

Total Telecommunications for the Oil & Gas Industry

ABB is a leading supplier of total telecommunication solutions to the Oil & Gas industry, with unique capabilities for large offshore, onshore and pipeline communication projects.



www.abb.com/oilandgas

Lead Competence Center
Telecommunication:

ABB AS
Automation Technologies Division
Hasleveien 50
P.O. Box 6540 Rodeløkka
N-0501 Oslo
Norway
Phone: +47 22 87 20 00
Fax: +47 22 87 20 01

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Sundheim-Madsion Business Communication as 09-2005 Photos: Photos courtesy of Statoil, Hydro, Viswear and ABB.



Integrated Communications Oil & Gas

Customized telecom solutions for reliable, flexible communications throughout the platform, platform-to-platform and platform-to-shore.

Offshore

Floating
& Fixed



Turnkey telecommunication solutions covering all needs for plant operations, ensuring reliable communications within the plant, plant-to-platform and plant-to-plant.

Onshore & LNG

Plants &
Terminals



Robust, cost effective telecommunication solutions providing secure communications along the pipeline and throughout pipeline networks.

Pipelines

Transport Lines
& Networks



ABB is a highly qualified telecommunication solutions provider with extensive experience and global capabilities, specializing in turnkey telecom projects for the Oil & Gas industry. For over 25 years we have been in the forefront of developing communication solutions - focusing on efficient, safe and profitable operations for our customers.

Through the years, ABB has built a specialized telecommunications organization dedicated to the needs of the offshore, onshore, LNG and pipeline market segments. We bring a unique level of competence into each new project, and our capabilities within telecom engineering, integration and total project management and execution have been proven in some of the most demanding projects in the industry.

Unique multiscope synergies

ABB is the leading supplier of automation, safety, electrification and telecommunication systems in Oil & Gas. Our multiscope capabilities are unique in the industry, providing our customers synergies of cost, quality and consistency. This combination of specialized expertise enables us to engineer telecommunication systems seamlessly integrated in a common communication and automation solution - with common user interface and operating and maintenance routines.

Telecom for your requirements

With Oil & Gas Centers located in 40 countries, ABB has over 4,500 dedicated oil and gas engineers and project managers worldwide. We understand the telecommunication needs of the upstream and downstream sectors and use our vast technology resources to meet them.

ABB is a strategic alliance partner with most leading telecom technology suppliers, so we have the freedom and flexibility to select the best solutions for your unique application. We migrate ideas between different vendors and technologies to ensure future-proof solutions. We collaborate with our own automation, safety and electrical engineers to build a telecom solution that is fit-for-purpose for effective lifetime operations.

Telecommunication technologies are constantly evolving - generating faster, more flexible and more economical information flow. Through ongoing technological and market awareness, ABB ensures optimal telecommunication solutions for today and for the future.





