MegaWatt Design Delfzijl

Publieke samenvatting / Public summary

Aanleiding

AkzoNobel and Gasunie are interested in creating the conditions for a joint investment in a 20MW electrolyser in the Delfzijl industry cluster, converting green electricity to hydrogen, to address the demand for green hydrogen in the area. AkzoNobel wants to take the next step in scaling-up production. The Delfzijl region is a perfect area for the production of green hydrogen due to the proximity to a large chemical industrial complex and the abundance of green energy produced by nearby wind parks and solar panel fields. Gasunie owns and operates the natural gas pipeline infrastructure in the Netherlands and is searching for alternatives to gas. Natural gas is a fossil fuel and emits large quantities of CO2. Gasunie is interested in the transportation, storage or conversion of hydrogen by making use of existing gas infrastructure or by developing new hydrogen infrastructure. Gasunie transports gas to a number of (petro) chemical companies in the region. The perfect match of an abundance of green electricity, an existing pipeline infrastructure and the proximity of a large chemical industry is what mainly drives this project.

Doelstelling

The project goals can be divided in three major objectives: Objective 1: Demonstrate the implementation of power to hydrogen for meeting climate policy targets at the largest scale to date (20 MW), in real-life industrial and commercial conditions, for production of green chemicals, starting with green fuel, with a focus on preparing the next scale-up step within 5 years. Objective 2: Demonstrate the procurement of electricity at

Projectinformatie / Project information

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Subsidiebedrag / Grant amount
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Algemene informatie / General information

Penvoerder / Secretariat
Nouryon Industrial Chemicals

Publicaties en materialen / Publications and attachments

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reduced cost through advanced procurement and arbitrage strategies, combined with generation of significant additional value from the provision of balancing services to the electricity grid at 20 MW scale. The target is to decrease effective electricity costs by 35% compared to a similar consumer operating at constant load. Objective 3: Provide a constant and reliable supply of green hydrogen to, among other, the (petro) chemical industry in Groningen.

Korte omschrijving

Research will be conducted by AkzoNobel and tests in order to determine which electrolysis technique is most suited for the 20MW facility. The options has been narrowed down to three alternatives which need to be researched and tested. Secondly, a basis of design (BoD) for the infrastructure needs to be developed by Gasunie, for both hydrogen and oxygen. For oxygen this concerns oxygen purification, oxygen compression and an oxygen filling station. For this study the characteristics of the produced gases coming out of the electrolyzer will serve as an input. Also the requirements of customers with regard to green hydrogen and oxygen will be researched and discussed. Furthermore, work will be conducted on the basis of design for the complete plant, which includes both the electrolysis as well as the gas processing and gas distribution plans. Finally, activities concerning cost estimates for the selected alternatives will be conducted. Based on the cost estimates and other relevant criteria a choice will be made for a preferred alternative. After the choice for a particular alternative has been made, preparations will start for the next project phase.

Resultaat

Ultimately, the result will be the first 20 MW green hydrogen plant of its kind in the world which will predominantly deliver green hydrogen to several major chemical companies in the Netherlands. However, the results of this study and complementary tests are as follows: • A preliminary basis of design report on the three electrolysis alternatives and their utility connections containing

a process flow diagram, a preliminary equipment list, a rough mass balance and consumptions figures, operational data and sustainability data; • A preliminary basis of design report focusing on gas processing and distribution infrastructure, containing a process flow diagram, a preliminary equipment list, a rough mass balance and consumptions figures, operational data and sustainability data; • A final basis of design report on the three electrolysis alternatives containing a process flow diagram, preliminary equipment list, rough mass balance and consumptions figures, operational data and sustainability data. A completed HS2 report. A final alternative will be chosen for the 20MW green hydrogen facility; • Final result: A pre-project plan, containing a budget, schedule and list of activiti

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