

Green hydrogen for steel production: RWE and thyssenkrupp plan partnership

- **CO₂ emissions from iron production to be reduced**
- **100 MW electrolyzer could cover 70% of H₂ requirement of a thyssenkrupp blast furnace**
- **Rapid implementation of National Hydrogen Strategy helpful for investment decisions**

Green hydrogen from an RWE Generation electrolyzer could help thyssenkrupp Steel Europe sustainably reduce CO₂ emissions from steel production in the future. The energy company and the steel producer have agreed to work together towards a longer-term hydrogen partnership. The first hydrogen is set to flow to the Duisburg steel mill by the middle of the decade.

Hydrogen from Lingen for steel production in Duisburg

The hydrogen required for iron production is to be produced by electrolysis, in which water is broken down into hydrogen and oxygen. The companies agree that only electricity from renewable sources should be used to operate the electrolyzers. At its power plant site in Lingen RWE is already planning to build electrolysis capacities that could supply green hydrogen for the iron production of Germany's biggest steelmaker. A 100 MW electrolyzer could produce 1.7 tons of gaseous hydrogen per hour, corresponding to around 70 percent of the quantity required by the Duisburg steelmaker's blast furnace earmarked for hydrogen use. This would translate theoretically into around 50,000 tons of climate-neutral steel. The conversion of the blast furnace is to be carried out by 2022 - the first important stage of a fundamental transformation process at the end of which the company's entire steel production will be carbon-neutral.

Important signal: German government adopts National Hydrogen Strategy

One of the prerequisites for the collaboration is the development of a dedicated hydrogen network to transport the gaseous hydrogen from Lingen to tkSE's steel mill site in Duisburg. Pipeline transport of the hydrogen is the most economical delivery option. In dialogue with gas network operators and the authorities, RWE and tkSE therefore want to drive solutions for timely network connection. They believe hydrogen pipeline transport will be possible on the basis of regulations corresponding largely to those currently applying to natural gas delivery. The GETH2 initiative, in which RWE is involved, is already promoting corresponding solutions. The gas network development plan published on May 4, 2020, in its "green gas

variant”, for the first time includes calculations for initial hydrogen sections parallel to the natural gas network.

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Roger Miesen, CEO of RWE Generation, says: “Hydrogen is of central importance for greenhouse gas abatement in Germany. The National Hydrogen Strategy and the €9 billion funding to be made available will give this future technology the necessary kick-start. In order for a hydrogen infrastructure in Germany to really pick up speed, rapid implementation is now needed, because investment decisions for green hydrogen projects need planning certainty.”

Bernhard Osburg, Chairman of thyssenkrupp Steel: “The planned cooperation with RWE is an important step on our path to climate neutrality. The aimed-for supply quantity would be largely sufficient to supply a blast furnace with green hydrogen and allow the production of climate-neutral steel for around 50,000 cars per year. This shows that climate-neutral steel is possible and we are pressing ahead with the conversion of our production. Nowhere else than in the steel industry can hydrogen be used with a comparable climate protection effect. We therefore expressly welcome the adoption of the National Hydrogen Strategy.”

Background

Hydrogen is a central component of the German government’s decarbonization strategy. The lightest element in the periodic table can not only replace fossil fuels and raw materials – it also allows flexible, supply-oriented storage of renewable energies. Under the “National Hydrogen Strategy” of the Federal Ministry for Economic Affairs and Energy, up to five gigawatts of electrolysis capacity for hydrogen production is to be created and the hydrogen transport and distribution infrastructure further developed by 2030. Through targeted support and relief the ministry wants to make hydrogen economically viable for producers and users.

Further Information

thyssenkrupp Steel climate website

<https://www.thyssenkrupp-steel.com/en/company/sustainability/climate-strategy/>

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Q&A with thyssenkrupp Steel CTO Dr Arnd Köfler

[LINK]

Purpose, ambition and mission of the new RWE

<https://www.group.rwe/en/the-group/profile-and-strategy/>

en:former - The Energy Blog of RWE

<https://www.en-former.com/en>

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***thyssenkrupp Steel Europe** is one of the world's leading suppliers of carbon steel flat products. With around 28,000 employees, the company supplies high-quality steel products for innovative and demanding applications in a wide variety of industries. Customer-specific material solutions and services around steel complete the range of services. With a production volume of approximately 11 million tons of crude steel annually, thyssenkrupp Steel is the largest flat steel producer in Germany.*

RWE Generation SE

With its highly efficient power plants in Germany, the UK and the Netherlands, approximately 3,100 employees at RWE Generation use gas, hard coal, hydro power and biomass to generate electricity. The company's gas fleet is the fourth largest in Europe. Which is an excellent starting point, as gas is becoming increasingly important as a bridge to the age of renewables. The company banks on biomass, particularly in the Netherlands – and is converting two coalfired power stations so that they can use this CO₂-neutral energy source. RWE also has hydro power plants in many core markets.