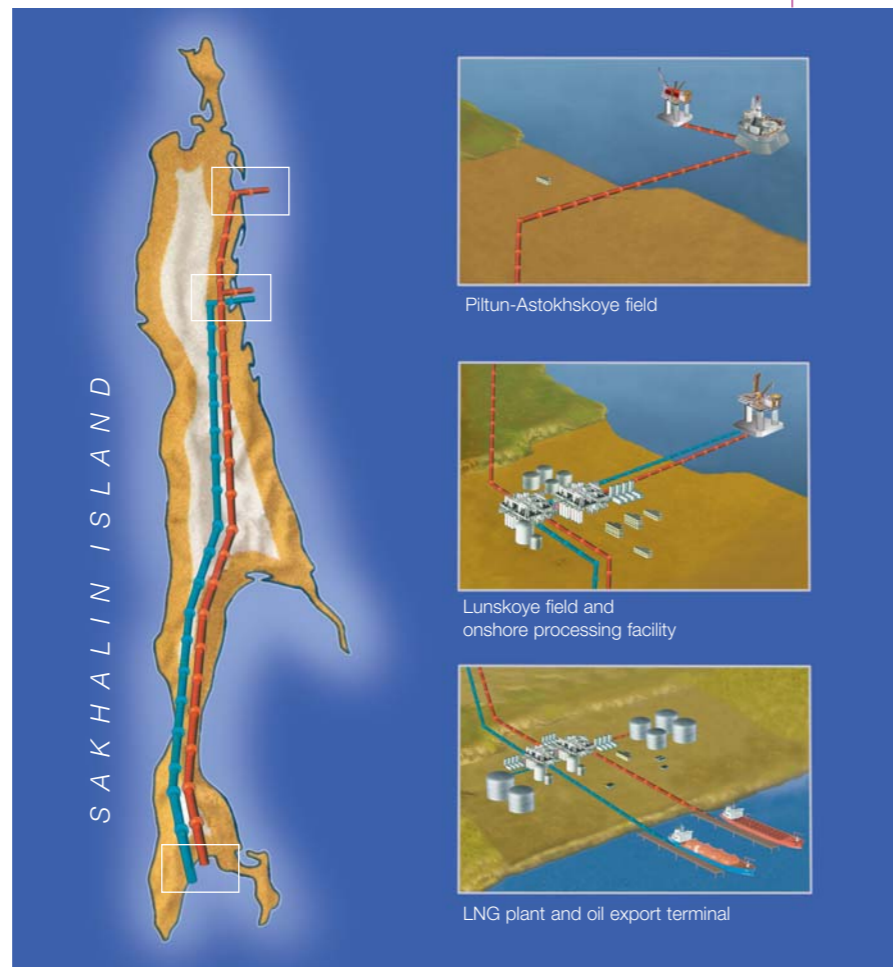
Project Profile Sakhalin II

The Advantage of a Single Source Telecom Solution

... low risk - low cost - high performance

Project facts:

- Operated by Sakhalin Energy Investment Company (Shell 55%, Mitsubishi 25%, Mitsui 20%)
- The largest single integrated Oil & Gas development ever
- The first offshore oil production field in Russia
- The world's largest and Russia's first LNG plant
- The largest Oil & Gas telecom project ever
- Sakhalin II project is scheduled for completion in 2008



The Sakhalin II Telecom Project

For the largest Oil & Gas telecom project ever, Sakhalin II, ABB was contracted for total telecommunication supply. Located off the Sakhalin Island in Far East Russia, the remoteness and size of this project presented many challenges – not least of which were complex logistics with multiple time zones and extensive use of Russian content and sub-suppliers throughout all phases.

ABB supply for the Sakhalin II project includes a total telecommunication solution for 3 offshore platforms, an onshore processing plant, an LNG plant, 800 km of pipeline with around 110 remote valve stations, 2 ports and 6 temporary construction camps. In all, 18 different telecommunication sub-systems will be required to support project operations. ABB is also responsible for installation supervision and commissioning.

ABB meets the technical and commercial demands of each new telecom project with well-proven solutions that have been continually optimized and refined through decades of experience. A single-point telecommunication supply from ABB ensures efficient project execution from concept to commissioning - and a reliable, integrated telecom solution that is easy to operate and maintain.

Telecommunication projects in the Oil & Gas industry are often large, complex and remote, requiring a wide variety of systems and sub-systems. When multiple suppliers are involved, responsibility becomes fragmented and the risks of complications, delays and cost over-runs are greatly increased.

Low risk, low cost

As a single-source telecom supplier, ABB bears the cost and risk of interfacing with the various disciplines and sub-suppliers. Centralized project administration, engineering, quality assurance, logistics and system supply from ABB assigns clear responsibility and creates many synergistic benefits. Project tasks are relegated and monitored from a single point, eliminating overlap and ensuring that nothing is left undone or incomplete. The number of interfaces and potential sources of error are reduced, and consistent engineering and Quality Assurance/Health, Safety and Environment (QA/HSE) is implemented from top to bottom – resulting in cost effective and on-time integrated total solutions.

Cost advantages continue once the systems are operable. Operational cost benefits are achieved through integrated operations and system management, precise diagnostics, fewer spare parts, less preventive maintenance, common training platforms and simpler upgrades and modifications.

High performance

Today, successful operations of an Oil & Gas facility are highly dependent on the functionality and reliability of the communication system. Secure, real-time flow of information - voice, data and video - to, from and within the facility is paramount for safe and efficient operations.

Single-source telecom solutions from ABB are based on leading technologies that are applied in a flexible and integrated manner, allowing systems to adapt to evolving needs throughout the various project and operational phases. When project responsibility lies with ABB, we assure that optimal integration is implemented between the systems in the contractual scope, and that external equipment is interfaced in a way that optimizes the overall solution.

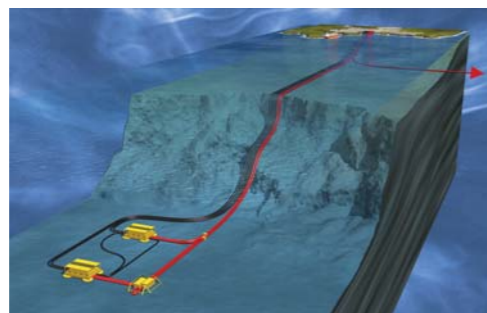
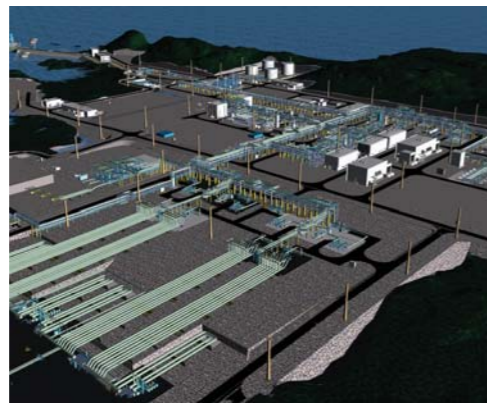




Project Profile Ormen Lange

Project facts:

- Operated by Hydro (development phase) and Shell (operational phase)
- Norway's 2nd largest gas field, located 120 km off Norway's west coast
- Will supply 20% of the UK's total gas demand via the world's longest export pipeline (1200 km), from Norway to the east coast of England
- Production starts October, 2007



The Ormen Lange Telecom Project

For the giant Ormen Lange subsea-to-shore gas project in Norway, ABB has supplied a total telecom, automation and electrification solution. Advanced communications have been implemented throughout the onshore processing and export facilities to provide a high level of safety and reliability.

