

Green Smart Open-hole Continuous Casing System

Publieke samenvatting / Public summary

Aanleiding

The increased use of electricity through mass electrification plays a significant role to meet the climate goals set by the Dutch government. Mass electrification is hindered by lengthy permit processes of infrastructural projects that often arise from complex discussions with landowners and other stakeholders affected by these projects. A recent and illustrative offshore grid example: the Ten Noorden van de Wadden offshore wind project has been postponed as none of the cable route options are found feasible yet. If feasible, cable laying by trenching is not only time consuming but can also have a significant impact on flora and fauna and impacts the day-to-day life in densely populated areas. Green SOCCS is an innovative alternative for cable laying by trenching. It is a drilled solution that avoids affecting daily stakeholder life and speeds up the permitting process. Green SOCCS accelerates wind infrastructural projects, particularly in nature sensitive areas, in cities and rural areas. In addition, the cable lifetime and the wind project performance can benefit from the cable protection in a steel conduit.

Doelstelling

Callidus, Ampelmann and Delft Offshore Turbine (DOT) have joined forces to re-introduce the Smart Open-hole Continuous Casing System (SOCCS) to accelerate offshore wind development by speeding up the permitting process of infrastructural projects. SOCCS is a trenchless cable installation solution based on the inside out steel pipe inversion principle. The technology combines the commonly

Projectinformatie / Project information

Projectnummer / Project number

MOOI24031

Subsidiebedrag / Grant amount

€ 3.745.154,00

Algemene informatie / General information

Penvoerder / Secretariat

Delft Offshore Turbine B.V.

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used Horizontal Directional Drilling (HDD) technique with a continuously formed casing to allow drilling over long distances. The purpose is to establish Green SOCCS as a nature friendly, spatial planning resolving, and a cost-effective technology for long-distance trenchless cable and pipe installation operations. In addition, the resulting infrastructure of conduits should be suited for multi-use applications. Callidus, Ampelmann and DOT teamed up with the following parties that have a strong reputation for innovation, engineering and operational excellence: Van Leeuwen Sleufloze Technieken (HDD operator, participated in SOCCS), Twentsche Kabelfabriek (cable manufacturer), TenneT (grid operator), Plumettaz (cable installation equipment) and Delft University of Technology (knowledge and innovation)

Korte omschrijving

The key activities are:

- Project management: The main activities consist of all project management disciplines including a detailed HSE (health, safety and environmental) plan for the specific project locations;
- Preliminary design phase: this work package includes the determination of (component) requirements and a detailed reporting regarding the design specifications before the actual design and construction can commence;
- Design: this work package includes the design, procurement and engineering of all components;
- Construction and marriage: in this phase the equipment is produced and seamlessly integrated (the so called marriage) with the electric HDD equipment;
- Test campaign: in this phase the proof of concept will be demonstrated. Initial tests and safety checks will be performed in DOT's workshop. Subsequently, by installing a conduit over a limited length we will show that the Green SOCCS system is ready to commence installing conduits over long(er) distances, providing a proof that the pipe inversion/continuous casing concept can successfully be applied to expand our national grid;
- Desktop research: Study of deployment possibilities

Resultaat

In the next three years, an upscaled and modularized SOCCS machine equipped with off-the-shelf electric HDD equipment will be designed and manufactured for use in the field. The focus will be to have a technical, permittable and environmentally acceptable solution to overcome complex (shallow water) crossings for (high voltage power) cables. This setup will be used to drill and install a conduit with a 14 inch diameter over a limited distance to test the integrated setup. Furthermore, a desktop study will be undertaken to explore the deployment possibilities and additional uses of Green SOCCS beyond its application in (high voltage power) cable installation (including transport of H₂, CO₂ and water), highlighting its broader potential benefits. Finally, a systematic verification of the system will be carried out, ensuring its effectiveness and reliability in operational environments. The ultimate goal is to achieve an end-to-end solution (i.e. including cable installation) for distances exceeding 30 kilometers from an onshore single drilling site. The next step is a first semi-commercial project to successfully install a conduit over a length of 3-5 km.

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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