

**N**exans



**Innovative cabling solutions  
to increase your profitability**

# Cost-efficient automotive cabling

## Ecology

Because you and your customers are concerned with pollution and fuel-efficiency, Nexans is providing environmentally-friendly solutions at all levels. Smaller, lighter cables mean overall weight reduction and thus lower fuel costs. Hybrid and electric vehicles call for flexible cables with high electro-magnetic compatibility (EMC). Halogen-free, fire-retardant (HFFR) cables are far safer and easier to recycle, while meeting new ecological norms.

## Economy

The high price of copper has led you to seek cheaper alternatives for automotive cabling. Nexans' copper-clad steel or aluminum cables and new alloys help to reduce costs, while higher temperature insulations allow smaller, optimized cross-sections. The mechanical strength of Nexans cables means that small diameters can now move from 0.5 mm to 0.22 mm. Replacing fluoropolymers with cross-linked insulations also achieves important savings.

## Emerging zones

To meet your international needs, Nexans can deliver or manufacture its products nearly anywhere in the world. Aside from special cables produced locally for established automakers in Sweden, Germany and France, we also manufacture PVC and even high-end products in Morocco, Romania, and Korea. And we are creating a new plant in Russia. In fact, we are ready to follow our customers wherever they want to produce.

## Expertise in metallurgy

To provide you with a steady source of automotive wires and cables, Nexans has integrated its entire metallurgical supply chain: from the provisioning of raw materials and advanced research in metals/alloys to cable finishing and recycling. Nexans processes some 600,000 metric tons of copper and 200,000 of aluminum yearly. We recently purchased two aluminum factories in Australia and three in South America to keep up with increasing demand.



Battery cables



Sensor wires



# Car equipment manufacturers are driven to expect...

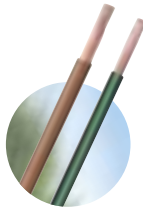
As an automaker or first-tier supplier, you are concerned with new developments in the automotive cable market: the rising price of copper and the effect it has had on construction costs; the need for more environmental-friendly products, including halogen-free cables and high-temperature solutions to deal with heat in confined spaces; new hybrid and electric car requirements; and the migration of your factories to emerging zones. Also, you increasingly need high value-added cable products.

Nexans manufactures a wide range of special automotive cables, including light-weight aluminum or alloy, high-temperature, and halogen-free versions, in addition to economically-priced standard cables. Our innovations and expertise have won the approval of major manufacturers, and we are presently serving the industry in places like Romania, Morocco, Poland, the Czech Republic, Russia, Brazil, Korea and India.

Our vertically-integrated metallurgy division guarantees a steady supply of metals, while our knowledge of car-specific insulations is unsurpassed in the automotive industry. As energy and data cable specialists, we are also on the leading edge of all new types of propulsion: hybrid, fuel-cell powered, and all-electric vehicles.



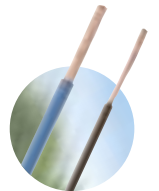
From conventional cars...  
to new hybrids...  
and electric vehicles...



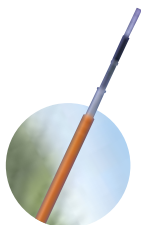
Singlecore cables



Multicore cables



High-temperature cables



Hybrid and electric car, bus and truck cables



Cables for driver systems



...  nexans is everywhere you need a cable

# Reliable cable solutions for a high-speed industry

## STANDARD CABLES

### Singlecore cables

From 0.22 mm<sup>2</sup> to 6 mm<sup>2</sup> and from class A to F according to ISO 6722 (85°C to 250°C), these copper cables are available with relevant insulations. We also have class B to D (105°C to 150°C) halogen-free, fire-retardant (HFFR) solutions to meet future regulations.

*Nexans provides 105°C class cables to first-tier suppliers Lear Corporation and SEWS-Cabind, while supplying PVC cables for Dacia/Renault's Logan in Romania, Morocco and Russia, and high-temperature cables for Daimler Trucks.*



**Battery cables**

### Multicore cables

For ABS and airbags, these cables come in a full range of materials, cross-sections and cores.

*Cables used by many truck manufacturers have a double insulation (instead of corrugated tubes) to provide enhanced vibration resistance and to meet ADR (hazardous goods transport) regulations.*

### Battery cables

From 10 mm<sup>2</sup> to 100 mm<sup>2</sup> for various temperature classes. Because of weight constraints, we are working on future aluminum versions, and have developed a new generation of highly-flexible cables for OEMs to make installation and maintenance easier in tight spaces.

*Heavy-duty double-insulated battery cables are provided to Delphi and Durapart industries AS for Volvo. Halogen-free solutions are available for class B to D categories.*

## SPECIAL CABLES

### Sensor wires

Simple to complex designs are available with integrated energy and data for ABS, gear boxes and oxygen sensors.

*We are primarily supplying ABS wires for the truck market, including the main players, such as Daimler Trucks, Scania and Volvo.*

### Hybrid and electric car, bus and truck cables

Flexible singlecore and multicore power cables for high-voltage applications (600 to 1,000 volts), available in all temperature categories (to over 200°C) with EMC screening; also in halogen-free, fire-resistant (HFFR) insulations (up to 150°C).

*Nexans has provided different solutions for prototypes of new hybrid/electric vehicles, and is participating in various projects with European and Asian OEMs.*

### Cables for driver systems

Databus and coaxial cables used for rear-bumper cameras, motion detectors and panoramic automotive radar.

*A growing trend among French OEMs, our coaxial cables are currently being used on Volkswagen cars, as well.*

### High-temperature cables


Multicore and singlecore cables for hot engine compartments and exhaust systems. Advanced insulations, including FEP (Fluorinated Ethylene Propylene), and PTFE (Polytetrafluoroethylene) allow these cables to survive temperatures up to 300°C, providing safety and functionality, for example in oxygen sensors which are increasingly important due to exhaust regulations.

*Nexans supplies first-tier suppliers such as Bosch and Delphi with PTFE insulated wires which are used by all major OEMs. A halogen-free, fire-resistant (HFFR) insulation has now been developed for class D applications (up to 150°C) for both singlecore and multicore.*



**Sensor wires**





Nexans  
automotive  
breakthroughs

- Advanced halogen-free insulations
- High-temperature, irradiated or silane-crosslinked XLPE engine cables
- Polyurethane and PVC for trucks transporting dangerous materials
- Flexible power cables for high-voltage hybrid and electric vehicles
- Heavy-duty sensor cables used in ABS

## INNOVATION is at the core of our products

Nexans has automotive teams at our research center in Lyon (France) and Nuremberg (Germany), and a Metallurgy Center in Lens (France). They draw on the collective knowledge of the 600

researchers and engineers group-wide. Our metallurgy experts are continuing to experiment with new, lighter, cheaper and more efficient alloys, while our chemists are doing groundbreaking

work for insulations, in areas like flame-retardant, halogen-free compounds, high temperature resistance, fluoropolymers, cross-linking, etc.



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 building and Local Area Network markets. Nexans addresses a series of market segments: from energy, transport and telecom networks to shipbuilding, oil & 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 22,000 people and had sales in 2007 of 7.4 billion euros. Nexans is listed on Euronext Paris, compartment A.