

COMPANY BROCHURE  
NEXANS DEUTSCHLAND GMBH



# Cables and cabling solutions

As a globally active company in the cable industry, Nexans puts energy at the center of its business and offers a comprehensive range of cables and cable system solutions. By offering innovative, high-quality products, we are creating added value for our business customers and end users in the private sector through increased productivity, greater security, more stable networks and improved quality of life. Our focus is on the sectors energy infrastructure, industry, building and local data networks. In addition, we are developing solutions for energy, transmission and telecommunications

networks, petrochemistry, the automotive industry, railway applications, ships, aeroplane construction, the electronics industry and the fields of handling and automation.

## SUPPORTING INTERNATIONAL MARKETS

Our customers operate in globalized markets and need to act quickly. This is why we offer them an identical cable and service range worldwide. Regardless of the country in which an energy group, network operator or machine manufacturer is based, it has access to an uniform product range and can

be sure that its needs will be met in compliance with national and international standards. This is important, especially for the ever more complex projects in the infrastructure and energy sectors.

## GLOBAL PLAYER FROM GERMANY

The Nexans Group, which is active around the globe, is represented in 40 countries with 26,000 employees, and in 2016 generated sales of nearly € 5,8 billion. The company, which is listed on the NYSE Euronext in Paris, generated around half of its sales in Europe.

Nexans Deutschland is a subgroup of the French Nexans S.A. group and is represented in nine locations. With an extensive portfolio of wires, cables and cable solutions, around 11,000 employees from Nexans Deutschland achieved sales of one billion € in 2016. Development, production and manufacturing is carried out in Mönchengladbach, Nuremberg and Hanover, the location of the German company headquarters. Three subsidiaries – Nexans Metallurgie Deutschland (Bramsche and Neunburg vorm Wald), Nexans Power Accessories Germany (Hof) and



Corporate Social Responsibility (CSR) is a given for Nexans – and we take our responsibility seriously at many different levels. For example, Nexans is a member of the Global Compact of the United Nations and therefore adheres to the ten basic principles in the areas of human rights, labour standards, environmental protection and the fight against corruption. The Group thus undertakes to actively implement these principles on a daily basis, including by requiring its vendors and business partners to comply with minimum social and ecological standards.





Hannover plant

Nexans autoelectric (Floß) – round off the product range with innovative high-tech developments or tried-and-tested mounting accessories. True to our focus on market areas, our German and European customers receive the full range of cable solutions from Nexans, such as high-capacity cables, systems and components

for the telecommunications and energy sectors. They also benefit from superconducting materials and components, liquid gas transfer systems and special machines for the cable industry. Thanks to its close integration with the Nexans Group, Nexans Deutschland utilises synergies in all areas of the Group. This applies to global projects as much

as it does to R&D and the exchange of expertise. In addition, the Hanover location in the Machines & Cryogenic Systems unit is the only location that produces state-of-the-art special-purpose machines for metallic cable sheathing and the production of longitudinal seam-welded tubes, as well as flexible and highly flexible cable systems for cold liquefied

gases in the temperature range between  $-160\text{ }^{\circ}\text{C}$  and  $-269\text{ }^{\circ}\text{C}$  for the global market. In addition, the Machines & Automation unit at our location in Hanover is the only location that produces state-of-the-art, special-purpose machines for metallic cable sheathing and the production of longitudinal seam-welded tubes for the global market.



Nexans Deutschland is constantly evolving with more and more new requirements for quality, innovation and projects. This makes us the agile, learning organisation that we are today, which consistently adapts to the needs of its customers. This includes bridging the gap between tradition and future, sustainably and transparently supporting change based on our values and enabling the necessary cultural change. Bit by bit, we are getting closer to this objective. At the same time, significant changes are being made with regard to structures, processes and cross-location cooperation. For us, the corresponding support provided on an equal footing, the injection of new impulses and the development of employees in a focused process are the key tasks of the Human Resource Management department at Nexans Deutschland GmbH.



# Innovations with commitment

To Nexans, proximity to the customer means being in close dialog with the users of its products. This allows us to quickly identify new ways of increasing their competitiveness and helping them to maintain their competitive position with high-performance, sustainable and economical cable solutions. It also means knowing how we can face future challenges on the market together. Nexans Deutschland therefore subjects its products and services to a constant process of innovation. After all, quality is not a finished state, but a goal that needs to be achieved afresh every time.



