

**N**exans



---

**Turnkey cable solutions  
to ensure the reliability of your power network**

# New power perspectives

Worldwide electricity consumption is increasing 2.4% annually, with Asia increasing by 3.7%. However, there are still 1.6 billion people in the world without electricity, and this could reach 2 billion by 2020. For decades, there has been heated discussion about the cheapest, most efficient and safest way of producing electricity. In the wake of blackouts, there is also growing concern about transmission and distribution. Infrastructure reliability and grid interconnectability are now seen as the keys to a sustainable supply of electrical power.

Developing nations are rapidly “electrifying,” while developed ones are integrating their networks, often continentally. The fuel of choice has been shifting from coal and oil to cleaner burning natural gas. Massive windfarms are underway, hydro electricity is expanding, and nuclear sites are being upgraded. All players want to secure sources of supply, improve reliability and efficiency, and assure environmental protection.

## What power utilities expect from cable manufacturers:

- Advanced knowledge of all power plant types, and their cabling needs
- Full range of quality transmission and distribution cables and accessories
- Innovative products and solutions contributing to value-creation for power utilities
- Turnkey capability for high-voltage links underground, submarine and aerial
- Advanced data and telecom cables (broadband) for control and grid management
- Ability to transport, deliver, install, and maintain anywhere in the world
- Environmental responsibility, including recycling



# Nexans helps you meet your network challenges: aerial, underground, and submarine



Nexans contributes to ensure the reliability and efficiency of many of the world's power generation and transmission/distribution networks. Our expertise ranges from securing steady supplies of copper and aluminum to designing high-performance products, providing installation and training support, and helping our clients to recycle safely and efficiently. Our energy and telecommunications cables and accessories are serving thermal and gas plants, hydro-electric installations and windfarms; and we are Nuclear Qualified for all types of reactors. Our local, national and international grid solutions include all technologies. Not only do we help customers design their plants and networks, we are also installation experts in all environments, using our own ROVs to lay HVAC/HVDC transmission lines on the seabed. Our innovations include high-capacity overhead and extra-high-voltage cables, and superconductivity. We have a full range of accessories, from 1 to 525 kV.

## **Nexans expertise for reliability and efficiency:**

- Mastery of aerial, underground and submarine environments
- Global expertise, from renewal of mature networks to electrification of slums and rural areas
- Added-value, with power and telecommunications often combined in a single cable: e.g. Axlight
- Advanced R&D for superconductivity underground, composite materials for aerial lines
- Reliable delivery through dedicated logistics, and plant capacity worldwide
- Unsurpassed installation experience, using advanced equipment and software
- Complete range of purpose-designed splices, terminations, transition joints
- Compliance with IEC, NF, BS, CENELEC, CSA, ASTM, EDF, ICEA, etc.
- Training for cable operators, maintenance personnel, HV joiners
- Close partnership with power utilities, independent systems operators (ISOs), engineering procurement and construction companies (EPCs), installers and subcontractors



# A full range of generation, transmission, distribution cables and services...

## Extra-high-voltage cables and superconductivity

Our EHV cables can carry 500 kV; cryogenic cables cooled by liquid nitrogen allow more current to be transmitted in reduced cable diameters.

*Nexans is supplying a 138 kV superconductive system (qualified to 161 kV) for the Long Island Power Authority (USA) which is the world's first superconductive link on an existing grid.*

## High-voltage DC cables

Mass-impregnated HVDC cables can deliver high power capacity over long distances, especially in submarine installations.

*Nexans is supplying the worldwide longest HVDC submarine cable link (580 km) to connect Norway to the Netherlands.*

## XLPE high-voltage cables

Originally designed for underground HV transmission, these cables are rapidly replacing fluid-filled cables undersea, as well.

*For the Ormen Lange ("Long Serpent") field, Nexans is delivering the world's first 420 kV XLPE submarine cable to replace fluid-filled cables.*

## Overhead lines

Aluminum conductor, steel or composite reinforced, all aluminum alloy conductors, and other overhead conductors. New thermo-resistant conductors operate up to 220°C without increasing sag, and reducing tension on towers. Nexans has also developed a new generation of insulated aerial lines.

*Nexans provides an increasing number of power utilities worldwide with high temperature HV conductors, which allow higher transmission capacities compared to traditional conductors. Also, to prevent the theft of electricity in Argentina and Brazil, Nexans designed a concentric "anti-robbery" cable which has allowed power utilities to recoup 15% of lost output.*

## XLPE medium-voltage cables

Widely used by power utilities in developed and developing countries, these reliable aluminum or copper cables provide practical solutions to most network problems.

*Nexans provided MV submarine interconnections between 80 turbines and the central transformer in the world's largest offshore windpark: Horns Rev, Denmark.*

## MV and HV accessories

All types of connectors and plugs for bare and insulated cables. We produce insulated connectors for distribution and transmission equipment (transformers, switches), as well as cable joints and terminations.

*To maintain and repair existing networks, a new, reliable transition joint was launched at RWE in Germany, as well as a temporary quick repair joint for EDF in France.*

## Low-voltage underground cables and accessories

For plant applications, and subscriber distribution. Accessories include LV cabinets and straight and branch joints.

