

PROJECT SHEET

BUTENDIEK OWF, GERMANY
ARRAY CABLE INSTALLATION

BOSKALIS

Royal Boskalis Westminster is a leading global marine contractor and services provider. With safety as our core value, we offer a wide variety of specialist activities to the oil & gas and renewables sectors. These activities include marine installation and decommissioning, seabed intervention, marine transport and services, subsea services and marine survey. In addition, Boskalis is a global dredging contractor, provides towage and terminal services across the globe and delivers marine salvage solutions.

By understanding what drives our clients we are able to provide the solutions that enable them to meet their specific business goals. For this reason we are constantly looking for new ways to broaden and optimize our offering and are committed to expanding our proposition, supported by our financial strength.

With our committed professionals in engineering, project management and operations, 900 specialized vessels and an unprecedented breadth of activities in 90 countries across six continents we help our clients in the offshore industry push boundaries and create new horizons.

INTRODUCTION

Boskalis was contracted by OWP Butendiek GmbH & Co. KG to supply, install and protect (by post-lay burial) the high-voltage inter-array cable at the offshore wind farm of Butendiek. This German wind farm is situated in the German Bight (Nordsea), approx. 35 km west of the island of Sylt. The 33 km² wind farm consists of 80 wind turbines with a capacity of 3.6 MW each and a total capacity of 288 MW. The inauguration of the wind farm took place on September 8, 2015. It provides renewable energy to approx. 370,000 households.

The infield cables were loaded in one load-out at Drammen in Norway and then cut down to the correct size on site. The WTGs were connected in a grid of infield cables. 86 individual cables were installed between the turbines, including 6



A

FEATURES

Client	OWP Butendiek GmbH & Co KG (shareholders: Siemens Financial Services, Marguerite Fund, Industriens Pension, PKA A/S and WPD)
Location	North Sea, Germany
Period	2015
Contractor	Boskalis
Marine Spread	Cable Laying Vessel: Stemat Spirit Cable Burial Vessels: Topaz Commander with ROVJET 806 trencher PLGR (Pre Lay Grapnel Run) Vessel: Anna B.
Soil conditions	Sandy soils
Burial requirements	1 meter target burial depth
Burial tool	ROVJET 806
Water depth along the route	17-22 m LAT



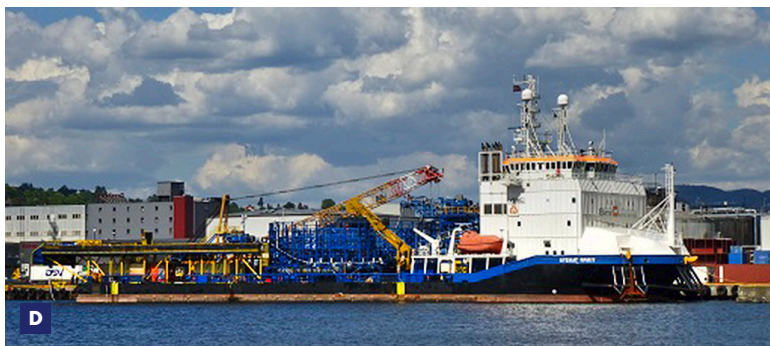
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redundancy cables, amounting to a total length of approximately 90 km for the infield cabling. Cable production commenced in December 2013. The cables were installed in the summer of 2014 using the Stemat Spirit. This vessel was converted to enable the handling of the long cable protection system lengths. Trenching of the cables was performed using a separate trenching spread. Termination, testing and commissioning of the 12 cable strings were carried out using in-house resources.

- A CLV Boka Spirit
- B Offshore substation

SCOPE OF WORK INTER ARRAY CABLE INSTALLATION

- Pre-installation survey
- PLGR
- Design and installation of cable protections systems
- Design, Production, Installation and Burial of 86 inter-array 33 kV cables, total length approx. 90 km (95 mm², 240 mm², 400 mm²)
- Loading of inter-array cables on the cable installation vessel (incl. mobilization/demobilization)
- Tower/OSS Access
- Cable pull-in operations, installation and hang-off array cables
- Cable ends terminations and testing
- Cold Commissioning of electrical and fibre optic connections of each string
- Trenching of the inter-array cables
- Post Lay Burial and Inspection Survey



- C** CLV Boka Spirit
- D** CLV Boka Spirit
- E** Loading cable

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