

GrInHy2.0: EU funding body visits the world's largest high-temperature electrolyzer of Salzgitter Flachstahl GmbH



Salzgitter, July 14, 2021

FCH JU Executive Director Meets the GrInHy2.0 Project Partners On-Site

The GrInHy2.0 high-temperature electrolyzer, which has been successfully operated for the first time in 2020, is the world's largest one installed in an industrial environment. On June 14, 2021, Bart Biebuyck, Executive Director of the EU funding body "Fuel Cells and Hydrogen Joint Undertaking" (FCH JU), visited the Salzgitter Flachstahl iron- and steelworks to learn more about the GrInHy2.0 electrolyzer installation on-site and to get informed about the project status.

GrInHy2.0 started in 2019 as the succeeding project of GrInHy ("Green Industrial Hydrogen"). Utilizing green hydrogen, made from water steam and renewable electricity via high-temperature electrolysis, a CO₂-emission-free steel production can be achieved in the long term. The project is setting the path towards decarbonizing the steel industry. Members of the consortium are Salzgitter Flachstahl (SZFG), Salzgitter Mannesmann Forschung, Sunfire, SMS Group company Paul Wurth, Tenova and the French research center CEA.

From the EU's point of view, GrInHy2.0 contributes to the ambitious EU climate targets of a net-zero economy until 2050. The project lays the foundation towards the ramp-up of electrolysis technologies and thus green hydrogen production across Europe. "The ambitious GrInHy2.0 project demonstrates how green hydrogen can successfully decarbonize hard to electrify sectors such as steel production by utilizing the waste heat from high-temperature industrial processes. We are proud to see that European players are leading the way in high-temperature electrolysis (HTE) and to know that the FCH JU funding has enabled the demonstration of the world's largest high-temperature electrolyzer to date", says Bart Biebuyck, Executive Director of the FCH JU.

The high-temperature electrolyzer has been developed and constructed by the electrolysis company Sunfire. It is based on the innovative solid oxide electrolysis cell (SOEC) technology, which utilizes waste heat and runs at 850 °C. Therefore, the system is much more efficient than other electrolysis technologies on the market: Sunfire's high-temperature electrolyzer requires significantly less electricity to produce one kilogram of green hydrogen. "GrInHy2.0 is an important demonstration project for us since it proves our electrolysis technology in an industrial environment. Contributing our deep technological know-how to the consortium, we are making another step towards decarbonizing industries that are still largely dependent on fossil resources", says Sunfire CEO Nils Aldag.

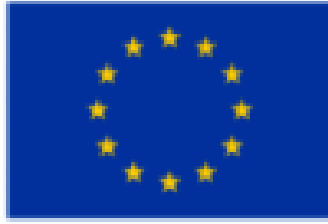
The GrInHy2.0 electrolyzer is part of Salzgitter's transformation project "SALCOS®" (Salzgitter Low CO₂-Steelmaking). With the existing infrastructure on-site – including the availability of steam from waste heat, a hydrogen pipeline and sufficient electricity supply – the system was built within perfect conditions. The electrolyzer produced green hydrogen for the first time in December 2020, accomplishing a significant work schedule milestone of the project. Since then, the hydrogen produced has been fed directly into the steel plant's hydrogen grid. As of today, 15 tons of green hydrogen have already been used in SZFG's annealing processes and galvanizing plants for steel refinement. "The steel industry can make an enormous contribution to decarbonizing the industry sector. Key is the availability of green hydrogen. With GrInHy2.0, we are testing an innovative and energy-efficient approach in an industrial setting", says Gunnar Groebler, CEO of Salzgitter AG and Board Member of Hydrogen Europe.

At the end of this year, the project partners aim to achieve a nominal production rate of 200 Nm³ of hydrogen per hour. The system is expected to be in operation for at least 13,000 hours and to provide proof of plant availability in excess of 95 % until the end of 2022. Over this period, the electrolyzer is required to produce a minimum of 100 tons of green hydrogen and to provide evidence of an electrical efficiency exceeding 84 %LHV.

Information about the GrInHy2.0 and SALCOS projects are available at <https://salcos.salzgitter-ag.com> and <http://www.green-industrial-hydrogen.com>.



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About Sunfire

Sunfire is a global leader in the production of industrial electrolyzers based on pressurized alkaline and solid oxide (SOEC) technologies. With its electrolysis solutions, Sunfire is addressing a key challenge of today's energy system: Providing renewable hydrogen and syngas as climate-neutral substitutes for fossil energy. Sunfire's innovative and proven electrolysis technology enables the transformation of carbon-intensive industries that are currently dependent on fossil-based oil, gas, or coal. The company employs more than 650 people located in Germany and Switzerland.

For more information visit www.sunfire.de