

Green Ammonia Production Environmental Study

Publieke samenvatting / Public summary

Aanleiding

The Dutch industrial sector needs to speed up the transition towards more sustainable clean energy sources to meet the European climate goals. One of the identified pathways (Groenvermogen) is to increase the availability of green hydrogen and/or green energy carriers in the form of green ammonia. Green hydrogen and green ammonia will enable the industry to speed up their shift towards cleaner production and lowering the dependency on fossil fuels. The future availability of large quantities of green hydrogen and/or green ammonia – through (mainly) the Port of Rotterdam – will empower the needed energy transition of the Dutch industry. New solutions are needed to increase the supply (import) of green energy carriers (e.g. hydrogen or ammonia) towards the Dutch industry. SwitchH2 aims to develop this market by producing and delivering industrial quantities of green ammonia, produced offshore, right at the source.

Doelstelling

The purpose of this project is to perform a preparatory (environmental) study to the execution of a demonstration project, which will see the first ammonia Floating Production Storage and Offloading (FPSO) solution to be developed by SwitchH2. The study aims at providing a technically validated, economically viable and organizationally durable design of a newbuild FPSO that will produce green ammonia based on sustainable energy (Wind, Solar and Wave) produced on land as well as offshore. The project will research the possible demonstration of large scale conversion and energy storage in green ammonia and the related (import)

Projectinformatie / Project information

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Subsidiebedrag / Grant amount

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Algemene informatie / General information

Penvoerder / Secretariat

SwitchH2 B.V.

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transportation chain to supply the Dutch industry by means of shuttle tankers. Applicant SwitchH2 will focus on a specific site of the first 1:1 ammonia FPSO offshore in Northern Portugal, which allows for concretely verifying all relevant environmental aspects.

Korte omschrijving

WP1: Technical aspects -Develop a FEED design on the FPSO, the mooring arrangement for the specific location -Develop the process design of the green NH₃ production, including FMEA analysis. - Marinization of process components -Validation with lab-, model- and basin-testing -Finalize FEED design incl. energy streams/balance and fabrication plan
WP2: Commercial/financial aspects -Investigate the options for power purchase agreements that guarantee the needed renewable power supply (high reliability and commercially feasible) -Analyzing and validating financial/commercial feasibility: the Levelized Costs of Ammonia (LCoA) -Prepare for offtake agreements with Dutch offtakers of green ammonia (mainly in the Port of Rotterdam). Develop a financial model and prepare an SPV-based financing strategy for the FPSO to be build and operated (Special Purpose Vehicle). WP3: Organizational aspects -Study on transport of ammonia in shuttle tankers; solutions, frequency, costs to Rotterdam. -Environmental studies and insight in needed permits for the intended location. - Analyze possibilities of certification (pre-certification studies).

Resultaat

The proposed study will yield the following tangible results: -Finalized FEED design (concept design) of the technical solution incl energy balance and volumes and a fabrication plan -Finalized process design of the ammonia production solution - Preferred outline for power purchase agreements and identified IPP's (Independent Power Producers) and/or asset owners of wind and solar PV-parks. - Concrete financial plan incl. LCoA on the demonstration project -Preferred outline for offtake agreements with Dutch offtakers -Report on transport/shuttle requirements and available parties

to transport the ammonia -Environmental study for
the proposed demonstration location -Finalized pre-
certification studies. -Final study report

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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