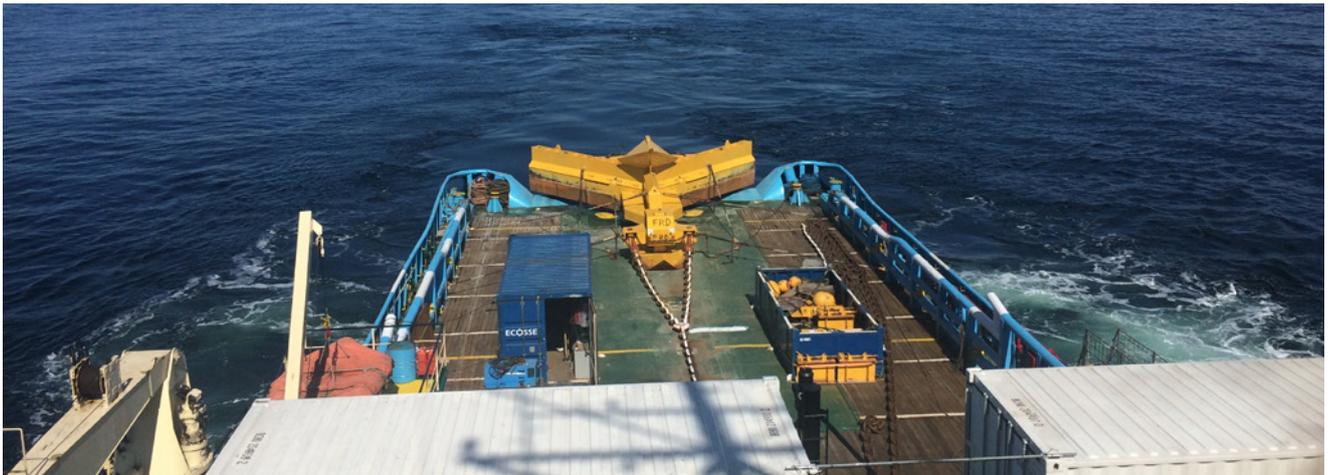


Kriegers Flak Offshore Wind Farm Export Cables

Oceanering SCAR Seabed System provides boulder clearance and trenching activities



Project Overview

The Kriegers Flak Offshore Wind Farm is located approximately 28 mi (45 km) off the coast of Denmark, connected by two export cables. This wind farm is expected to be operational by the end of 2021, and will have an operating capacity of 600 MW produced by 72 turbines capable of providing power to approximately 300,000 homes.

The Baltic 1 and Baltic 2 offshore wind farms, located in German waters, are approximately 18.6 mi (30 km) from Kriegers Flak. In the near future, two separate interconnecting cables will be installed to connect all these wind farms together, effectively creating a common electrical grid system between Denmark and Germany, and allowing the free flow of electricity, as demand requires, between these two countries.

Issues

The geotechnical investigation into the proposed export cable routes identified areas of soft granular soils that are more suited for jet trenching activities, together with harder, stiffer clay/rock soils that are more suited for a traditional towed plough. The Oceaneering Renewables And Special Projects (RASP) team had previously provided trenching services to the nearby Baltic 2 offshore wind farm development with similar soils, utilizing its proven SCAR Seabed System. The SCAR system provides a highly efficient and economic method of clearing and preparing the seabed as the first stage of major wind farm construction projects.



Based on this successful SCAR track record, the RASP team was contracted to provide trenching services in the stiffer soil locations. An option for a future backfill campaign was also included within the contract, the provision of which would be based on the rate of natural backfill of the cut trenches.

A high-resolution geophysical route survey, performed by the client, had identified previously unknown boulder fields throughout the two export cable routes, which would be detrimental to the export cable installation and jet trenching campaigns and could contribute to major scheduling issues.

Reduced development costs on the Kriegers Flak project were a significant factor to the sustainability and commercial viability of the wind farm, which aimed to reduce the cost per kilowatt hour (kWh) produced to below the current industry standard.

The Oceaneering Solution

Initial discussions with the client investigated methods of cost reduction for the RASP trenching scope. The RASP team worked with the client, identifying and communicating Oceaneering requirements for a successful project outcome, while, in turn, the client advised the RASP team as to what services the client could provide from its own internal support departments and existing approved vendors.

On discovery of the boulder fields within the export cable design routes, the ability for the SCAR trenching system to be operated in different modes enabled the client to maintain its mobilization schedule by providing one system to perform both boulder clearance and trenching activities.

Working with the RASP team, the client was able to provide internal survey and ROV services to the required specification and to charter a local Danish vessel from an existing long-term supplier. The RASP scope of supply was for the provision of the SCAR boulder clearance and trenching system and for an offshore team supported by the client's personnel and services.

The work was performed safely with no injuries recorded, at operational speeds across ground in excess of those scheduled, thus providing further cost savings to our client.