Located at 3,000 meters below the surface of the Norwegian Sea, Ormen Lange is Europe’s third largest gas reservoir. The field stretches 40 km in length and up to 10 km in width, covering around 350 square kilometers. Extracting gas from this deepwater reservoir requires the world’s largest gas wells, and exporting the treated gas 1,200 kilometers from the onshore facility at Nyhamna to the UK is done via the world’s largest subsea gas pipeline, Langeled.

**Facts about Ormen Lange**
- Discovered in 1997, Ormen Lange is Norway’s first true deepwater (850 – 1100 meters) project.
- Production plans call for four subsea templates with up to 24 “big bore” wells.
- Multiphase flow from the wells to the onshore facility at Nyhamna is handled by two 30-inch pipelines.
- The 1,200 km Langeland pipeline exports gas from Nyhamna via the Sleipner platform to Easington, England.
- At its peak, Ormen Lange will process around 20 billion standard cubic meters of gas per year, which is equal to Norway’s gross annual energy consumption.

**Setting the standards for remote oil & gas operations**

Ormen Lange is a giant among the world’s offshore gas fields. It is impressive in size and ambitious in concept, which is to operate a deepwater field located 120 kilometers offshore in sub-zero waters from onshore facilities. To accomplish this daunting task, the partners in Ormen Lange looked to the most advanced technology available. For integrated automation, electrification and telecom solutions, they turned to ABB.

ABB is the leading supplier of integrated electrotechnical solutions to the oil and gas industry. For Ormen Lange, ABB has provided an extensive range of integrated solutions, encompassing the following systems and services:
- Safety and Automation System (SAS)
- Electrification Systems
- Electrical Drive Systems and Motors
- Telecommunication Systems
- Process Information Management System (PIMS)
- ABB Service Environment
- Lifecycle Process Simulators
- Pipeline Protection System
- Engineering and Project Management Services

**Off to a good start**

With a modern technological infrastructure from ABB, advanced simulation capabilities and thorough operator training throughout the project phase, production start-up at Ormen Lange was achieved ahead of schedule and on budget.
Supporting Ormen Lange  
all the way

An Integrated Operations project
The ABB scope of supply to Ormen Lange was designed around a strategy of Integrated Operations (IO). This strategy focuses on accelerating production, increasing recovery, reducing operating costs and enhancing environmental standards through the optimization of technologies, methods, organization and work processes. To further extend field lifecycle through Integrated Operations, ABB is leading an industry consortium known as TAIL to identify and develop new solutions for increased integration and cooperation at all levels.

Integrated automation, electrification and telecommunications
In 2004, ABB was contracted by Norsk Hydro to provide an integrated Safety and Automation System (SAS), a Process Information Management System (PIMS), electrification systems and a total telecommunications solution for their Ormen Lange facilities. Construction and installation of both offshore and onshore facilities ran for a 4-year period and was completed in 2007.

The ABB scope of supply for the SAS and PIMS solution includes:
- A redundant 800xA system for 25,000 I/O points, including 12 Operator and Engineering Work Stations and 40 servers
- 65 AC800M controllers
- 2 Safeguard 400 for Emergency Shutdown System
- 55 S900 RIO cabinets
- 3 Anti Surge Control Systems (ConSI MAPS)
- Consoles for CCR, Simulator and Maintenance room
- New and modification of existing HW and SW (Re-use Library)
- SIL compliant library for ESD, PSD and F&G
- Implementation of 3rd party interfaces
- Asset Optimizer System

ABB Service Environment™
The ABB Service Environment™ is a complete service concept for the Oil and Gas industry with emphasis on integrated operations, information security and remote operations independent of system discipline and vendor.

The work processes, procedures and support tools for service are offered as a share between the customer, ABB and participating third parties as required by the operations to provide a Single Point of Contact for all requests.

The scope has been structured on international information security standards and meets specific requirements within oil and gas guidelines (www.ofn.no, guidelines 104, 110).

A unique total service concept
When operations were turned over to Norske Shell late in 2007, ABB was awarded a 5-year Service Environment™ contract to provide operations, service and support of the safety and automation systems for Ormen Lange. The scope of delivery was tailored to take full advantage of Shell’s strategy of Integrated Operations.

With the Service Environment™ program, ABB experts can work in real-time with Ormen Lange from Remote Monitoring and Operations Rooms (ARMOR) located in Oslo, Bergen and Stord. Through ARMOR access and 24/7 Help Desk support, Shell receives high IT security, short response times, a single point of contact and access to ABB’s extensive competence and resources. The ABB Service Environment™ scope of supply to Ormen Lange also includes a broad range of additional services and applications for ongoing service and operations, as well as future modifications.