

**Global cable expertise:
reliable solutions for complex Oil and Gas projects**

Challenges to the oil and gas industry

The oil and gas industry is continuing to reduce costs, improve efficiency, and exploit new fields. To ensure future supplies, it is also moving into deeper waters (+ 3,000 m). By 2015, nearly 25% of offshore oil will come from greater depths, compared to just 10% in 2004.

Meanwhile offshore gas output will continue to rise from both shallow and deep waters, with 12% of global offshore gas coming from the deep ocean floor by 2015, compared to 7% today. Continuing gas growth will drive expenditure on gas infrastructure, including pipelines, LNG plants, gas-to-liquid processing plants, tanker transport, and loading and unloading terminals.

Moving the control of subsea development onshore can greatly reduce operating expenses. However, it requires longer submarine energy cables and longer umbilicals. "Smart wells" both on and offshore need remote management capability through sensor, instrumentation and control cables, and extended WANs and LANs for application-sharing among wells and platforms.

Onshore facilities (storage depots, refineries and petrochemicals) demand energy and control cables which can operate under aggressive conditions, while protecting workers, infrastructure and the environment.

What oil and gas producers expect of a cable manufacturer:

- advanced exploration technologies
- full range of cables for energy, control, and data
- special cables for exploration, exploitation, refineries and petrochemicals
- high-reliability and low-maintenance for continuous production
- installation expertise in ultra-deep waters and onshore
- technologies for pipelines, tanker transfer, storage
- environmental friendliness and safety



Nexans keeps oil and gas flowing both upstream and downstream



Nexans is present at every level of oil and gas production, providing a wide range of energy and telecom cables for onshore and offshore exploration, production and distribution, as well as for refinery and petrochemical infrastructure. We are developing new installation techniques, as well as trenching and burying systems for cables on the seabed. Innovative technologies, like long-length, deepwater umbilicals and high-speed fiber and copper backbones for data transfer and remote control applications, are all in our product range. Nexans provides special products for the electrical heating of pipelines, and special combined submarine cables and umbilicals. We have pioneered sheathings that resist sea salt, chemicals, and "mud."

To protect infrastructure and people, we have also developed advanced fire-performance products, and have been carefully tracking and improving materials for easy recycling.

For onshore projects, we use our unique supply chain, global services and technical support to help international contractors and engineering firms meet the complex challenges of the hydrocarbon processing industry.

Nexans takes an integrated approach to your needs:

- cables for all applications, from exploration and production to transport and refining
- full range of LV/MV/HV power cables for wells, platforms and refineries
- specialized umbilicals for greater water depths and long-distance applications
- advanced fiber/copper WANs and LANs for land and maritime installations
- standard and interconnective solutions for high availability worldwide
- high performance in tough conditions, including heat, cold, saltwater, "mud," and oil
- installation expertise for deepwater and remote land locations
- reduced weight and volume through XLPE cable designs
- superior fire-reaction and resistance to safeguard people and equipment



Nexans... the most complete cable provider

Seismic data acquisition cables, oceanographic

Lead-in cables, gun cables and bottom-laid cables for 4D seismic acquisition offer high mechanical strength and operational flexibility. Deep-water cables are also used for oceanographic monitoring and surveillance.

Nexans designed storm-resistant cables and accessories for a monitoring system operating under the UN Test Ban Treaty. For Deep Sea Link, an electro-optical cable assures operational and reservoir monitoring down to 2,000 m.

Seismic data acquisition cables, terrestrial

Nexans' precision copper and optical cables for sensors and geophones are sturdy, reliable, waterproof and light, with low cross-talk for higher accuracy.

For Sercel, Nexans developed lightweight and mobile land cables, which can also be used down to 300 m water depth.

Topside instrumentation, compensation, control and power cables

Fire-safe, "mud-resistant" LV and MV cables are used for control and instrumentation on platforms. IEEE 45 Type P versions exist for explosion-risk environments. Hybrid cables monitor sensors and activate control, safety and bleed valves to regulate oil, water and gas flow, and measure and control temperature.