To achieve seamless integration of the many plant telecom sub-systems into the overall automation and telecom solution, ABB's unique Communication Controller is utilized. This solution allows operation and management of the telecom equipment from common automation and telecom operator stations.

Fully integrated with the automation system, the Public Address system developed by ABB provides an extremely flexible solution that meets the owner's unique requirements. The system is fully duplicated with a central node and ten remote nodes connected together to make a uniform system over the fiber optic network. To enable a seamless integration with the automation system, a standard OPC (OLE for Process Control) interface is utilized.

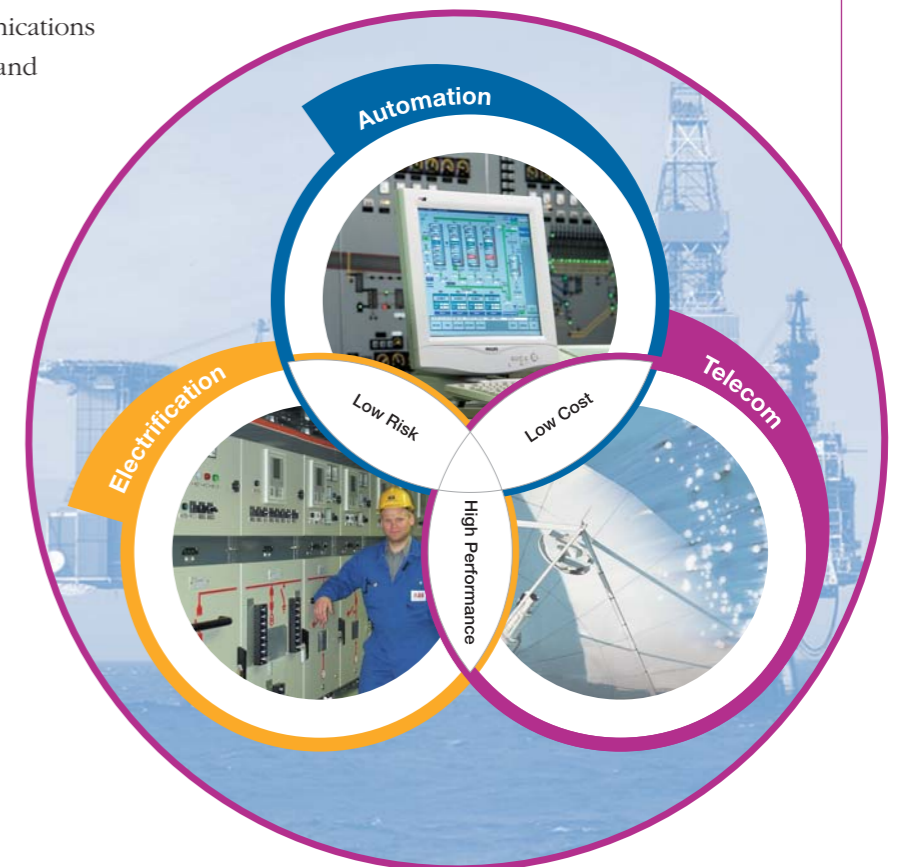
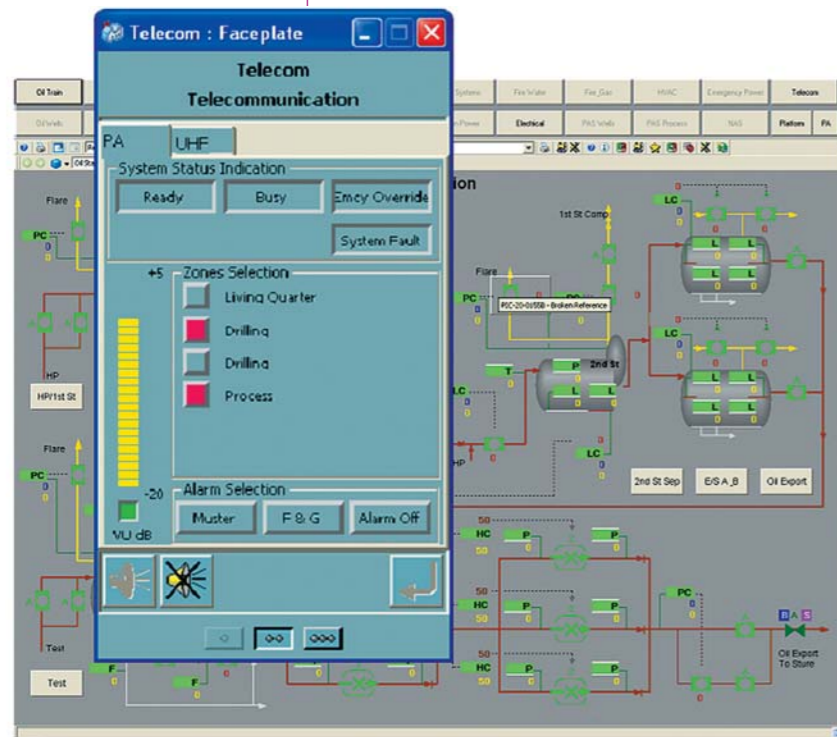
To Ormen Lange, ABB has delivered a fully integrated automation and telecom solution that gives direct access to the telecom systems from the automation platform.

