Complete, reliable cable solutions and services for offshore subsea oil and gas
Challenges to the oil and gas industry

The oil and gas industry is continuing to reduce costs, improve efficiency, and exploit new fields. The world is increasingly relying on offshore resources, and to ensure future supplies, it is also moving into deeper waters (3 kilometers and more). By 2015, it is estimated that 12% of oil production will come from deepwater sources, compared to 2% in 2002. Meanwhile deepwater gas production will equal and probably exceed 12%, with new subsea-to-shore developments.

Continuing oil and gas growth will drive expenditure on gas infrastructure, including pipelines, subsea template systems, smart well control systems and subsea processing. It will also stimulate new builds of FPSOs, Tension Leg Platforms (TLPs) and Multipurpose Support Vessels (MSVs).

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

What do you expect from a cable manufacturer?

- full range of cables for energy, control, and data
- high-reliability and low-maintenance for continuous production
- installation expertise in ultra-deep waters
- technologies for pipelines, tanker transfer, storage
- subsea power cables and umbilicals for pumps and processing
- subsea fiber-optic systems for communication and seafloor monitoring systems
- expertise and accessories for terminating subsea “trees”
- software capability to test dynamic riser solutions, especially in deeper waters
- environmental friendliness and safety in marine conditions
Nexans keeps oil and gas flowing both upstream and downstream

Increasingly, Nexans is playing an important advisory and service role in the offshore world, which includes seismic exploration, planning of ultra-deepwater architecture and technology, ROV operation, simulations, testing, telecommunications networks (including offshore Internet networks), oil-field infrastructure upgrades, training, maintenance, and even cable removal and recycling.

Nexans takes an integrated approach to your needs

- cables for all applications, from exploration and production, processing and transport
- full range of LV/MV/HV power cables for wells and platforms
- deepwater long-distance umbilicals with increased power capacity (up to 36kV)
- advanced fiber/copper WANs and LANs for shore-to-platform and inter-platform fiber-optic communication systems
- standard and interconnective solutions for high availability worldwide
- high performance in tough conditions, including heat, cold, saltwater, “mud,” and oil
- installation expertise for deepwater seafloor and seafloor-to-surface systems
- reduced weight and volume through XLPE cable designs
- superior fire performance to safeguard people and equipment
- full range of customized accessories, including wet-mate connector technologies

Nexans is present at every level of oil and gas production, providing a wide range of energy and telecom cables for offshore exploration, production, processing, storage and transport. We are constantly improving installation techniques, as well as trenching and burying systems for cables on the seabed.

Our innovative technologies include long-length, deepwater power umbilicals to meet the rising power needs for pumps and subsea processing. Nexans also provides high-speed fiber and copper backbones for data transfer and remote control applications. Customized offshore solutions include: electrical direct electrical-heating cables to keep pipelines flowing; sheathings that resist sea salt, chemicals and “mud”; advanced fire-performance products; customized software for the optimal installation of dynamic risers.
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. For Norway’s Optoplan, Nexans is supplying and assembling a record 768 optical fiber riser cable for an ocean bottom seismic sensor system to monitor reservoirs in the North Sea. Our GUN cables come complete with terminations, while lead-in cables are provided with “fairing” to reduce drag.

Topside instrumentation, compensation, control, power cables and fiber optic backbones
Fire-safe, “mud-resistant” LV and MV cables are used for control and instrumentation on platforms, with a version for explosion-risk environments. Hybrid cables monitor sensors and activate control, safety and bleed valves. Optical fiber backbones carry signals for instrumentation, sensing, and telecommunications. Nexans Kukdong (Korea) 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, a state-of-the-art global positioning system, and multiple cranes. The Skagerrak laid a 400 kV submarine cable across the Strait of Gibraltar and a 576-km-long HVDC cable between Norway and the Netherlands. With Prysman, it is laying a 275 km energy/fiber cable at 1,500 meters between Mallorca and mainland Spain. It is also completing 292 km of HVDC for the Norwegian Valhall oil field.

Capjet Trenching System
The Capjet ROV system – based on water-jetting – trenches and back-fills fiber-optic, power and control cables, steel and flexible flowlines, and oil and gas pipelines. The new Capjet Spider handles large-volume dredging. Capjets have buried 8,000 km of cables and pipelines worldwide. After completing the Norwegian Ormen Lange oilfield and the NorNed power cable, the world’s longest (576 km), they will be used to bury pipelines in the Yacheng Field off Hainan Island in the South China Sea.

Optical sensing cables
CableSense fiber cables use Distributed Temperature Sensing (DTS) where fiber functions as a sensing element to measure temperature, stress and strain to safeguard power cables and umbilicals from critical overheating. Nexans supplied umbilicals fitted with CableSense to the Dutch dredging/contracting company, Van Oord. The same technology monitors the temperature of submarine power cables running from Hainan Island to mainland, China.