Nexans Kukdong is contributing to an ice-resistant platform, the "Prirazlomnaya" for a Russian Federal State Unitary enterprise.

Skagerrak cable-laying vessel

Nexans' Skagerrak is one of the world's most advanced cable-laying vessels, with a 7,000 tonne capacity turntable and a state-of-the-art global positioning system.

The Skagerrak successfully laid a 400 kV submarine cable across the 28 km Strait of Gibraltar, and is laying a 576-km-long HVDC cable between Norway and the Netherlands. In 2008-9, the vessel will lay a 292 km 150 kV HVDC cable to power the Valhall oil field from the Norwegian mainland.

Capjet Trenching System

The CAPJET trenching system buries fiber-optic, power and control cables, steel and flexible flowlines, and large oil and gas pipelines.

Two 125-km-long umbilicals are being trenched and buried as part of Norway's Ormen Lange project.

Dynamic umbilicals for Remotely Operated Vehicles (ROVs)

Nexans provides cost-effective and field-proven umbilical solutions using steel-wire armor for ROVs operating down to 7,000 m.

Nexans provided the steel-armored umbilicals for the ROV that worked on the "Prestige" wreck off the coast of Spain. Aramid strength members can operate down to more than 6,000 m.

Umbilicals

Multifunction umbilicals carrying energy, telecommunications, fluids and chemicals are essential for controlling subsea systems. Nexans has developed a new generation of umbilicals using stainless steel tubes.

For BP, Nexans is furnishing power umbilicals for the King Subsea Pump project, and in the Gulf of Mexico, 117 km of umbilicals for the Atlantis and Thunder Horse projects. For Dolphin Energy in Qatar, it is producing, transporting and installing a 90 km plus 70 km umbilical. For the Erha project in Nigeria, it is supplying 2 dynamic and 1 static umbilical (Cooper Cameron Ltd).

Optical sensing cables

CableSense fiber cables use Fiber Bragg Grating (FBG) technology to monitor characteristics, like temperature and tension, to safeguard power cables and umbilicals, especially in critical ROV operations.

Nexans supplied umbilicals fitted with CableSense to the Dutch dredging and marine contracting company, Van Oord.



Dynamic umbilicals for ROVs
for control and operation of subsea installation



Topside instrumentation, compensation, control and power cables
for continuous and reliable exploitation



Umbilicals
for energy, telecommunications, fluids and chemical transport





Maritime copper/fiber LANs
for remote monitoring, control, maintenance, data transfer and entertainment



Skagerrak cable laying vessel
for laying cables securely on the seabed



Seismic and oceanographic cables
for exploration ease and system durability



High voltage energy cables
for subsea power transmission



Optical sensing cables
to safeguard power cables and umbilicals



Transfer lines
for liquefied gas



Copper/fiber LANs
for telecommunications, monitoring of data and energy flows



Seismic data acquisition cables
for terrestrial exploration



Capjet trenching system
for trenching and back-filling of buried cables and pipelines



Marine optical fiber backbones
for telecommunications and remote-control



Electrical direct-heating cables
for flow assurance of pipelines and flow lines



Onshore optical fiber backbones
along pipelines and flow lines



LV, MV and HV onshore cables
for instrumentation, compensation, control and power



Accessories and custom software
for all energy and telecom needs, mechanical testing, etc.



... for a safer, more efficient oil and gas industry

Electrical direct-heating cables

A heating cable strapped to a pipeline provides a current in the steel which heats up the pipeline to required temperatures to prevent "plugs" and avoid shutdowns.

Nexans completed the first offshore electrical pipeline heating system for Statoil in the Åsgård field (North Sea), for a total of 45 km. We also provided a pipeline heating system for the Huldra, Kristin and Nome fields, and obtained important contracts for Statoil's Tyrihans and Alve fields.

Subsea and land-based high-voltage energy cables

Nexans manufactures submarine paper-insulated and XLPE-insulated cables with copper conductors of up to 2,500 mm² for voltages up to 525 kV AC, from shore to platform, between platforms and for all onshore applications. Our composite solutions add fiber-optic cable for secure telecommunications.