As a world-class multiscopes supplier, ABB has pioneered the convergence of automation and telecommunication technologies in the Oil & Gas industry. Our unique integration solutions empower the operator with a single window and common operator environment for all control and communication tasks - providing numerous operational and economical benefits.

Through close in-house cooperation between automation, safety, electrical and telecommunication engineers, ABB has identified commonalities, developed technology and created a powerful system architecture that fully integrates all plant telecommunications into a total OPC-based automation and telecom solution. A core system element is our unique Communication Controller, which can integrate telecom equipment from any manufacturer into the overall process control solution.

Benefits of an integrated solution:

- Uniform operation and user interface
- All information accessible from a single window
- Automated actions, messages and event logging
- Transmitting equipment removed from operator desk
- Uniform system maintenance and reconfiguration
- Reduced engineering and interface requirements
- Less cabling and spare parts





A Total Suite of Telecom Applications

Combining industry standard off-the-shelf technology with cutting edge developments in telecommunication, ABB provides reliable, high performance integrated communication solutions.

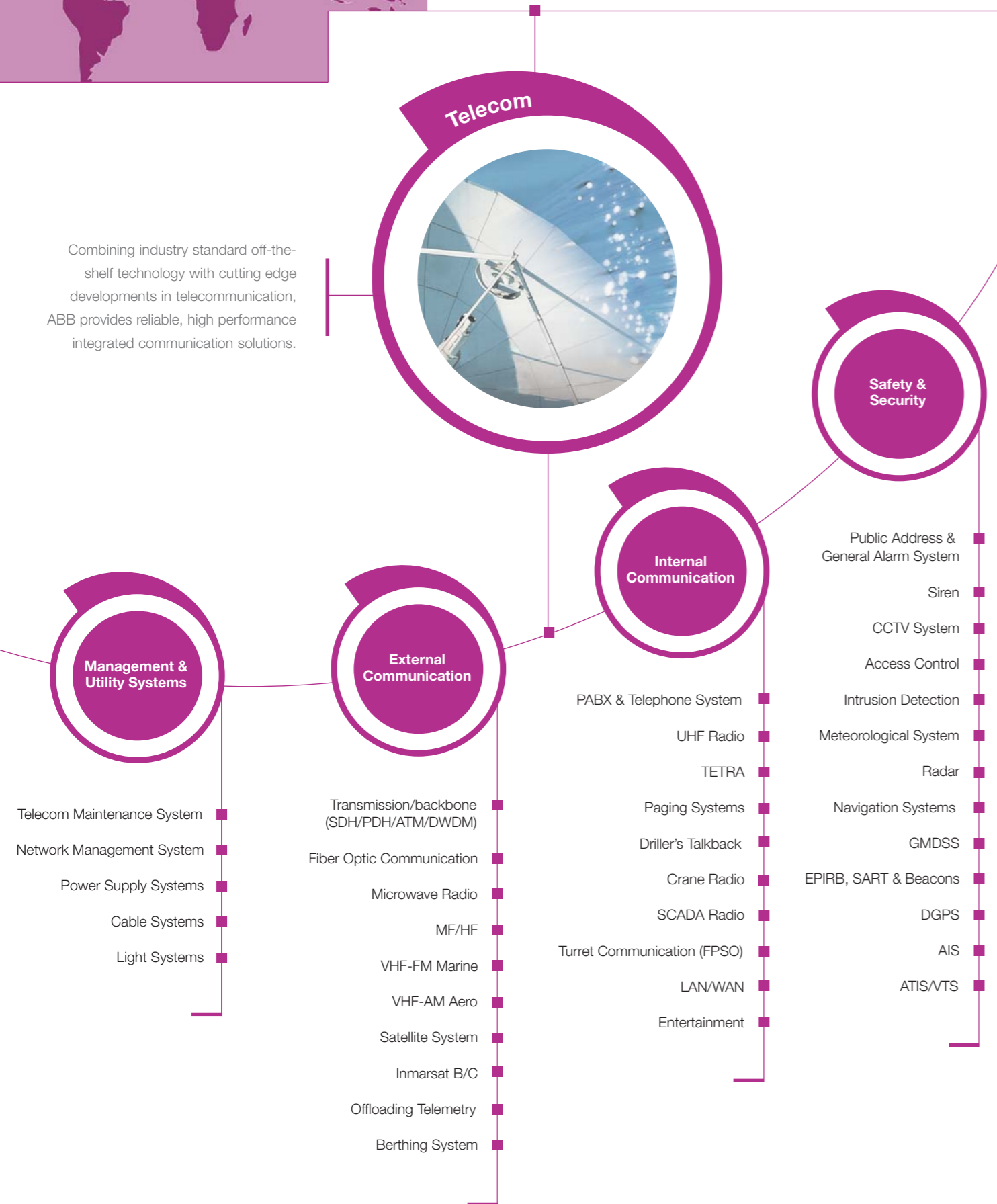


ABB offers a full spectrum of communication systems for onshore and offshore installations - fixed and floating, topside and subsea. Our integrated solutions are based on the best equipment available, selected according to the unique technical and commercial requirements of each project.

We evaluate each delivery for lifetime performance, taking into account current and future integration capabilities and the flexibility to adapt to the evolving needs of the facility. Our customers benefit from our long-standing relations with all leading telecom equipment suppliers and our freedom to always select the best suited technologies.

External Communication

