



# SUSTAINABLE ENERGY FROM SEA TO LAND THROUGH HIGH VOLTAGE CABLES

Currently a number of offshore windfarms are being built for future energy supply in the Netherlands. These new windfarms will be connected

to the existing high voltage grid with 220 kv seacables offshore and 380 kv landcables onshore under ownership of TenneT, assigned by the Dutch

Government. These offshore windfarms and high voltage cables will generate a supply of 1,4 GW from 2022.

One of the offshore windfarms currently under construction is Hollandse Kust Zuid (HKZ) that is located about 18 kilometers off the coast between The Hague and Zandvoort in the North Sea. Sustainable energy generated here will be transported by seacables to a new transformer station on Maasvlakte 2 in the Port of Rotterdam. The new high voltage station will be connected with landcables to an existing high voltage station on Maasvlakte 1. Bilfinger Tebodin was asked by TenneT to supervise the realization of the 380 kv landcables to ensure the quality and safety of the new connection.

Alex Griffioen, Projectmanager at TenneT: "We requested Bilfinger Tebodin to supervise the realization of the landcables because they are a reliable partner with high quality and safety standards. We worked with them on other projects and are very satisfied with their service."



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in the Port of Rotterdam so a Horizontal Directional Drilling (HDD) of 1.4 kilometers was necessary. Usually, 380 kv connections are built above ground with lines. The underground 380 kv cables used for this project are still quite unique in the world. They were first tested in 2018 when TenneT laid down the first underground cables

together with TU Delft and TU Eindhoven to monitor their behavior.

The Pipelines and Electrical departments within Bilfinger Tebodin carried out quality supervision for the underground high voltage cables. "Combining both disciplines is of great value to TenneT in this specific project," says Remco Brandenburg, Project Engineer at Bilfinger Tebodin. Once the high voltage cables have been laid down, a Site Acceptance Test was carried out to verify if all the quality and safety requirements are met. The high voltage cables passed this test and with that we can conclude that the construction went well using system-oriented contract management as quality control during realization.

## UNIQUE UNDERGROUND CABLES

The land cables were produced in South Korea and shipped to the Port of Rotterdam. The total length of the land cables is 3.7 kilometers and the main parts are realized with regular excavations. However, part of the connection has to cross the Yangtzehaven



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