Feeding clean energy to a platform eliminates onboard generators and dangerous CO₂ emissions. Two record-breaking achievements: a 67-km-long 52 kV cable linking land facilities with the Troll platform in the North Sea, and a 420 kV XLPE cable installed by Nexans in the Ormen Lange oil field.

Marine optical fiber backbones

Independent optical fiber cables running from shore to platforms and between platforms increase bandwidth and provide remote-control. Nexans supplies repeaterless systems for up to 500 km.

Several North Sea platforms (Statoil) are being linked to achieve cost savings and better safety. Sensor fibers are used to monitor temperature, pressure, stress and overheating, so flow changes and "wax" can be controlled.

Maritime and terrestrial Local Area Networks

Copper and/or fiber LANs can move functions onshore, providing remote monitoring, control, maintenance, real-time drilling data, videoconferencing and even entertainment. They are also ideal for the multiple needs of refineries.

In the Caspian Sea, Nexans Cat 7 allows application sharing. Instead of having to pull three separate cables, a single cable (containing four individually screened cables) handles telephony, Internet, data and TV. Cat 7 can now support 10 Gigabit Ethernet speeds.

Accessories and custom software

For all energy and telecom needs: joints and terminations, pressure systems, pumping plants, pull-in heads, terminations, buoyancy elements, branching units, amplifiers, etc.

Without the need for mechanical testing, Nexans' unique software dynamically positioned cables in the North Sea to and from platforms and production ships according to currents, waves and movement.

Onshore instrumentation, compensation, control and power cables

Nexans provides LV, MV and HV compensation, control and power cables for transmission and distribution. For refineries, petrochemicals plants and LNG terminals, they can be shielded against dangerous chemicals.

Nexans provided all the MV/LV power cables to the first oil refinery built in Vietnam. We also supplied all instrumentation, control and power cables to Yemgas for two liquefied natural gas trains built in Yemen.

Onshore optical fiber backbones

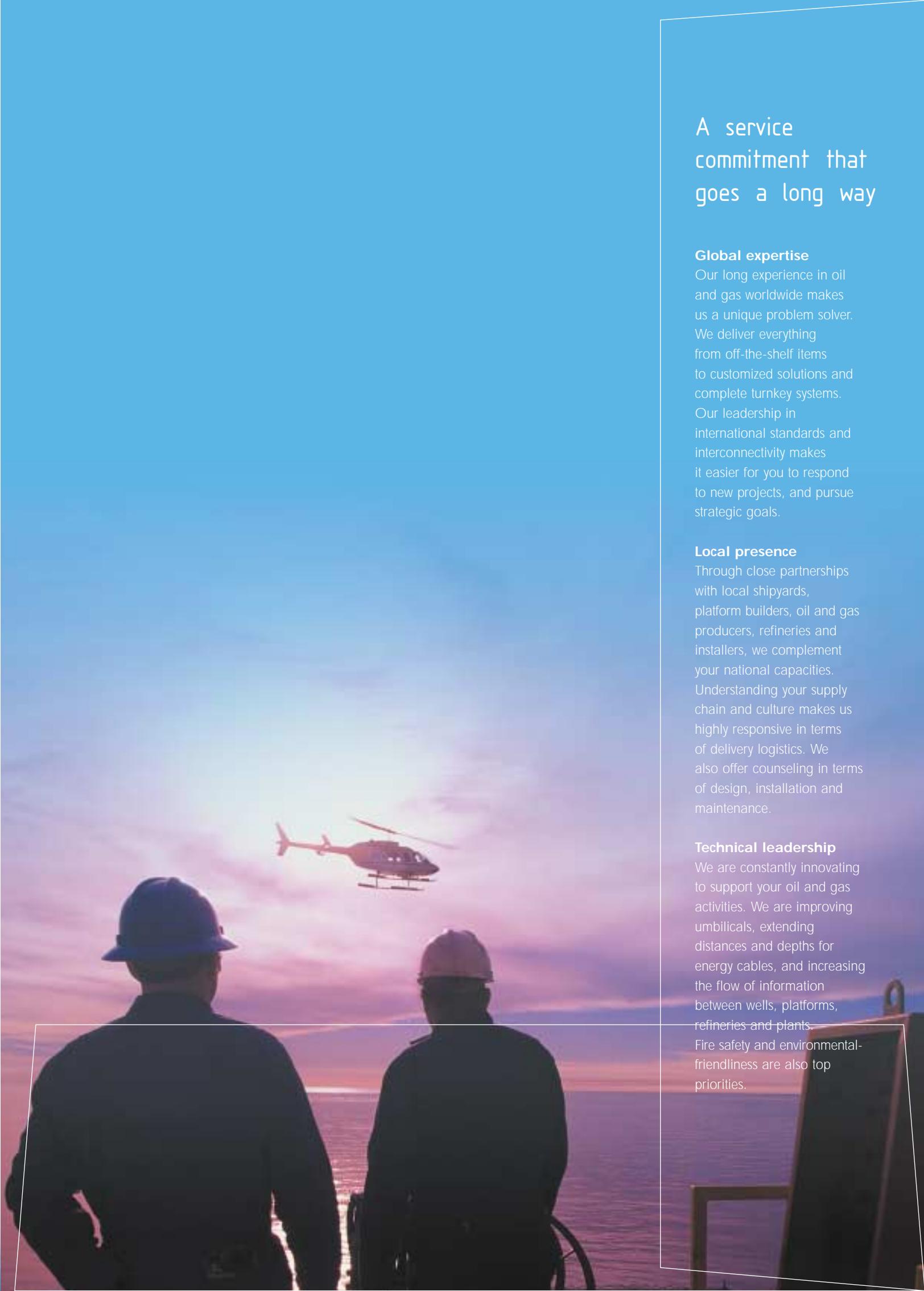
Pipelines between distant points provide a convenient and protected infrastructure (Right-Of-Way) for long distance optical fiber backbones.