External communication systems interconnect installations and link them to the surrounding world - carrying voice, video, process control and safety system traffic necessary to allow uninterrupted safe operations of the facility. With today's solutions and technologies, distance is no longer a limitation and bandwidth is available as needed, either on demand or fixed.

Internal Communication

Internal telecommunication systems play a major role in supporting day-to-day operations and enhancing the work environment. They allow any type of system or operator to communicate within the facility, enabling reliable and efficient operations. ABB designs internal operational systems to fit tightly within the external communication infrastructure.

Safety & Security Systems

ABB has detailed knowledge and extensive experience from applying safety standards and governmental requirements from all parts of the world. We deliver Personnel Safety Systems for safeguarding personnel and equipment on and around an installation according to international rules and standards and adapted to meet local safety requirements. For best possible performance and flexibility, safety systems are closely integrated with each other, as well as to other internal and external systems.

Management & Utility Systems

System and personnel well-being are supported by a number of management and utility systems, which are intended to ease and simplify telecom maintenance and operations. One such system, ABB's Telecom Maintenance Systems (TMS), is a centralized management and maintenance system which ensures easy and secure access to all telecom systems.

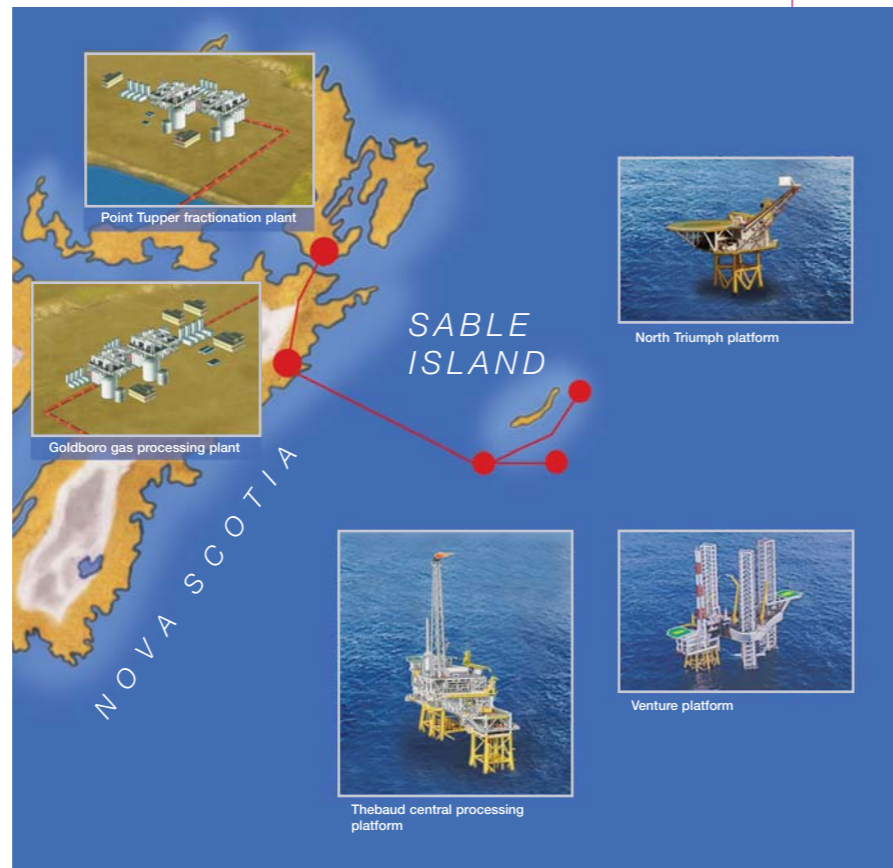




Project Profile Sable Island

Project facts:

- Operated by Sable Offshore Energy Project (ExxonMobil, Shell, Imperial Oil Resources, Emera Offshore, Mosbacher)
- The first offshore gas field in Canada
- The largest single project ever undertaken in Nova Scotia
- First gas production commenced December 31, 1999



The Sable Gas Project Telecom Solution

The Sable Gas Project was formed from an alliance of 6 companies, each taking responsibility for delivering parts of the project. The project was developed in a greenfield area with very little telecom infrastructure, and included three offshore platforms and two onshore plants interconnected by pipelines.