## RESEARCHING FOR INNOVATIONS

Instead of resting on their laurels, the approximately 600 engineers and technicians employed in R&D at Nexans are continuously working on developing new products



and refining existing solutions. In four research centers in Nuremberg (Germany), Lyon, Lens (France) and Jincheon (Korea) and three application centers, we are constantly searching for new ways of increasing the performance and security of our cables and ensuring that they can be adapted in line with specific potential applications. The economic viability of future applications is a top priority here.

Nexans engineers conduct research in the following areas:

- Polymers and processes for power cables
- Technology for medium- and high-voltage cables
- Connection technology and power cable fittings for large cable cross-sections
- Systems with high-temperature superconductors
- Cables for building technology

But before ideas such as a fire-retardant cable sheath or a superconductive cable become usable and economically viable products, they have to undergo rigorous testing. Only once they have passed the various test runs – such as torsion, fire or high voltage tests – are they tested in the field. Once the new products have overcome this hurdle too, they are added to the Nexans product catalogue.



## GOETHE UNIVERSITY IN FRANKFURT AM MAIN CONNECTED WITH ACTIVE LAN FTTO

With approximately 41,000 students and 500 professors, Goethe University in Frankfurt am Main is one of the five biggest universities in Germany. The 16 departments offering a total of 170 courses are spread across several areas: the Bockenheim campus, the Riedberg campus, the Westend campus with the House of Finance and the lecture hall centre, and the Niederrad campus.

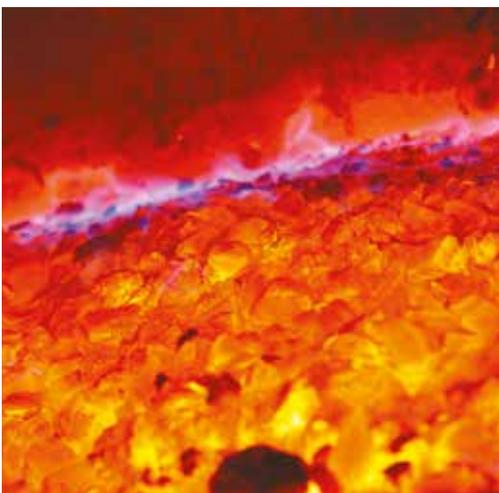
As an IT skills and services centre, the university's computer centre operates the voice and data communication network, central IT services (e.g. e-mail, internet services, e-learning, file services and computer services) and the public computer systems in PC pool rooms. Due to the large distances and high security requirements, the only transmission medium considered to be suitable for the university campuses was fibre optics – together with intelligent FTTO system technology (Fibre to the Office) from Nexans. Now, over 7000 FTTO switches are in use at Goethe University. They not only ensure rapid data exchange but, thanks to Power over Ethernet, can also provide power to the connected VoIP telephones, for example.



## AUTOMATION CABLES FOR HIGH TEMPERATURES AND CABLES FOR FAST DATA TRANSFER

The new, heat-resistant **MOTIONLINE®** cables for drag chains are proof of how the expertise of the development team is constantly opening up new application areas. While most drag chain cables can only withstand ambient temperatures up to 80 °C, these cables work effectively up to ambient temperatures of 125 °C, making them suitable for use in the glass industry as well as metal and plastics processing. For the insulation of the cable, Nexans has adapted a material from the automotive industry, which does not become brittle at high temperatures and also has a similar level of resistance to abrasion, oil and chemicals as polyurethane. In addition, the material is flexible, making it ideally suited to dynamic application in drag chains.

Users wanting maximum data rates would be well advised to use the **MOTIONLINE® CAT7** Ethernet cables, which provide 10 gigabit Ethernet capability for demanding drag chain operations. **MOTIONLINE® CAT7** cables can also withstand harsh industrial environments, including oil and chemicals, as well as being halogen-free, flame-retardant and highly abrasion-resistant. With a maximum signal frequency of 600 megahertz, these cables are perfect for connecting devices such as high-resolution, high-speed cameras for process monitoring and quality assurance.



## “RED GOLD” – COPPER WIRE ROD

With its special property profile, copper has become indispensable as a modern material. Copper is the first choice when it comes to very high electrical or thermal conductivity, along with optimum suitability for deformation. The “red gold” also offers outstanding corrosion resistance and recycling properties. Following refinement, a certain proportion of the copper produced globally is upgraded

to create copper wire rod. This rod is the ideal primary material for further processing by means of drawing, rolling or other manufacturing processes; even here, copper can demonstrate its unique properties. The Nexans metallurgy plant in Bramsche also produces oxygen-free copper, which possesses optimized electrical and mechanical properties.