In remote deserts, optical fiber cables safely attached to pipelines can provide the remote control of pumping stations, and full network management.

Transfer lines for liquefied gas

Nexans Cryoflex® transfer lines consist of concentric, flexible, vacuum-insulated corrugated tubes for carrying liquefied gases between floating production ships, shuttle tankers, LNG carriers and onshore LNG receiving terminals.

Not only do these flexible tubes resist stress, strain, and corrosion, the outer sheath functions as an emergency insulation in the case of an inner tube puncture, an important safety feature.

A photograph of two workers in hard hats standing on a platform, looking out over the ocean at sunset. A helicopter is flying in the sky above them. The scene is silhouetted against the bright, colorful sky of a sunset.

A service commitment that goes a long way

Global expertise

Our long experience in oil and gas worldwide makes us a unique problem solver. We deliver everything from off-the-shelf items to customized solutions and complete turnkey systems. Our leadership in international standards and interconnectivity makes it easier for you to respond to new projects, and pursue strategic goals.

Local presence

Through close partnerships with local shipyards, platform builders, oil and gas producers, refineries and installers, we complement your national capacities. Understanding your supply chain and culture makes us highly responsive in terms of delivery logistics. We also offer counseling in terms of design, installation and maintenance.

Technical leadership

We are constantly innovating to support your oil and gas activities. We are improving umbilicals, extending distances and depths for energy cables, and increasing the flow of information between wells, platforms, refineries and plants. Fire safety and environmental-friendliness are also top priorities.



Global expert in cables and cabling systems

With energy as the basis of its development, Nexans, the worldwide leader in the cable industry, offers an extensive range of cables and cabling systems. The Group is a global player in the infrastructure, industry and building markets. Nexans addresses a series of market segments from energy, transport and telecom networks to shipbuilding, oil and gas, nuclear power, automotives, electronics, aeronautics, material handling and automation.

With an industrial presence in more than 30 countries and commercial activities worldwide, Nexans employs 21,000 people and had sales in 2006 of 7.5 billion euros. Nexans is listed on the Paris Stock Exchange.

Nexans S.A. – 16 rue de Monceau – 75008 Paris – France
Tel.: +33 (0)1 56 69 84 00 – Fax: +33 (0)1 56 69 84 84 – www.nexans.com
marcom.info@nexans.com