Netherlands Floating Hydrogen Production

Publieke samenvatting / Public summary

Aanleiding
As the global energy landscape transitions towards sustainable and carbon-neutral solutions, the integration of renewable energy sources like offshore wind and hydrogen production becomes pivotal. This study delves into the feasibility of deploying a floating hydrogen production unit adjacent to fixed-bottom offshore wind turbines in the Netherlands North Sea, with a specific focus on the OneSea solutions and technology.

Doelstelling
The primary objective is to comprehensively assess local metocean conditions in the Dutch sector of the North Sea to deploy large scale Hydrogen production floating units, the technical and economic advantages of such a combined system, harnessing synergies between fixed foundation offshore wind and a floating hydrogen production unit.

Korte omschrijving
The research adopts a multidisciplinary approach, encompassing naval architecture, marine and layout engineering, and economic analysis of the system. Initial investigations involve a thorough review of the OneSea solution and its compatibility with existing offshore fixed wind infrastructure. Technical aspects include considerations such as the design conditions envelope, safety protocols, and integration challenges between the floating hydrogen production unit, mooring system, and fixed-bottom wind turbines. Economic viability is evaluated through a detailed cost comparison analysis, encompassing capital investment,

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operational expenses, and potential savings from utilizing the leased floating hydrogen production unit as a hub for the operations and maintenance services of the fixed-bottom wind turbines. The study employs advanced simulation tools and models to predict the performance of the integrated system under varying operational conditions and environmental scenarios. Sensitivity analyses are conducted to identify key factors influencing the system, facilitating optimization for maximum efficiency.

Resultaat

The anticipated outcomes aim to provide valuable insights into the potential benefits, challenges, and overall value of implementing a floating hydrogen production unit alongside fixed-bottom offshore wind turbines. The findings will serve as crucial information for policymakers, industry stakeholders, and investors, guiding decisions on the viability of such hybrid systems and fostering future developments that optimize the utilization of renewable energy resources in offshore environments.

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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