Engineering for the offshore and onshore facilities was split between three different companies, each having experience from different areas of the world. ABB's project management was located in Canada, working in an integrated team with other contractors, while telecom design and engineering was done from Norway.

As telecom contractor, ABB was responsible for developing specifications, engineering the solutions, procuring the equipment, installing and commissioning the telecom systems and ensuring a smooth handover to Operations and Maintenance. This required much interaction with a variety of parties, such as local telecom authorities, local owners of existing communication infrastructure, providers of satellite services and government organizations.

Telecommunication work for the project started in October, 1997. ABB completed the project in November of 1999 - on schedule and under budget.

While each new project has its own risks and rewards, challenges and potential pitfalls, it is still all about doing again what we did successfully the last time - only better every time. Good project management, best-class practices and adaptation to market needs are required in the complex sort of projects we work with, involving multiple actors in multi-cultural environments.

As a system integrator, it is ABB's responsibility to make sure that our design and engineering fully comply with client requirements and with the needs of all interfacing contractors from all facilities within the project.

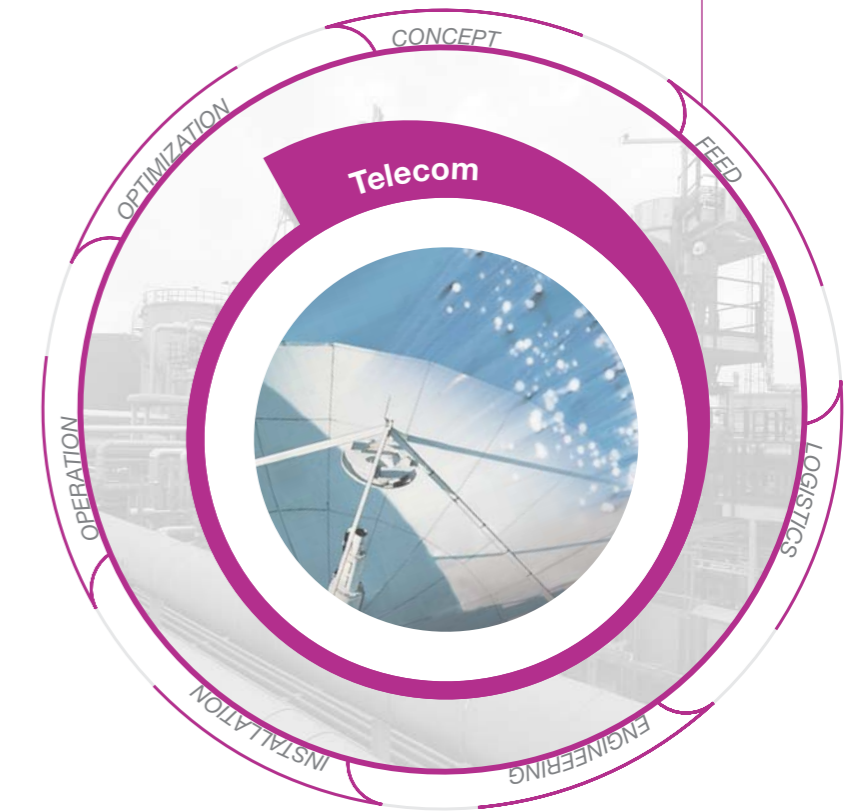
Developing an organization that can efficiently deal with large, complex telecom projects on a regular basis takes time. For over 25 years, ABB has continuously built up telecom experience and know-how with each new project, distinguishing us as one of the most qualified telecommunication suppliers in the Oil & Gas business.

A solid project foundation...

For large, multifaceted projects ABB brings together top expertise from in-house resources and industry leading telecommunication sub-suppliers early on in the project to jointly determine the most effective, flexible communication foundation for the entire project. Through these joint efforts, ABB contributes with increased cost-savings and rationalization for the total installation.

...gives long-term benefits

Project execution by ABB throughout all phases of the project assures continuity from start to finish. Knowledge and experience gained from conceptual studies continue into pre-engineering and FEED. As the project transitions from each phase to the next, feedback is gathered and documentation is adapted accordingly. Reusage and continuous development of project experience and documentation are examples of how a total ABB solution can save time and errors, and maintain a standard and consistent level of quality throughout all project phases.





