Connecting Denmark's eastern and western power grids
Storebaelt HVDC submarine and underground cable link

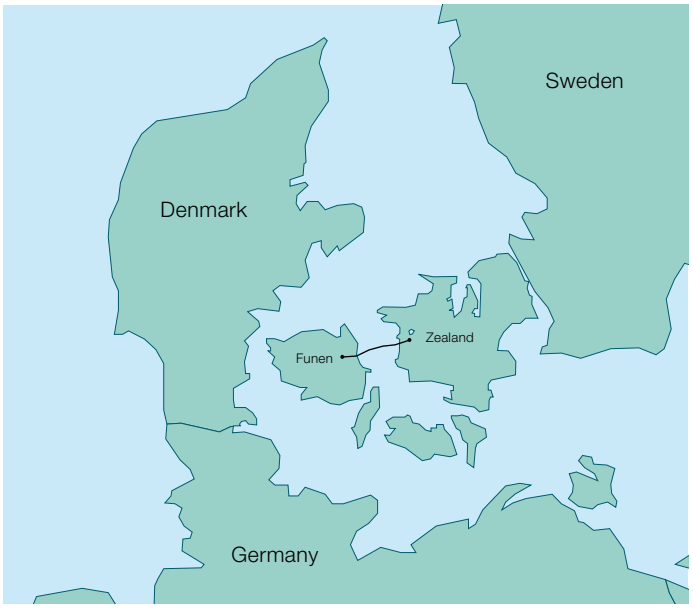
- Creates Denmark's first nationwide power network
- Minimizes the need for reserves in eastern and western parts of Denmark
- Accommodates the introduction of more wind power in the system
- Stabilizes power supply in the eastern and western power grids
- Improves the performance and competitiveness of the Danish and Nordic energy markets

Scope of supply

- Project management
- Cable system design
- Mass impregnated (MI) cables, metallic return cable (MRC) and accessories
- Cable load prediction system
- Supervision of pulling the land cable
- Supervision of installation of the MRC and HVDC submarine cables
- Installation of cable joints and transition joints
- Testing and commissioning

Cable data	
Voltage	400 kV DC
Power	600 MW
Length	32 km submarine MI cable (Cu) 26 km underground MI cable (Cu) 32 km metallic return cable
Customer	Energinet.dk
Completion	2010

Power and productivity
for a better world™



Customer needs

Denmark has two power transmission systems: one for eastern Denmark, which is connected to the Swedish and Norwegian power grids; and one for western Denmark, which is linked to Germany and continental Europe. The two systems are physically separated by a 32-kilometer channel of water (the Storebaelt strait); they are asynchronous and operate independently of one another.

To connect the two systems and create a national electricity network for the first time in Denmark's history, Energinet.dk, the Danish transmission system operator, decided to build a high-voltage direct current (HVDC) interconnection that would improve the utilization of the country's power generation and transmission resources. The link would also increase energy trading and improve the overall performance of the Danish and Nordic power markets.

Energinet.dk selected ABB to design, supply and commission the submarine and underground HVDC cables that make the interconnection possible.

Why ABB?

Energinet.dk and ABB have a long and close relationship based on the successful completion of numerous transmission projects in Denmark, including all three existing HVDC interconnections that link Denmark with neighbours Germany, Norway and Sweden.

ABB has also supplied most other HVDC projects in northern Europe, including HVDC cable interconnections between Sweden and Germany, Sweden and Poland, Estonia and Finland, UK and the Netherlands and the world's longest underwater highvoltage cable link (NorNed) between Norway and the Netherlands.

ABB delivered the world's first HVDC cable link in the 1950s, and is a market leader in both HVDC and high voltage cables. In addition to its unrivaled track record, ABB was also selected for best technical compliance, price and for its ability to meet a challenging delivery schedule.

The ABB solution

The ABB HVDC monopole cable solution comprises a 16 km underground cable from the converter station on the island of Funen in the west, a 32 km submarine cable across the Storebaelt strait, a 10 km underground cable to the converter station on the island of Zealand in the east, and a 32 km submarine metallic return cable.

The underground and submarine cables are mass impregnated and the metallic return cable is made of cross-linked polyethylene (XLPE).

ABB designed the cable solution in accordance with customer specifications and requirements, and was also responsible for manufacturing the cables, laying the land cables, and executing all cable joints and terminations.

The solution was commissioned in July 2010.

Customer benefits

- Complete cable solution from one supplier
- All cable components manufactured by ABB
- Supplier expertise and reliability – ABB is a market and technology leader in submarine and underground high voltage cables
- Rapid delivery

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