Pilot electrolysis plant in Herne: Green hydrogen for wind energy

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- Evonik and Siemens Energy cooperate on project
- Innovative hydrogen technology research and testing in an industrial environment
- Federal Ministry of Education and Research is providing funding for the project

Essen, Germany. Evonik is investing in a pilot electrolyzer at its site in Herne (Germany) to produce green hydrogen as a starting product for isophorone diamine (IPDA), a key raw material for rotor blades for wind turbines. In an accompanying project, Siemens Energy is researching how this new electrolysis technology stands up in industrial use. The project consortium started at the end of 2022 and runs until mid-2025. Both the investment and the research project receive funding from the Federal Ministry of Education and Research.

Judith Pirscher, State Secretary at the Federal Ministry of Education and Research (BMBF): "Green hydrogen is the missing piece in the energy transition puzzle. By funding the H_2annibal project, we are supporting research into innovative hydrogen technologies in real conditions in a chemical plant. In this way, we are speeding up the transfer from science to industry and supporting the ramp-up of the hydrogen economy in Germany. The Federal Ministry of Education and Research is providing total funding of around €9.3 million for these two projects."

Maike Schuh, CFO of Evonik: "We are investing massively in green growth to position ourselves more sustainably. To reduce our carbon footprint, we intend to invest a total of €700 billion in production processes and infrastructure group-wide by 2030. Hydrogen electrolysis in Herne is a key element in that."

Evonik and Siemens Energy are therefore driving forward the industrial transformation in the area of climate protection precisely where the Hannibal mine extracted hard coal until about 50 years ago. Rainer Stahl, manager of the Herne site: "In the H_2annibal project, we are testing a new type of electrolysis

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technology and therefore making a contribution to reducing CO_2 emissions and, at the same time, safeguarding the sustainable supply of hydrogen and oxygen to our production facilities in the mid-term."

At present, the hydrogen used by Evonik in Herne is fossil-based. In the future, green hydrogen should be produced directly at this site using a PEM (proton exchange membrane) electrolyzer from Siemens Energy with rated power of 8 MW. This will be operated with renewable energy. Green hydrogen from this electrolyzer could meet up to 45 percent of the hydrogen and, in addition, 100 percent of the oxygen required at this site. In the electrolysis process, water is split into hydrogen and oxygen with the aid of electricity. Using the electrolyzer could avoid 12,000 metric tons CO_2 a year.

Manuel Mundt, Vice President Finance for Sustainable Energy Systems at Siemens Energy: "Avoiding greenhouse gas emissions is particularly difficult in the industrial sector. We need innovations and strong partnerships to find new technological routes that drive forward the transformation of industry." In Herne, Evonik and Siemens Energy now have an opportunity to test a new generation of the electrolysis system for green hydrogen in a complex integrated production system that is typical for the chemical industry. Herne is a model for a chemical park with fluctuating, demand-driven hydrogen requirements.

The H_2annibal project: a pilot electrolyzer to produce hydrogen for IPDA production at the Herne/Hannibal mine site is funded by the German Federal Ministry of Education and Research.
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Company information

Evonik is one of the world leaders in specialty chemicals. The company is active in more than 100 countries around the world and generated sales of €18.5 billion and an operating profit (adjusted EBITDA) of €2.49 billion in 2022. Evonik goes far beyond chemistry to create innovative, profitable and sustainable solutions for customers. About 34,000 employees work together for a common purpose: We want to improve life today and tomorrow.

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