



Fact Sheet

HelWin1 HVDC Platform

Status: February 2015

Siemens handed over the HelWin1 offshore platform to the customer TenneT in January 2015. Thus the link has taken up commercial operation. HelWin1 is one of five North Sea grid connections for which Siemens was contracted by the German-Dutch network operator TenneT. These links have a total transmission capacity of more than 3.8 gigawatts. High-voltage direct-current (HVDC) transmission technology is used to ensure efficient transfer of the electrical energy to land: The alternating current that is produced is converted to direct current power at the HVDC platform. This is necessary to transport energy over great distances with only low losses. The electricity produced in the wind farms is transported to the German mainland by a subsea cable. Thanks to HVDC technology, transmission losses are less than four percent. The direct current power is then converted back into alternating current at a second converter station on land and fed in to the German power grid.

Technical specifications:

- Capacity: 576 megawatts – enough to supply more than 700,000 households
- Voltage: Input: 155 kilovolts (AC/alternating current)
HVDC link: +/- 250 kilovolts (DC/direct current)
output: 400 kilovolts (AC/alternating current) on land



- HVDC transformers: 2 offshore, each with a rating of 425 MVA, 2 onshore, each at 422 MVA
- Dimensions: Topside: 75 meters x 51 meters x 28.5 meters (length x width x height)
(without mountings) Cable access tower: 15 m x 15 m x 43 m (length x width x height)
- Construction: 7 decks incl. upper deck – total height of 28.5 m net / 40 m (incl. cranes)
- Crew quarters: 16 cabins with an individual bathroom and a total of 24 bunks
2 galleys with a total of 4 walk-in refrigerated compartments,
1 multi-purpose/recreation room, 2 lounges
- Heliport: 1 elevated helipad
- Local sea depth: 23 meters
- Bottom of platform: 22 meters above sea level
- Loading cranes: 2 on upper deck, each with 10 t load carrying capacity at 40 m extension range
- Total weight: 12,000 tons
(11,000 t platform / 1,000 t baseframe incl. steel piling supports)
- DC submarine cable: 2 cables with steel wire reinforcement (Prysmian)
each 130 km long (68 km in sea, 17 km in Wadden Sea, 45 km on land)
 - . Sea
approx. 11 cm cable diameter, weight of around 30 kg/m
conductor cross-section of 875 mm² (approx. 3.5 cm copper core diameter)
 - . Wadden Sea
approx. 12 cm cable diameter, weight of around 35 kg/m
conductor cross-section of 1,200 mm² (approx. 4.2 cm copper core diameter)
 - . Land
approx. 11 cm cable diameter, weight of around 13 kg/m
conductor cross-section of 1,800 mm² (approx. 5.6 cm aluminium core diam.)
- Foundation: 10 pilings (up to 100 m long, embedded up to 66 m in the seabed,
up to 3.2 m in diameter each, wall thickness of 8 cm)
- Unit/Emergency Power Supply: 2 auxiliary power diesel generators, each with an electr. capacity of 2.3 MVA
1 emergency diesel generator at 625 kVA
2 uninterrupted power supply (UPS) units, each at 40 kVA
2 UPS units, each at 200 kVA
- Cooling: Seawater cooling with a heat exchanger to the fresh-water cooling system
1,260 cubic meters/h flow rate (equivalent to 100 bathtubs per minute)
- Land-based station: Büttel
- Shipyard: Nordic Yards
- Order received: 2010
- Platform installation: 2013
- Commissioning: 2015