

World's largest high-temperature electrolyzer achieves record efficiency



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To reduce CO₂ emissions, Salzgitter AG is introducing innovative technologies for climate-friendly steel production. Now another technological breakthrough has been achieved within the GrInHy2.0 hydrogen project.

By using green hydrogen, the steel and technology group Salzgitter AG is a pioneer of sustainable steel production technologies. To drastically reduce its carbon footprint by 2033, the company has implemented the program SALCOS® – Salzgitter Low CO₂ Steelmaking as essential aspect of their new Salzgitter AG 2030 strategy.

Part of this initiative is the EU-funded hydrogen project GrInHy2.0, demonstrating the world's largest high-temperature electrolyzer to produce green hydrogen.

“For many months, we have been working together with our partners on this lighthouse project. Now we reached another important milestone,” says project leader Simon Kroop from the Salzgitter Mannesmann Forschung. “For the first time, the electrolyzer produced 200 Nm³ of green hydrogen per hour. We are also able to prove an electrical efficiency of 84 % el,LHV. This is a level of efficiency that no one else has achieved before. By comparison: other electrolysis technologies such as Alkaline or PEM only reach efficiencies of around 60 % el,LHV.”

The high-temperature electrolyzer was developed and manufactured by the German electrolysis company Sunfire. Based on the innovative SOEC (solid oxide electrolysis cell) technology, the electrolyzer uses renewable electricity to split water into hydrogen and oxygen. Electrolysis per se is not a new process – but Sunfire's SOEC technology is the most efficient on the market.

“Our electrolyzer runs at operating temperatures of 850 °C and uses waste heat from Salzgitter's steel production processes,” explains Konstantin Schwarze, Head of Large Systems Product Development at Sunfire. “That is why

our high-temperature electrolyzer requires much less electricity to produce hydrogen at a large scale than conventional technologies. As part of GrInHy2.0, we were finally able to demonstrate the high efficiency on a megawatt scale.”

“The limited resource of renewable electricity is being ideally used for generating hydrogen, which is another step towards green steel production. This is proven by the record efficiency which also supports our strategic vision Pioneering for Circular Solutions,” says Dr. Stefan Mecke, SALCOS® project spokesman.

Sunfire CEO Nils Aldag is proud of industrial large-scale projects like these: “Our electrolyzers enable a green future for industrial companies like Salzgitter AG. We are very pleased to see our technologies successfully operating in industrial environments. Pioneers like Salzgitter are setting a great example. Many more of these are needed to achieve our European climate targets.”

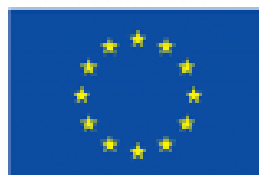
Besides Salzgitter Flachstahl and Sunfire, also the Salzgitter Mannesmann Forschung, SMS Group company Paul Wurth, Tenova and the French research center CEA are part of the GrInHy2.0 consortium.

More information about GrInHy2.0: www.green-industrial-hydrogen.com.

Picture: © Salzgitter AG



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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

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