The characteristic Goliat floating production, storage and offloading vessel (FPSO) is the largest of its kind in the world. ABB will contribute to its safe and efficient operations with a complete range of electrical, automation, instrumentation and telecommunications products and systems, as well as providing clean power from the shore.

The Goliat field
The Goliat field is being developed and operated by Eni Norge. The circular FPSO is currently under construction in South Korea. The Sevan 1000 FPSO design was chosen to ensure safe and efficient operations in challenging and harsh arctic conditions.

Safety and automation
More than ever, in an arctic climate, the operator has to count on the reliable operations of the control system. ABB will deliver the fully-integrated Extended Automation System 800xA, including emergency shutdown, process shutdown, fire and gas detection and power management systems, among other things. Three extended operator workplaces (EOWs) will be delivered as interfaces to all systems. The system enables remote operations from the shore.

ABB will also deliver a simulator for System 800xA operator training and for life cycle training support for different process scenarios. The simulator will provide realistic operation environments for training.

Integrated operations
Integrated operations are the oil and gas industry’s answer to the demand for increased recovery, while at the same time putting an even stronger emphasis on the health, safety and environmental aspects of oil and gas production. Integrated operations are mainly comprised of new work processes and software solutions. For the management, production optimization specialists, and maintenance management teams, ABB will provide a tailored integrated operations portfolio to increase throughput, reduce energy consumption, lower operations costs and increase operational safety for personnel, equipment and the environment. This includes cyber security, network infrastructure and information management systems, as well as asset management systems such as condition monitoring, operational performance monitoring and flow assurance solutions.

Power distribution
Reliable and energy efficient power supply is crucial to any process plant. ABB will deliver the electrical equipment on board, such as switchgear, transformers, distribution boards, drives, motors, and protection and control products. Goliat will seamlessly integrate the electrical and automation systems, which will be accomplished through the IEC 61850 substation automation protocol standard. This will give the
operator complete control of the production processes as well as the electrical system on board in the same graphical interface.

Telecommunications
ABB will deliver telecommunication systems that fully support, manage and monitor the Goliat offshore operations from both the offshore control room and the onshore remote operation center. The telecom contract contains offshore data networks, wireless coverage to surrounding vessels, onboard radio system, radio link to the shore, public announcement system, general telephone, positioning and meteorological system, and more than 20 other subsystems. Additionally, a telecom management system will provide diagnosis and maintenance of the various telecom systems.

Instrumentation
ABB will deliver field instruments as well as fire and gas detectors for the platform, including both ABB and third-party instruments. Instruments will be selected for maximum integration compatibility with the safety and automation predictive maintenance system via HART communication.

Valves
Along with partner, Solberg & Andersen AS, ABB is responsible for supplying the valves needed for the processes on Goliat. ABB will also provide a predictive maintenance system as well as an online valve monitoring system.

Power from shore
The FPSO will require up to 100 MW of power. Part of this power will be supplied from the onshore grid and partly from onboard gas turbines. A combined alternating current (AC) electrification system and gas turbine solution will help reduce CO2-emissions by approximately 50 percent compared to conventional power supply.

Subsea cable
ABB was awarded the contract for the 106 km subsea power cable, with integrated fiber optics for general communication services. The cable will be connected to an onshore substation near Hammerfest. The 123 kV/75 MW three-core polymeric (XLPE) insulated cable is the longest, most powerful alternating current (AC) cable ever delivered to an offshore application. ABB’s subsea cables have low electrical losses, are resistant to solvents, oil and abrasions and have an excellent tensile strength that is ideal in harsh marine environments.