

PROJECT SHEET

HORNS REV 3
OFFSHORE WIND FARM
INTER-ARRAY CABLE SUPPLY AND 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, 800 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

The Horns Rev 3 Offshore Windfarm consists of 49 wind turbines with a power output of 8.3 megawatt each, resulting in a total power output of approx. 400 megawatt. The turbines are installed in 11 - 19 m water depth on monopile foundations with separately installed transition pieces. The wind turbines are connected to an offshore substation (OSS) by 49 inter-array cables in 12 strings. In total approximately 100 km of infield array cable is installed in order to connect each of the 49 wind turbines to the OSS. One back-up cable between the Horns Rev 3 Offshore Windfarm and the Horns Rev 2 windfarm provides power to these wind farms in case of an export cable failure.

FEATURES

Client	Vattenfall
Location	Denmark
Period	2017 - 2018
Contractor	Boskalis Subsea Cables
Kind of project	Inter-array cable supply and installation
Cable supplier	Prysmian



A Cable Lay Vessel Ndeavor

SCOPE

The scope for this project included all the activities required to design, supply, install and protect, terminate and test the 33 kV (inter) array cable system for the Horns Rev 3 Offshore Wind Farm and one back-up cable connecting with the Horns Rev 2 Offshore Wind Farm. The supply scope included provision of hang-offs, FO-boxes, T-connectors and a cable protection system. This cable

protection system supports the cable from the aperture of the monopiles till an area beyond the scour protection where the cable burial commenced.

There was a minimum depth of 1.0 m set for the burial of all Horns Rev 3 cables and the Horns Rev 2 back-up cable.

Finally a post-installation high voltage and OTDR acceptance test were successfully performed to confirm that the cable system was installed without damages.

Delayed installation of the monopiles complicated the works. Main impact was not working in the scheduled summer period, but from September - December this impacted vessel availability and workability significantly.

FACTS & FIGURES

- Cable lay vessel Ndeavor and Spirit
- Burial vessel Ndurance and Olympic Artemis both equipped with ROV Trencher 107



B ROV Trencher 107