Feasibility system integration gas + wind energy island IJmuiden ver

Publieke samenvatting / Public summary

Background

The rapid growth of offshore wind with increasing connection distances to onshore substations necessitates massive electric power conversion equipment (and the accompanying support structures) both offshore and onshore, and electricity transport over ever increasing distances. The IJmuiden-Ver wind area (potential of at least 4 GW) can possibly be a first case where building an offshore island is more economical than conventional support structures. It is very relevant to properly assess whether on such an island, conversion of wind electricity to hydrogen is feasible and would bring net benefits. Likewise, a role in offshore CO2-storage is relevant to be investigated. Such an innovative, multifunctional island could be a first instalment of a series of icons of Dutch craftsmanship, expertise and technology and be sustainable and ecologically friendly. An island may contribute significantly to the energy transition if it lowers overall costs and make the energy system more robust and flexible.

Objective

The goal of the project is to make an inventory of the opportunities, the challenges, the costs and the planning of the production of hydrogen on an artificial island (IJver) with the electricity of the wind farms that are foreseen in the IJmuiden Ver area. The feasibility of this solution in technical and financial (including risks) terms will be identified, but also the legal, ecological, stakeholder and permitting issues will be described.

Projectinformatie / Project information

Projectnummer / Project number
TESN318002
Subsidiebedrag / Grant amount
€ 214.827,00

Algemene informatie / General information

Penvoerder / Secretariat
Offshore Service Facilities B.V.

Publicaties en materialen / Publications and attachments

- **14.01.2021**

  Eindrapport TESN318002

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Boundary conditions and critical milestones will be identified and an advice to OSF will be formulated how to proceed with the development of the island taking into account the conditions of hydrogen and Carbon Capture and Storage (CCS).

Short description of activities

In the project, first deployment scenarios for the offshore energy island are determined. This includes defining the energy system functions and services along with optimized phasing of the island since the value of an offshore energy hub is determined by the timing, location and scope of services it delivers. Next, the project focuses on location and physical aspects. The location of the island depends on various aspects; physical aspects such as top soil and subsoil conditions will play an important role. Further, spatial aspects related to the surroundings island also play an import role. Furthermore, a techno-economic model will be created to do the techno-economic evaluation of the scenario's. This uses the specific energy infrastructure knowledge of the project partners. A final work package deals on the setting of the project, integration, and an analysis of non-technical aspects and risks: legal, ecological, stakeholder and permitting.

Results

The project will result in an advice on the feasibility and the timing of a hydrogen plant on the IJver island and insight in the role CCS can play. The crucial learning points deal with the techno-economic analysis, financial advantages, the system integration aspect, the risks and opportunities including those posed by legal, ecological, permitting and other non-technical factors. These will be described in a report. Knowledge dissemination and stakeholder consultation are an essential part of the project.

If the outcome from the study is positive, and if an island is also feasible from other perspectives, then the development of a hydrogen implementation plan will be executed by OSF. Further research will then be carried out by the project partners.

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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