

# World's longest, most powerful dynamic AC cable Goliat floating oil and gas platform, Barents Sea



- World's longest, most powerful power-from-shore AC cable
- Reduces platform CO<sub>2</sub> emissions by an estimated 50 percent

#### Scope of supply

- Turnkey power-from-shore dynamic AC cable system
- Cable system design and engineering
- Qualification testing and fabrication
- Cable laying and installation, including trenching and rock dumping
- Commissioning

#### Cable data

Voltage	123 kV AC
Power rating	75 MW
Cable length	105 km static submarine XLPE cable (Cu) 1.5 km dynamic submarine XLPE cable (Cu)
Customer	Eni Norge
Completion	2013



In 2010 ABB delivered the world's first power-from-shore dynamic AC cable connection. It provides Statoil's Gjøa floating oil and gas platform with 40 MW of electricity at 115 kV AC along a 101 km cable from the Norwegian power grid. The solution connects for the first time an offshore floating platform to the onshore power network.

**The ABB solution**

ABB is providing a turnkey power-from-shore dynamic AC cable system including cable system design and engineering, qualification testing and fabrication, cable laying and installation (including trenching and rock dumping), and commissioning.

The ABB cable system will connect the Goliat FPSO platform to the Norwegian power grid via a three-core static AC cable that will run 105 km along the seabed. A 1.5 km dynamic AC cable will connect the platform to the static AC cable, 350 meters below the surface

ABB has extended the technical boundaries for this, the world's second dynamic AC power-from-shore cable system. At 106 km, it is the longest high voltage AC cable ever, and its 123 kV power rating is the highest. The 75 MW rating of the cable allows for an increase in energy supply should Eni require to power additional fields from the same cable system in the future

The dynamic section, which weighs 90 kg per meter and hangs in the water between the platform and the seabed, has to withstand substantial mechanical stress from currents, waves and the movement of the platform. An important feature of the ABB solution is the innovative corrugated copper sheath that is designed to operate for the full production lifetime of the Goliat field in these extreme, high-stress conditions

ABB's high-voltage XLPE submarine cables have low electrical losses, are resistant to solvents, oil and abrasions, and have an excellent tensile strength. They are ideal for harsh marine environments.

**Customer benefits**

- Turnkey solution, including installation and trenching, from the market and technology leader in high voltage cables and power-from-shore solutions
- Customized solution of a technology pioneered by ABB
- Cost-effective, high-efficiency, zero-emissions solution for offshore power requirements

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**Customer needs**

The Goliat oil and gas field lies 105 kilometers off the northern coast of Norway in the Barents Sea. The field was discovered in 2000, and is scheduled to start producing oil and gas from a floating, production, storage and offloading (FPSO) platform in 2013. The field is operated by Eni Norge.

An important consideration for Eni Norge when evaluating the various technical options for developing the field was the electrification of the platform using power from shore. This would enable Eni Norge to use renewable hydropower from the Norwegian power grid and reduce the platform's carbon dioxide emissions by an estimated 50 percent.

Power-from-shore is considerably more advantageous than the conventional alternative of gas turbines. Gas turbines consume large volumes of gas that could otherwise be sold, produce large quantities of CO<sub>2</sub> emissions, have significant and costly space and weight requirements, and require regular maintenance.

**Why ABB?**

The two high voltage cable technologies that make it possible to connect offshore oil and gas platforms to the onshore power grid were pioneered by ABB: HVDC Light® and dynamic AC cables.

ABB delivered the world's first power-from-shore solution in 2003 for the Abu Safah oilfield, 50 km off the Saudi Arabian coast; the solution is a 115 kV cross-linked polyethylene (XLPE) cable system. In 2005, ABB delivered the world's first power-from-shore solution using high-voltage direct current. The HVDC Light link transports 70 MW of power to Statoil's Troll A oil and gas platform, 70 km offshore. Following the success of the solution, BP selected ABB to provide an HVDC Light power-from-shore solution for its multi-platform Valhall complex in the North Sea.