Seismic data acquisition cables, oceanographic
Spanish coast, and supplied an aramid-armored cable used for oceanographic research at 7,000-meter depth in the Indian Ocean.

Umbilicals
Umbilicals carrying energy, telecommunications, fluids and chemicals are essential for controlling subsea systems. Nexans has developed new stainless-steel tube, long-length, deep-water power umbilicals that can serve the power needs of pumps and subsea processing equipment (up to 36 kV). Nexans furnished power umbilicals for the King Subsea Pump (BP) and the Tynhans project in the North Sea (Statoil). Service umbilicals include Atlantis (BP) and Thunder Horse (BP) fields in the GOM, deepwater Akpo and Usan offshore fields for Total in Nigeria, and the Dolphin Energy gas project in Qatar.

Dynamic umbilicals for ROVs
Nexans provides cost-effective and field-proven umbilical solutions using steel or aramide armor for ROVs operating down to 7,000 meters. Nexans provided the steel-armored umbilicals for the ROV that worked on the “Prestige” wreck off the Spanish coast, and supplied an aramid-armored cable used for oceanographic research at 7,000-meter depth in the Indian Ocean.
Topside instrumentation, compensation, control, power cables and fiber optic backbones

Skagerrak cable-laying vessel

Capjet Trenching System

Dynamic umbilicals for Remote Operated Vehicles

Ultra-deepwater energy cables

Maritime Local Area Networks

Ultra-deepwater hybrid cables

Accessories and custom software

Transfer lines for liquefied gas umbilicals
Direct electrical-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 Åsgard field (North Sea). We also provided a pipeline heating system for the Huldra, Kristin and Nome fields, and Statoil’s Tyrihans and Alve fields.

Subsea high-voltage energy cables
Nexans manufactures submarine paper-insulated/XLPE cables with copper conductors for voltages up to 525 kV AC, from shore to platform and between platforms. Hybrid solutions add fiber-optic cable for telecommunications. Feeding clean energy to platforms eliminates onboard generators and CO₂ emissions. Two achievements were the 420 kV XLPE cable installed in the Ormen Lange field and two 292-km-long 150 kV cables for the Valhall field (Norway).

Ultra-deepwater hybrid cables
Nexans has recently developed an ultra-deepwater hybrid fiber and DC power cable which can operate safely down to 8,000 meters. Using technology developed for transatlantic cables, the new hybrid cable was designed to serve the next phase of ultra-deepwater extraction and processing. It will carry optical signals and 10kV power for subsea monitoring stations.

Maritime 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. Land-to-shore links are assured by the fiber backbone. Statoil (Norway) is expanding fiber optic connections from onshore to handle seismic survey operations, ocean bottom sensing, subsea processing and wellhead control, thus consolidating expertise in one land-based control center. In the Caspian Sea, a single Cat 7 cable handles telephony, Internet, data and TV at 10 Gigabit Ethernet speeds.

Accessories and custom software
Joints and terminations, pressure systems, pumping plants, pull-in heads, terminations, buoyancy elements, branching units, amplifiers, etc. Cable End Modules (CEMs) terminate a fiber cable descending from a platform to seabed equipment using our patented wet-mate connectors. Nexans’ unique software dynamically positions cables in the North Sea for platforms and FPSOs according to currents, waves and movement. For Statoil, we connected environmental sensors to monitor infrastructure evolution, combining both active and passive terminations.

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 receiving terminals. Super-sized 65 cm Cryodyne® lines now make it possible to increase transfer capacity nine times. 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.

ICEFLEX™ cables for rigs, platforms and FPSOs
This marine energy cable, available in both rubber and thermoplastic versions remains highly flexible at extremely low temperatures (-50°C), while offering Halogen-Free Flame (or Fire)-Retardant/HFFR protection. Responding to a request from the Russian oil and gas market, Nexans developed a cable suited to all exploration, extraction and transportation applications in ultra-cold conditions. It neither cracks nor breaks during vibration, operational stress or iceberg impact, and also resists atmospheric agents (ozone, UV).
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, complete turnkey systems and extensive services. 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, 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, maintenance and recycling.

INNOVATION
We are constantly innovating to support your oil and gas activities. We are improving umbilicals, extending distances and depths for energy and telecom cables, and increasing the flow of information between wells, platforms, and onshore control centers. We are leaders in fire safety, direct electrical-heating, and power umbilicals.
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, building and Local Area Network markets. Nexans addresses a series of market segments: from energy, transport and telecom networks to shipbuilding, oil and gas, nuclear power, automobiles, electronics, aeronautics, material handling and automation. Nexans is a responsible industrial company that regards sustainable development as integral to its global and operational strategy. Continuous innovation in products, solutions and services, employee development and engagement, and the introduction of safe industrial processes with limited environmental impact are among the key initiatives that place Nexans at the core of a sustainable future. With an industrial presence in 39 countries and commercial activities worldwide, Nexans employs 22,700 people and had sales in 2009 of 5 billion euros. Nexans is listed on NYSE Euronext Paris, compartment A.