Project Profile Kvitebjørn

Project facts:

- Operated by Statoil
- Developed with a fully-integrated fixed steel platform with drilling & process facilities and living quarters
- Daily output of 20 million cubic meters of gas and 10,000 cubic meters of condensate from 11 production wells
- Gas is piped to Statoil's Kollsnes facilities and condensates to their Mongstad refinery
- First production September, 2004



The Kvitebjørn Telecom Project

For Statoil's Kvitebjørn project, ABB supplied a total communication solution including procurement, engineering, installation supervision and commissioning.

System delivery included PA&A, office data, radio link, UHF radio & paging, mandatory and general radio, audio and video entertainment, meteorological observation, marine radar, CCTV, telecom power supply, PABX, telemetry and surveillance.

For ease of operation and maintenance, ABB has also delivered a TMS system which provides a common, intuitive operator interface for management of all delivered sub-systems.

A total telecommunication solution for an Oil & Gas facility will always consist of a wide range of products and systems from multiple manufacturers - posing numerous functional and operational challenges. In an integrated telecom solution from ABB, key design parameters include full functional interaction and easy, single-point management and maintenance from the very start.

Telecom Management System

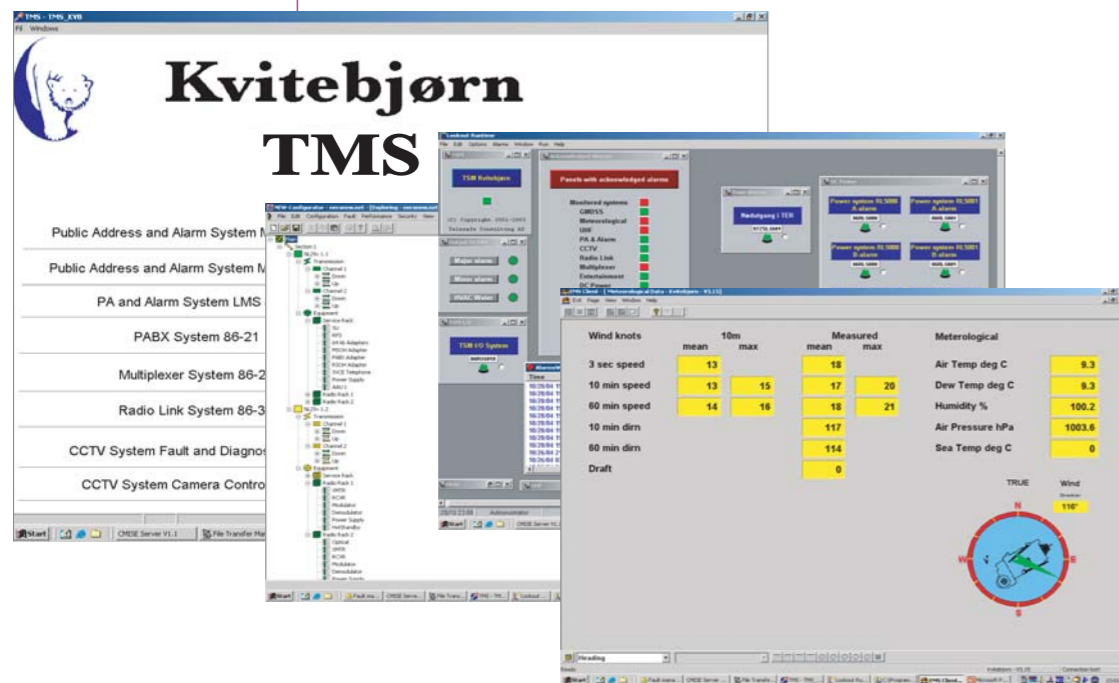
ABB's Telecom Maintenance System (TMS) is an overall umbrella for telecommunication management and maintenance, integrating all configuration tools in a single software application. Based on standardized protocols, TMS uses the existing Ethernet for gathering and distributing management information to control all equipment and software applications from a single location, either on site or remote.

All system documentation is available on-line in TMS, supporting diagnostics and maintenance, and only general knowledge of a given telecom system is required to perform maintenance.

TMS may be accessed from dedicated work stations or integrated with other operator stations in the automation system, providing a uniform user interface. OPC (OLE for Process Control) and SNMP (Simple Network Management Protocol) are integrated into the TMS software application, providing a unique flexibility for integrating process-reported alarms and Telecom Management.

Global service and support

But there is more to successful operations than technology alone. With each delivery, ABB customers gain a qualified telecommunication service partner to provide a broad range of lifecycle services, including training, operational support, service and maintenance, as well as modernization and upgrades. With local ABB presence in more than 100 countries and Oil & Gas Centers in all strategic areas, we are never far away.

