

Oranjewind Inertia

Publieke samenvatting / Public summary

Aanleiding

In accordance with the Dutch Climate Agreement, 70% of the total electricity production in 2030 must come from renewable sources. As fossil energy sources are phased out, the grid system services they provide are disappearing as well. These services - such as inertia - are required for the stability and safe operation of electricity grids and have been traditionally provided by the heavy rotating generators in conventional power plants. To minimize the risk of grid shutdowns that could affect economic activities and public services like healthcare, infrastructure and heating, an innovative solution for inertia demand needs to be developed and tested.

Doelstelling

RWE proposes the pilot project 'Oranjewind Inertia' to develop, install and test Battery Energy Storage Systems (BESS). The project is part of RWE's offshore wind project 'Oranjewind' in the North Sea. This BESS combines battery storage with grid-forming converters, allowing them to provide inertia and other related grid services, thus matching perfectly with the demand for scalable flexibility. By taking over the provision of inertia from conventional power plants, BESS can make the envisaged transition to renewable energy sources much smoother and faster. Therefore, the Oranjewind Inertia project fits well within the DEI category 'flexibilization of the energy network' by indirectly contributing to a significant reduction of CO2 emissions.

Korte omschrijving

Projectinformatie / Project information

Projectnummer / Project number
DEI124022

Subsidiebedrag / Grant amount
€ 800.828,00

Algemene informatie / General information

Penvoerder / Secretariat
RWE Generation NL B.V.

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The gas-fired power plant RWE Moerdijk 1 site will be utilized to house a 10 MW lithium-ion BESS. First, the technical requirements for grid-forming operation will be defined and the innovative power conversion system will be developed into a scalable BESS system. Next, the battery system components, including the grid-forming converters, will be installed and integrated into the grid. An energy management system to control the battery system and the new grid-forming operational modes will be developed, as well as an operational concept for the inertia services. After this, testing will commence. Over two years, system operations will be assessed under various simulated scenarios against grid stability and security. In addition, the scenarios will consider multiple market situations, such as additional demand of inertia. The performance of the system components and the system will be evaluated, and the benefits to the grid, operation reliability, economic characterization and feasibility will be analyzed. Finally, the project's results will be disseminated and communicated to relevant stakeholders.

Resultaat

Oranjewind Inertia will display the inertia benefits of a BESS concept to the grid and analyze its technical impact and usefulness in providing inertia and related grid system services. The system's reliability and performance will be assessed and will be evaluated to see whether it is able to fulfil the technical requirements. Ultimately, this pilot project will result in the technical feasibility of using BESS for the provision of inertia on a MW scale, an evaluation of market opportunities and an optimized business case for the system. RWE hopes that the technology can eventually be expanded to their global BESS projects in the pipeline.

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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