

CONTACT Cornelia Junge  
PHONE +49 5132 89-2357  
E-MAIL presse@tennet.eu

DATE 16/10/2023  
PAGE 1 von 2

## **DolWin epsilon converter station on the sea route to Norway - First direct connection will be soon realised**

- **Transportation of the platform from Singapore to Haugesund (Norway)**
- **Around 60 days of transport time and 13,000 nautical miles (24,000 kilometres) of transport route**
- **First HVDC project with 66 kV AC direct connection**
- **Installation in the North Sea in 2024**

TenneT as the leading offshore transmission system operator in Europe ships out: In a major new milestone, the 900 MW DolWin epsilon offshore platform left Seatrium Limited's (Seatrium) shipyard in Singapore on 15 October 2023. After three years of construction and with more than ten million manhours, the heavy-transport vessel Mighty Servant 1 "piggybacked" the platform and set off on its tour. For about 60 days, she will travel around 13,000 nautical miles at sea around the Cape of Good Hope and is expected at the Aibel shipyard in Haugesund (Norway) in December. Once here, Aibel, as a partner of the consortium Aibel / Seatrium (formed from a combination of Sembcorp Marine and Keppel Offshore & Marine), will still carry out final technical equipment. Further Hitachi Energy as Aibel's subcontractor and supplier for the HVDC technology, will install the converter and transformers.

Next summer, the platform will be transported self-floating and installed at its final destination in the German North Sea.

TenneT is breaking new ground with the DolWin5 grid connection: for the first time, the so-called 66-kilovolt direct connection is being used. In comparison to previous projects, a wind farm transformer station is no longer required. Instead, the wind power produced off the coast of Lower Saxony is transmitted directly as three-phase (AC) current to TenneT's DolWin epsilon converter platform. This also meant corresponding planning in the technical design of the platform and detailed agreements with the wind farm, whose technical systems are now located on the platform. The elimination of the wind farm's transformer station not only minimises costs, but also construction time and interference with the marine ecosystem.

Tim Meyerjürgens, COO of TenneT, emphasised: "Following the recent commissioning of DolWin6, this project is now also on the home straight - this is of enormous importance as the grid expansion in the North Sea must be accelerated in order to achieve our expansion targets in Germany. With DolWin5 and the elimination of the transformer station, we can demonstrate that we are pursuing and implementing more efficient solutions. This is only an intermediate step before we set new standards with the 2GW program."

The 2GW Program represents the next generation of offshore grid connection systems: a new standardised platform, a new certified cable system, a higher transmission capacity – with a lower environmental impact and the prospect of meshing in the future.

A special feature of the 82-metre-long by 73-metre-wide and 84-metre-high platform is the gravity-based foundation. So far, this has only been used for DolWin beta. It is based on the concept of a self-installing, gravity-based construction. The platform is slowly lowered to the 31-metre deep seabed by ballasting the four steel legs of the platform with water. The water is then replaced with heavy gravel to permanently secure the platform in-place for 30 years. Since no piles have to be driven into the seabed for anchoring, the installation is more quiet and more gentle on marine life. In addition, when such a platform reaches the end of its service life, the ballast can be removed from the hull and the complete platform towed to a harbour for dismantling.

### **About the DolWin5 grid connection project**

The DolWin5 project will implement a grid connection for offshore wind farms using high-voltage direct current transmission. Due to the distance and the power to be transmitted, direct current is suitable for low-loss transport. With the transmission capacity of 900 megawatts of green wind power, over 1.1 million households can be supplied. The wind power produced off the coast of Lower Saxony at sea is directly transmitted as three-phase current (AC) to TenneT's DolWin epsilon converter platform, converted into direct current (DC) and transported via the 130-kilometre-long cable route to the Emden/East converter station. Here at the land station, the electricity is converted back into three-phase current and fed into the extra-high voltage grid via the transformer station.

### **DolWin5-History**

The project was awarded to the consortium of Aibel and Keppel FELS (Engineering, Procurement, Construction and Installation / EPCI) and Hitachi Energy, subcontracted as the technology provider of the HVDC transmission system, in May 2019. The Prysmian Group was awarded as cable manufacturer in June 2019. As one of the first milestones, production work on the DolWin epsilon offshore converter platform started in Singapore in December 2020 with the first steel cut. In spring 2021, the foundation work for the land station in Emden/East got underway. In May of the same year, the laying of the land cable began. In 2022, the topping-out ceremony was celebrated at the land station. In addition, nearshore cables were laid and the land cable laying continued. This year, the submarine cable will be laid and DolWin epsilon will be transported to Haugesund (Norway).

### **Facts and figures on DolWin5 at a glance**

- 130-kilometre-long connection using high-voltage direct current transmission technology (HVDC) with a maximum transmission capacity of 900 megawatts
- 30 kilometres of land cable, 100 kilometres of submarine cable
- Emden/East as grid connection point
- Size DolWin epsilon: 82 x 73 x 84 metres (length x width x height)
- Weight topside: 11,450 tonnes
- Around 600 kilometres of cable were installed on DolWin epsilon
- Weight of substructure: 12,100 tonnes
- Water depth on site: 31 metres



*Schematic of the DoWin5 offshore grid connection project*

## TenneT

TenneT is a leading European grid operator. We are committed to providing a secure and reliable supply of electricity 24 hours a day, 365 days a year, while helping to drive the energy transition in our pursuit of a brighter energy future – more sustainable, reliable and affordable than ever before. In our role as the first cross-border Transmission System Operator (TSO) we design, build, maintain and operate 25,000 kilometres of high-voltage electricity grid in the Netherlands and large parts of Germany, and facilitate the European energy market through our 17 interconnectors to neighbouring countries. We are one of the largest investors in national and international onshore and offshore electricity grids, with a turnover of EUR 9.8 billion and a total asset value of EUR 41 billion. Every day our 7,400 employees take ownership, show courage and make and maintain connections to ensure that the supply and demand of electricity is balanced for over 43 million people. Lighting the way ahead together