

# PROJECT SHEET

**ANHOLT OWF, DENMARK**  
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

Anholt offshore wind farm is located between the headland of Djursland on the Jutland coast and the island of Anholt. The site covers an area of 144 km<sup>2</sup> and is comprised of 111 monopile wind turbines and one offshore substation.

## INSTALLATION OF 111 CABLES IN 4 MONTHS

As part of this project, Boskalis was contracted by Dong Energy to install 111 infield cables with a total length of around 154 km. Dong Energy subcontracted the cable manufacturer to supply three types of cable (150 mm<sup>2</sup>, 240 mm<sup>2</sup> and 500 mm<sup>2</sup>), delivered by train on 89 drums and in 3 continuous lengths (500 mm<sup>2</sup>).

Boskalis deployed two cable installation spreads to lay cables for the Anholt Wind Farm. The first cable installation spread was the Stemat 82, assisted by anchor handling tugs, Lydia D and Nova K. The Stemat 82 is an anchored barge equipped with a large turntable which was used to install the long cables that connect the substation to the first wind turbine in each row of the wind farm.

## FEATURES

Client	DONG Energy A/S
Location	Denmark
Year of construction	2012
Contractor	Boskalis
Infield Cables	111 nos
Vessel	Stemat 82, Toisa Wave, Swiber Else Marie



The second installation spread consisted of a purpose-built reel drive cable installation spread that was installed on the rear deck of the DP2 offshore construction vessel, Toisa Wave. This vessel ran into port to load 9 cable drums at a time. This set-up proved to be extremely efficient, resulting in the timely completion of the cable installation scope, ahead of schedule.



**A** Reel drive installation spread  
**B** Cable protection system on board CLV

After each cable was installed, Boskalis used a jetting ROV to trench the cables into the seabed at a target depth of 1.5 metres. The trenching of the cable was done independently of the cable installation, using a DP2 trenching support vessel.

Boskalis was also responsible for the design, supply and installation of 210 No. cable protection systems. These systems were tailor-made to suit the different cable entry configurations, such as bell mouths at the substation, J-tubeless cable entries in the monopiles, situations with or without preinstalled scour protection, etc.

The cable protection systems contained a seal system which restricts the water flow in and out of the monopiles. Boskalis used local divers to activate the seals once cable installation was completed.



- C** CLV Toisa Wave
- D** CSV Swiber Else Marie