

Key Facts



Client:
Equinor



Total cable route length:
200 km



Location of the project:
The North Sea, Norway



Duration:
2015-2018



Quantity of order:
A turnkey 80 kV cable system with
a 100 MW power rating

Scope

- Cable system design and engineering, including 200 km of extruded submarine DC cable.
- Cable manufacturing.
- Offshore cable installation.
- Testing.

Location



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NKT

Clean energy to Johan Sverdrup

Powered with renewable energy
by the world's longest extruded
power-from-shore cable

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Reducing offshore emissions.

High-voltage cable system enables operation of North Sea giant with renewable energy.

The project

One of the largest oil fields on the Norwegian continental shelf is connected to the mainland grid.

With expected resource base of 2.7 billion barrels of oil equivalents, Johan Sverdrup is one of the most important industrial projects in Norway in the next 50 years. Peak production is estimated to be 660,000 barrels of oil per day.

The enormous field, which is located on the Utsira Height, about 160 km west of Stavanger, will constitute 25 % of all Norwegian petroleum production when taken into operation, and the development and operation will generate revenue and provide jobs for coming generations. During 2017, more than 14,000 people around the world contributed to the development.

The water depth is about 120 meters and the reservoir is located at a depth of 1,900 meters. The oil will be piped to the Mongstad terminal in Hordaland, and the gas will be transported to the Kårstø processing plant in North Rogaland. Production start is planned for 2019 for phase one and 2022 for phase two.

The field will be operated by electrical power generated onshore, reducing offshore emissions of climate gases by up to 90 % compared to a standard development utilizing gas turbines.

The international energy company Equinor selected us for the delivery of the high-voltage cable system that is to supply power from shore to the offshore oil field.

The solution

We provided an energy-efficient cable system that contributes to reducing emissions.

We were contracted to design, manufacture and install an 80 kV (kilovolt) extruded DC (direct current) cable system with a capacity of 100 MW (mega-watts) to transmit power from the Norwegian power grid to the Johan Sverdrup offshore production facility. At a length of 200 km, it is the longest extruded submarine cable system to an offshore oil and gas facility in the world.

An onshore converter station at Haugsneset will turn AC (alternating current) from the grid into DC, which is transmitted efficiently over 200 km to the second converter station located on the Johan Sverdrup riser platform out in the North Sea. The current will then be converted back into AC and distributed to the rest of the field.

Supplying electric power from shore for offshore oil and gas production avoids the need to burn diesel or gas out at sea to power the equipment and machinery. This means substantial reductions in CO₂ (carbon dioxide) and nitrogen oxide emissions. In addition to the environmental benefits of powering the cluster from shore, the cable solution is typically considered safer and more energy-efficient than generating power offshore using fossil fuels.

With the world's longest single-length extruded power cable delivered without field joints, we are pushing the boundaries of technology and lowering environmental impact.

“The Johan Sverdrup development is a giant industrial project that needs environmentally sustainable solutions.”

