

PROJECT SHEET

ÖRESUND

REPLACEMENT OF THE 'ÖRESUND CONNECTION' - FOUR 400 KV HIGH VOLTAGE ALTERNATING CURRENT (HVAC) CABLES

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

Svenska kraftnät (SVE) and Energinet.dk (ENDK) jointly own and operate two 400 kV high voltage alternating current (HVAC) links across the Öresund strait between Sweden and Denmark; the 'Öresund connection'. The cables in the south, including the spare cable, were installed in the early 1970's. The cables reached their technical lifetime and needed to be replaced.

SCOPE

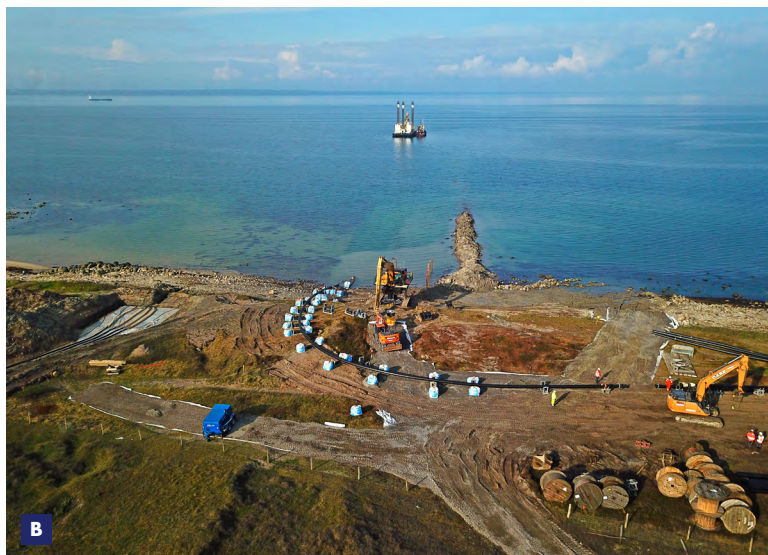
The scope of work consisted of removing four existing oil-filled power cables and the installation of four new power cables (7.3 km each) of this critical power connection between Denmark and Sweden. This was a challenge in itself but the circumstances, such as a busy shipping area, strong currents, shore ends with many boulders, made it even more challenging. Furthermore, the works covered the fiber optic cables to be piggybacked and 1,800 m of cable protection to be installed around these cables. All works were to be completed within a restricted outage period of 35 days in an environmental sensitive area with cultural significance; specifically on the Swedish side, which is a Natura 2000 zone.

FEATURES

Client	Svenska Kraftnät
Location	Kristinelund and Skibstrupgaard just north of Helsingborg, Sweden and Helsingør, Denmark (approx. 50 km north of Copenhagen).
Period	2019 - 2020
Contractor	VBNK (the consortium between Boskalis and NKT)
Kind of project	Cable replacement
Cable supplier	NKT



A Boskalis fleet at work: cable burial vessel Ndurance, cable lay vessel Spirit and backhoe dredger Nordic Giant captured in one picture.
B Nearshore and Onshore situation



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BOSKALIS FLEET AT WORK

The wide range of specialized Boskalis equipment was a huge advantage during this project. The four existing Low Pressure Oil Filled (LPOF) cables were removed by our cable-laying vessel Spirit. Before the cable removal started the cables were purged; fluid oil was pushed out of the cables. Four new cables have been installed by the Spirit. To bridge the shallow part of the route towards the beach, the backhoe dredger Nordic Giant dredged four trenches of 930 m each on the Swedish shore side and four trenches of an average of 250 m each on the Danish shore side. In Sweden ducts were pulled in from the beach, through which the cables are pulled from the Spirit towards the beach. The Endeavor buried the cables using the jet trencher TROV107. Due to boulders, the middle section of the routing could not be trenched, this section is now protected with rocks installed by our fallpipe vessel Rockpiper.

FACTS & FIGURES

- Cable lay vessel Spirit
- Backhoe dredger Nordic Giant
- Cable burial vessel Endeavor using jet trencher TROV-107
- Fallpipe vessel Rockpiper

Watch project movie at:

<https://vimeo.com/554763957>

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