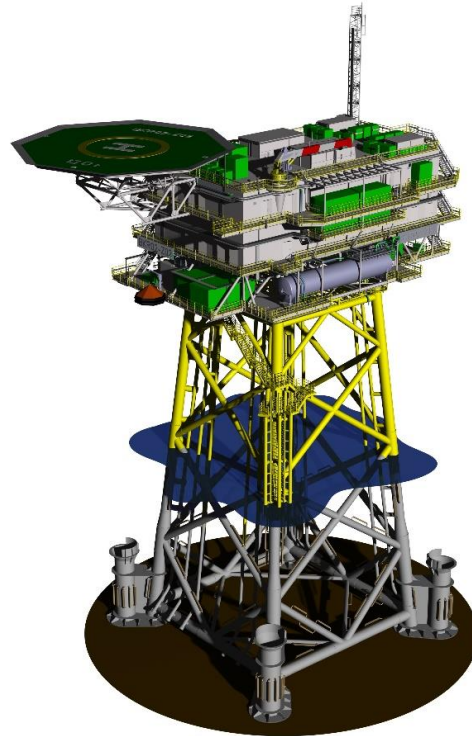


# Borkum Riffgrund 02 Offshore Wind Farm

Offshore Transformer Substation

Customer	DONG Energy Wind Power	
Period of Execution	Design:	2014-2016
	Implementation:	2018



## Description of the Supply

The Borkum Riffgrund 2 offshore wind farm will be located 38 km North of the German island of Borkum, adjacent to the existing Borkum Riffgrund 1. Borkum Riffgrund will have a final output of 450 MW.

The Borkum Riffgrund 2 topside is designed by ISC as a multi-story beam/bracing type steel structure with five decks, including a cellar deck positioned on the top of the jacket structure for cable pulling and cable hang-off. The enclosed areas are constructed as lightweight panel walls as opposed to the more common stress skin type. A helicopter deck is placed on the west side of the substation allowing for access by helicopter.

Located in a water depth of 27 meters, the topside is supported by a four legged lattice jacket that is able to support 12 J-tubes for array cables and 2 J-tubes for export cables.

## Consultant's Role

- Concept FEED, layout arrangement followed by detail design of complete transformer Substation including auxiliary systems.
- Complete detailed engineering design in place, sea transport, installation and lift for both Topside and four-legged jacket. Foundation design/driveability.
- HV transformer/reactor CFD temperature analysis
- HVAC design
- LV Electrical design
- Fire Safety design & Quantitative Risk Assessment
- Process, Piping & Mechanical
- Project follow-up fabrication and installation.
- Certification Packages for Topside and Substructure for Bureau Veritas verification.
- ZIE approval for the grouted connection
- German Standards and approval by BSH

## Supplementary Information and KPI

Jacket weight: 1670 tons.  
Topside weight: 2185 tons.