## NEXANS CABLES FOR CLEAN PORTS

Thanks to Nexans' hybrid ship-to-shore cables, ships in port can switch off their machines and be supplied via a local power grid connection so that they can use their AMP (Alternative Maritime Power) systems. The cable also offers an integrated data and telecommunication connection. This results in lower greenhouse gas emissions during stays in port, considerable noise reduction and great savings in fuel costs.



## NEXANS RHEY-RAIL®: SPECIALLY DESIGNED TO THWART THIEVES

Cable theft is a global problem that affects the railway network in particular, where railway earthing cables are the preferred plunder due to their high copper content. The risk of being caught red-handed is slim because the theft of these cables does not cause immediate disruption. As a preventative measure, priority was previously given to alternative conductor materials with a low scrap value. The disadvantage of this, however, is that these materials are not compatible with the NYY-O earthing standard. This means that installation engineers need to have a supply of additional special cable lugs as well as bending and pressing tools, all

of which they have to take along with them. Theft-proof Nexans RHEYRAIL® earthing cable puts an end to this.

The material mix of copper and steel used in the conductor reduces the scrap value to that of alternative conductor materials without resulting in a loss of compatibility. The long-established cable lug certified in accordance with DIN 46235 can be used as normal. High flexibility and dimensional stability makes installation easy and familiar, even at low temperatures. Nexans RHEYRAIL® earthing cable has been granted type approval by the German Federal Railway Authority. The function, compatibility and, in particular, the anti-theft protection were successfully demonstrated in a two-year field test.

Based on the approach of using a suitable material mix that maintains compatibility, with RHEYRAIL® PRL Nexans developed a return conductor cable for the 750 V DC traction power supply grid of the S-Bahn in Berlin. The large copper cross-section of 500 mm<sup>2</sup> made it necessary to supplement the

passive protection offered by the material mix with the option of active protection provided by monitoring wires.

The monitoring wires are integrated in the conductor and provided with extra protection from double steel taping. This means that tampering with them requires so much effort that it can largely be ruled out.

To be able to make use of all the benefits provided

by the monitoring wires of RHEYRAIL® PRL, together with Witt Industrieelektronik, Nexans has developed a monitoring device, which is compatible with the RHEYRAIL® PRL cable. This means that, in addition to rapid fault detection and precise location detection, this monitoring device can also reliably detect any attempts to tamper with the monitoring wires, therefore significantly improving anti-theft monitoring.

## TEMPORARY SITE CABLES REDUCE DISCONNECTION TIMES

Temporary site cables are custom-made, quick-connect cables for use on the high-voltage grid, for example, in conversions on overhead lines or in transformer stations. They have a similar design to high-voltage cables. However, the insulation thickness and, therefore, the outer diameter and weight are reduced thanks to the use of a high-purity insulation material. As a result, temporary site cables are easy to handle on construction sites and quick to connect.

Temporary site cables are not only suitable for the temporary supply of power during scheduled conversion works in transformer stations or as an alternative to temporary overhead line installation – as a tested and reliable piece of operating equipment, they can also be used in all weathers, during emergencies or disruptions caused by storm damage, for example. Temporary site cables from Nexans help minimise power outages and restore the power supply in the event of overhead line damage as soon as possible.



## DONG USES NEXANS SUB-MARINE CABLES TO CONNECT OFFSHORE WIND FARM HORNSEA PROJECT ONE

Danish company DONG Energy Wind Power A/S has once again used Nexans submarine cables to connect its Hornsea Project One wind farm off the Yorkshire coast. The company commissioned the supply and installation of 139 km of three-phase submarine cable for the cabling of the first of three construction phases for the gigantic wind farm. The 34 kV cables connect the 58 wind turbines to each other and then connect them to an offshore substation. The first construction phase of the wind farm



is expected to go into operation in 2019 with an output of 406 MW. Later, all three construction phases together will generate an output of 1.2 GW, which is enough to cover

the electricity demand of at least one million households. This will make Hornsea Project One the biggest offshore wind farm in the world.

The wind farm is located in depths of 20 to 40 metres, approximately 120 km off the coast of the British Isles. For the first time in such a project, the installation team from Nexans will sleep on board a supply vessel in the vicinity of the project and work in an adapted shift rotation so that they do not have to cover this large distance every day.

## COLLABORATION FOR GREATER SERVICE IN THE MINING AND TUNNELLING SECTOR

Nexans Deutschland is collaborating with Becker & Hüser GmbH (B&H) to provide customers in the mining and tunnelling sector with a wide range of repair services and complete solutions. The company, which is headquartered in Sonsbeck (North Rhine-Westphalia), has developed special repair techniques for cables, lines and fibre optic cables and open pit and underground mines. Different repair methods are used depending on requirements regarding the mechanical load-bearing capacity and flexibility of the cables and lines.

