



Cable solutions

DONG Energy awarded DEME's subsidiary Tideway cable installation contract for the Hornsea Project One offshore wind farm. PES investigates to find out why and introduces readers to the 'Living Stone'.

Early June this year, Tideway BV, Breda, the Netherlands, a subsidiary of the Belgian dredging, environmental and marine engineering group DEME, was awarded a cable installation contract (Transport and Installation) by DONG Energy for the world's largest offshore wind farm, Hornsea Project One.

Tideway will deploy DEME's newest, multipurpose vessel (MPV), 'Living Stone' for this project. This Dynamic Positioning 3 (DP3) vessel is the most advanced subsea cable installation vessel in the world. It is currently being built by the Spanish shipyard LaNaval near Bilbao, Spain.

The 'Living Stone' will have two turntables below deck each with a capacity of 5,000t making a total capacity of 10,000t. There is also the possibility of a third carrousel



above deck with an additional load capacity of 2,000t.

Delivery of the state-of-the-art 'Living Stone', which is equipped with dual fuel engines, is scheduled for April 2017. LNG will be the primary fuel. This means the 'Living Stone' will be amongst the cleanest installation vessels in the world, having a Green Passport and the Clean Design Notation, which is awarded to owners and operators who choose to design and operate their vessels in an environmentally sustainable manner. The official christening of 'Living Stone' took place in Bilbao mid-September 2016.

The total scope of work for Tideway will consist of cable installation; pre-trenching, backfilling, pre-sweeping, route preparation and rock placement of three high voltage subsea power cables from the shore to

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three different offshore substation platforms, as well as the installation of two interlink cables. The power cables will be pulled ashore near Horseshoe Point immediately south of the Humber Estuary.

Due to the extreme length of the three subsea power cables (134 km, 140 km and 152 km), DONG Energy has to install a reactive compensation platform between the three substations and the shore. The interlink cables are 13 km and 14 km., Hornsea Project One is the largest export cable project ever in the history of offshore wind energy, with a total cable length of 453 km.

Tideway is not only responsible for the far shore and main lay sections of the project but also the nearshore cable work, as well as the engineering and construction of the three landfalls which includes a multiplicity of activities.

"In this particular area we have to deal with quite a long and shallow foreshore of about 20 km from the beach, meaning we have to make use of special tools and equipment, such as a shallow water lay barge, a special burial tool and winches to pull the cable," explained Philip Scheers, Manager of the Tideway Cable Project Business Unit.

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The cables will be delivered by two different suppliers, respectively from Rotterdam, the Netherlands and Karlskrona, Sweden. Due to their extreme length, each of the three export cables will be supplied in sections. This means that the ‘Living Stone’ will have to call at both ports - Rotterdam and Karlskrona - multiple times for loads from each section during the carefully planned installation periods. During these operations, logistics and meticulous planning are the key challenges in this project.

Tideway has always looked after its clients and thanks to its constantly innovative approach, has proved capable of delivering pioneering ideas that are smarter, cheaper, more efficient and safer.

“We come up with completely new developments and our overall goal is to always focus on making work on board faster, easier and, above all, safer,” added Philip Scheers. “In this particular case of introducing a revolutionary cable/umbilical installation system, situated on the free deck space of the ‘Living Stone’, our client Dong Energy is fully aware of our problem-solving abilities and know what they can expect from the innovative and reliable cable handling tools we developed. And we always live up to those expectations.”

Tideway looks at the world today and comes up with new opportunities for the near future. The solutions range from a pre-trenching method to protect the cables as optimally as possible, to unique methods for handling cable ends, connections and cable protection (CPS) systems. Normally these are pretty labour-intensive operations but thanks to the high automation grade of

the smart cable installation system, on board the ‘Living Stone’, it automatically ends up with a more efficient, less time-consuming and much safer result.

DONG Energy will build the giant Hornsea Project One offshore wind farm, capable of powering well over 1 million UK homes, off the Yorkshire Coast in the UK. Covering approximately 407 square kilometres and providing a capacity of 1.2 gigawatts (GW), Hornsea Project One will be the first offshore wind farm to exceed 1 GW in capacity and will become, by a considerable margin, the world’s largest offshore wind farm.

Duncan Clark, Senior Programme Director for DONG Energy’s Hornsea Project One, said: “We are pleased to be able to call on the experience of Tideway for this vital cable installation and pre-trenching work. This activity will take us another step towards the construction of the world’s largest offshore wind farm.”

Philip Scheers concluded: “The award of this major contract is a testament to the confidence DONG Energy has in the capability of our Company to develop novel solutions. And we are delighted to be expanding our relationship with DONG Energy from the offshore oil and gas market to the key growth area of offshore wind. We look forward to a successful campaign.”

The offshore project execution is scheduled to commence in 2017 with the engineering route survey and the last export cable will be laid and protected mid-2019. ■

Tideway

DEME’s subsidiary Tideway has the specialised knowledge, experience and techniques that are required for the installation of high voltage marine power cables. Tideway manages the complete installation process, including route preparation, pre-lay dredging, trenching, cable laying and the protection of crossings and construction of landfalls.

Tideway has worked on several world firsts in the power cable installation field. The company laid the 576 km high voltage NorNed power cable between Norway and the Netherlands, which has a world record length. And in an equally challenging project, Tideway installed a power cable from the Thornton far-shore wind farm to the continent and laid the infield cables between the turbines. Given the distance from the coast, the depth of the sea at the wind farm and the complexity of fairways, pipelines and telecom/power cables that had to be crossed, this was an extremely complex and pioneering project.

Tideway is and has also been involved in many sea-crossing projects that link oil or gas producing sites with consuming countries including Europipe, Zeepipe, Interconnector, Medgaz, Nordstream, Bluestream and Greenstream.

Interconnecting power cables too, is a core specialist of Tideway. Just like NorNed linking the Norwegian and Dutch national grids, BritNed will link the electrical power grids of Great Britain and the Netherlands across the North Sea.

For the client, it is an advantage to rely on a full service provider like Tideway. At the Thornton project, Tideway and DEME were responsible for all marine and offshore activities, providing a single contact desk for the client. As for the NorNed cable installation, Tideway successfully carried out the cable laying, landfalls, sea bottom clearing and the rock placement near subsea crossings amongst other activities.