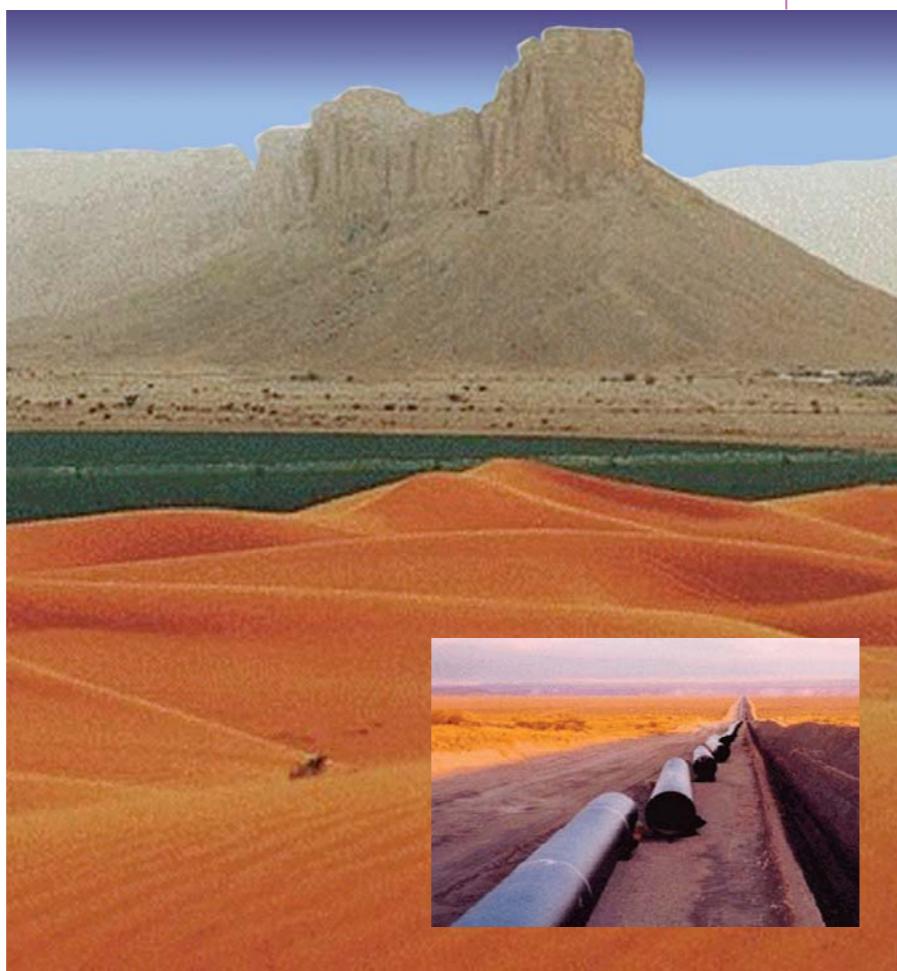


Project Profile Middle East Pipeline Networks

Middle East

Project facts:

- Owner/operator confidential
- Several pipeline networks and facilities
- Each network contains several pipelines and transports multiple liquid products
- Each pipeline system commissioned progressively from 2000 to 2008



Middle East Pipeline Networks Telecom Project

ABB was commissioned in the mid-1990's to supply a complete automation and telecom solution for several plant and pipeline networks in the Middle East. The project was challenging due to the size and scope of delivery, the remoteness of the pipeline stations, security issues surrounding the project and the planned step-by-step implementation of all systems over a long time period.

With a focus on security, reliability and "future-proofness", ABB engineered an overall communication solution that met the stringent demands of the project and provided full integration between the pipeline automation system and telecom systems. The first system was commissioned in January of 2000, with the following systems to be phased in over several years.

ABB is at the forefront of telecommunication technology for the Oil & Gas industry. We keep updated on industry trends and long-term strategies and stay abreast of the latest advancements in telecom technology to ensure future-proof solutions that are engineered for the full lifecycle of the facility.

As we look towards the future we see a continued convergence of technologies and applications - where the network is everything. Voice, data and video will be carried over the same network, with higher speed and bandwidth. To assure reliability and serviceability, standard, off-the-shelf products and systems will be increasingly utilized to build customized total solutions.

Telecommunications will play an increasingly important role in the industry's efforts to reduce CAPEX and OPEX. As more remote and less accessible reservoirs are developed, high-speed, reliable telecommunications - both fiber and radio - will allow for increased off-site monitoring and control. Land-based operations of offshore facilities are one example of how advanced telecommunication creates opportunities for more efficient and cost-effective operations.

Technology has taken great strides forward in developing mobile telecommunication solutions in the last few years, and mobility will continue to evolve in the future.

Stationary operator stations will give way to more flexible mobile solutions, providing operators access to their facilities regardless of location.

Streamlining technology through integration

Modern telecommunications are all about streamlining technology through integration, and this trend will certainly continue into the future. Duplication of hardware, software and cabling can have a strong impact on the bottom line due to higher costs, more spare parts, increased training and less efficiency. To rationalize operations and control costs, tomorrow's Oil & Gas industry will take advantage of common user interfaces for all applications and systems, common network infrastructures, common technologies (Ethernet, IP, Bluetooth, XML, etc.) and common maintenance systems.

As a global leader in telecommunications for the Oil & Gas industry, ABB will continue to ensure that communication technology keeps pace with the changing needs of the industry, and implement innovative solutions for increased efficiency in the future.

