

H2ermes

Publieke samenvatting / Public summary

Aanleiding

Green H2 and O2 are recognized to play an important role in the transition to sustainable and circular industries in the Netherlands and the world. Market and regulatory developments show increasing momentum for reducing the carbon intensity of molecules while cost competitiveness of zero emission solutions increases. And the H2ermes consortium is uniquely capable to demonstrate this firsthand: - Nobian is a leader in electro-chemistry since 1899 and develops projects of increasing scale, ensuring that the electrolyzers will be designed, installed and operated to the highest possible standards and best in class operational efficiency. - Tata Steel is one of the world leaders in terms of low emission steelmaking and has the ambition to produce carbon neutral steel from 2050 by working actively on reducing its CO2-emissions and short-term opportunities to use renewable hydrogen as an alternative energy carrier to replace natural gas and coal and associated CO2-emissions. - Port of Amsterdam is Western Europe's 4th largest port and one of the main fuel hubs worldwide, shifting its focus to sustainable energy production, sustainable fuel transshipments and circular industry.

Doelstelling

The ultimate goal of project Hermes is building a 100 MW demonstration plant, corresponding with the production of 20.000 Nm3 H2 per hour which will subsequently be used in the steel processes at TSIJ and in the wider Amsterdam Metropolitan Area (AMA). Preliminary estimates the potential in a reduction of 120 kton CO2 per year through the use

Projectinformatie / Project information

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Subsidiebedrag / Grant amount

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Algemene informatie / General information

Penvoerder / Secretariat

HyCC B.V.

Publicaties en materialen / Publications and attachments

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of green hydrogen replacing fossil energy carriers in steel production, chemistry, fuels production and mobility. In order to reach the ultimate goal a Front End Engineering and Design (FEED) study has to be performed in order to limit risks, capture opportunities and be able to make a well-founded investment decision based on several potential options with the highest chances of success. The focus of the study is to establish the “first building block” for a 100 MW H₂ electrolyser, with TSIJ as the launching consumer, enabling establishment of renewable hydrogen value chains in the region. At the same time, the consortium aims to design the plant in a modular way, so that hydrogen deployment (i) grow with increasing demand from TSIJ and (ii) grow with increasing demand from the larger AMA.

Korte omschrijving

During the FEED study, basic engineering of the plant will be carried out and use (volume, specifications, allowed fluctuations) of H₂, O₂ and waste heat in Tata Steel's processed and circular chemistry, renewable fuels production and mobility will be detailed. Also, a preFEED study is performed for the Regional Integrated Backbone by Port of Amsterdam supported by Gasunie. The outcomes of the study will be used as input for the final investment decision for the electrolysis and modifications to the steel mill, having optimized the design, economic viability and environmental and societal impact. The best suited electrolysis technique will be selected by Nobian for the 100 MW facility. Finally, activities concerning cost estimates for the selected technologies and implementation will be conducted, this also includes identifying pre-investments that are required early on in the realization and which investments can be made later as modular production capacity is added.

Resultaat

Ultimately, the result will be the first 100 MW green hydrogen plant of its kind in the world which will deliver green hydrogen and oxygen to TSIJ to be used in the steel production process and circular chemistry, renewable fuels production and mobility

in the AMA. By replacing fossil energy carriers of the existing value chains, a reduction potential of 120 kton on an annual basis is achieved. However, the final result of this study will be a basic engineering package for the plants, a substantiated marketing, sales and renewable energy sourcing plan and financing plan, adding up to the investment related required to take the final investment decision (planned end of 2022).

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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