*The Danish power company Syd Energi installed 450 km of Nexans Axlight-O cables to modernize and expand their MV network. Extremely reliable, this directly-buriable cable contains up to 72 micro optical cables for communications.*

## Aerial Bundled Conductors (ABCs)

0.6/1 kV XLPE aluminum-alloy core cables used for both network and residential connections; the latter can have one or two copper conductor(s) for monitoring purposes.

*Thousands of km of Nexans' ABCs are being installed by the power utility, Tatenergo, in the Republic of Tatarstan under a 5-year contract. This cable is also being widely used in many other countries.*



### Local and Wide Area Networks

to assure power plant and infrastructure security



### Power, control, instrumentation, fieldbus, compensation and coaxial cables (HFFR)

to control power plant pumps, motors, relays, valves and provide video surveillance



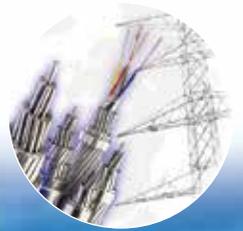
**Fiber optic data cables and accessories** (and OPGWs) for plant management, control and communications



**XLPE medium-voltage cables** for energy transmission (up to 60 kV)



**XLPE high-voltage cables** for aerial, underground and undersea energy transmission



**Overhead lines** (aluminum or aluminum alloys) for HV energy transmission



**Cable installation software** for aerial conductor positioning



**High-voltage DC cables** (mass-impregnated) to deliver high power capacity over long distances



**Aerial Bundled Conductors (ABCs)** for network and residential connections



**Low-voltage underground cables and LV accessories** for plant applications and subscriber distribution



**Medium- and high-voltage accessories** for distribution and transmission equipment

...to optimize your network efficiency



**Special laying ships and ROVs**  
for submarine cable laying,  
trenching and back-filling

**Power, control, instrumentation, fieldbus, compensation and coaxial cables**

These critical cables control power plant pumps, motors, relays, valves, and provide video surveillance.

*Nexans supplied all types of power, control and instrumentation cables for the Ling Ao reactors (China – prime contractor: Framatome); the Lungmen reactors (Taiwan – prime contractor: General Electric); the Cernavoda and Qinshan reactors (Romania and China – prime contractor: AECLA); and the Tianwan reactors (China – prime contractor: ASE) for instance.*

**Fiber optic data cables and accessories**

Optical fibers are often used for plant management, control and communications; they can also be integrated into XLPE, or aerial Optical Ground Wires (OPGWs).

*For the island of Smøla (Norway) windfarm, Nexans designed and installed a composite 145 kV three-phase AC high-voltage cable and fiber optic communications and control cables. For a connection between Spain and Morocco, Nexans provided a fiber optic submarine cable for control and telecom services.*

**Local and Wide Area Networks**

To assure power plant and infrastructure security, Nexans has both advanced fiber and copper LANs/WANs solutions.

*The kind of data speeds achievable means that power utilities can now plan a decade ahead without expensive retrofitting.*

**Cable design and installation software**

To optimize networks in challenging environments, Nexans uses sophisticated design and installation software.

*CAD software is used to design aerial lines according to conductor type, terrain, tower position, span and weather conditions.*

*In Norway, our custom-designed software takes into account waves and currents to hang cables dynamically offshore, saving expensive on-site mechanical testing*

**Special laying ships and ROVs**

Special cable-laying vessels, trenchers and excavators are guided via a Global Position System (GPS) for secure seabed touchdown and burying.

*Nexans' CAPJET Remote Operated Vehicles which position, trench and back-fill cables to protect them from anchors and trawlers, have buried over 3,500 km of cables worldwide (as deep as 3 meters).*



**Extra-high-voltage and superconductivity**  
to allow more current to be carried  
in reduced cable diameters

## Services to meet your power goals

### **Global expertise**

Over many decades, Nexans has accumulated expertise in aerial, underground, and submarine energy/telecom cables, accessories and installations. We understand the overall energy context, from power generation to transmission and distribution within national and international grids.

### **Local presence**

Being pre-qualified in many countries around the world, we are well-positioned to take on multi-supplier projects and international joint ventures. We can even count on our local production plants to provide power utilities with needed cable on the spot.

### **Technical leadership**

Given the fluctuating nature of multiple energy sources, we seek innovative ways to reinforce the reliability and efficiency of power production, storage, transmission and distribution. Our tested and durable accessories play an important role in preventing power shortages and blackouts.





Global expert in cables and cabling systems

As a worldwide leading expert in the cable industry, Nexans, an energy focused company, provides best-in-class cable solutions to customers operating in five key sectors: energy infrastructures, energy resources, transportation, communication and building. Committed to customer satisfaction, the Group keeps focusing on innovation and investing for industrial and operational excellence. Environmentally aware, Nexans is dedicated to sustainable development in production, energy efficiency, waste reduction and recycling. With an industrial presence in 40 countries and commercial activities worldwide, Nexans employs 23,700 people and had sales in 2010 of more than 6 billion euros. Nexans is listed on NYSE Euronext Paris, compartment A.

Nexans S.A. – 8, rue du Général Foy – 75008 Paris – France  
Tel.: +33 (0)1 73 23 84 00 – Fax: + 33 (0)1 73 23 86 38 – [www.nexans.com/power](http://www.nexans.com/power)  
[marcom.info@nexans.com](mailto:marcom.info@nexans.com)