the lead in developing and commercializing novel electrolysers and in greening industry, helping keep investment and jobs in Europe”.



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About voestalpine

In its business segments, voestalpine is a globally leading technology group with a unique combination of materials and processing expertise. voestalpine, which operates globally, has around 500 Group companies and locations in more than 50 countries on all five continents. It has been listed on the Vienna Stock Exchange since 1995. With its top-quality products and system solutions using steel and other metals, it is a leading partner of the automotive and consumer goods industries as well as of the aerospace and oil & gas industries. voestalpine is also the world market leader in complete railway systems as well as in tool steel and special sections. In the business year 2018/19, the Group generated revenue of EUR 13.6 billion, with an operating result (EBITDA) of EUR 1.6 billion; it had just under 52,000 employees worldwide. www.voestalpine.com

About SIEMENS Österreich (Siemens Austria)

Siemens Austria ranks among the leading technology companies in the country. Siemens employs about 10,700 persons in Austria, and its revenue in the fiscal year 2018 amounted to around EUR 3.3 billion. The business activity is concentrated on the areas of electrification, automation, and digitalization. This essentially includes systems and services for power generation, transmission and distribution, energy-efficient products and solutions for production, transport and building technology, and technologies for high-quality, integrated healthcare provision. Automation technologies, software and data analytics play a major role in these fields. With its six plants, globally active competence centers, and regional expertise in every federal state, Siemens Austria contributes considerably to domestic value. With around 10,700 suppliers, approximately 6,200 of whom are based in Austria, the external purchasing volume for Siemens Austria alone during the past business year amounted to over EUR 1.1 billion. Siemens Austria is not only responsible for the domestic market, but also for 20 further countries (the Central and Southeast European region, and Israel). Further information: www.siemens.at

About VERBUND

VERBUND is Austria's leading electricity company and one of Europe's largest hydropower electricity producers. About 95 percent of the company's electricity is generated from renewables, primarily hydropower. VERBUND trades in electricity in 12 countries, and in 2018 with around 2,700 employees, it achieved an annual turnover of about 2.8 billion euros. Along with its subsidiaries and affiliates, VERBUND is active from electricity generation to transport and on to international trading and marketing. VERBUND has been listed on the Vienna Stock Exchange since 1988, and 51% of the share capital is held by the Republic of Austria. More information: www.verbund.com



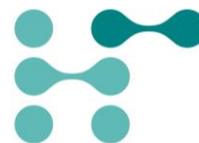
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