The collaboration has proven its worth in several projects, a current example

being the Gemeinschaftskraftwerk Inn joint venture power plant. B&H carried out the splicing work to extend a reliable cable for the construction of the new run-of-river power plant on the Swiss-Austrian border. Furthermore, the company has produced the terminations mine power feeder cables for current tunnel construction projects, including the Semmering Base Tunnel – a railway tunnel between Gloggnitz and Mürzzuschlag in Austria and the construction of the Koralm Tunnel, which forms a key section of the new high-speed rail link between Graz and Klagenfurt.



## DID YOU KNOW THAT THE FOLLOWING CABLE LENGTHS ARE INSTALLED IN...



...a car:

**3 to 5 km**



...a 1500 square meter building:

**15 to 30 km**



...an offshore wind farm:

**1750 km**



...an airplane:

**650 km**



...a data center:

**75 km**



...an oil drilling platform:

**1500 km**



...a cruise ship:

**3000 km**

## THE WORLD'S LONGEST SUPER-CONDUCTIVE CABLE

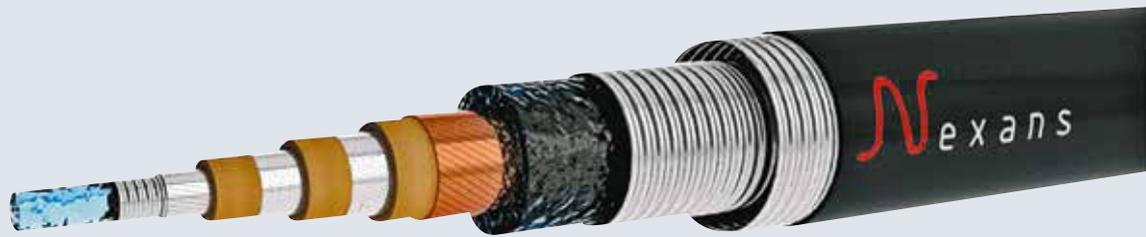
At its plant in Hanover, Nexans produced what is currently the world's longest superconductive cable, which was put into



operation in Essen's city centre in March 2014 as part of the „AmpaCity“ project by RWE and Nexans. The three-phase, concentric 10 kV cable, which is one kilometre long, connects two transformer stations and provides a transmission

capacity of 40 MW. This new technology, which has impressed with its reliability from the beginning, can be used in city centres in place of expensive high-voltage components, for example, therefore making the distribution networks more

effective and efficient. Both the superconductive cable and the superconductive current limiters used to protect against short-circuits are ready for the market and can be used cost-effectively as soon as positive secondary effects are created.



## QUICK AND COST-EFFECTIVE CABLING OF REGIONAL LINES

Until now, a variety of different cables for control and safety technology; the connection of electronic signal boxes; language, data and GSM-R services; and a low voltage supply have all been needed to equip regional railway lines with a modern and efficient infrastructure. These cables are laboriously laid in concrete troughs next to the track bed, which is a costly and time-consuming task. The all-in-one-system solution, DuoTrack®, from Nexans demonstrates that it is a quicker, easier, more efficient and, above all, safer option. With the DuoTrack® system, all the copper and fibre-optic cable services required for modern rail operation are integrated in one cable. Here, the key element is that the fibre-optic cable and copper

components of the DuoTrack® cable are firmly attached together so that they can be laid in one work step and connected to the rail so that they are theft-proof. If required, they can be separated to enable independent uncoupling of the copper or fibre-optic cable. Up to now, Deutsche Bahn has installed approximately 500 km of Nexans DuoTrack® in its regional network. This has been in operation for up to ten years without any faults, theft or vandalism damage. Nexans successfully confirmed the interest of foreign railway operators in DuoTrack® with a 20-km pilot project in Croatia (2014) and a test route in Hungary (2016). Planning has already begun on other export projects.

## DEDICATED TO HEALTH

Our products are also used in applied medicine, as many cannulas are based on small, stainless steel tubes, which are manufactured using our NanoWEMA® process. The process enables small tubes with diameters of 2 mm to 4 mm and a material thickness of less than 0.1 mm to be perfectly welded. Here, the latest laser technology ensures a smooth and durable weld seam.

Compared with conventional welding methods, a huge advantage of the laser system is its simple operation and low energy consumption. The laser is also two to three times faster and can weld a metre length of pipe in only three seconds.

The quality of the weld seams is monitored and their quality documented with the UNLitherm® system developed for NanoWEMA®. This means that cannula manufacturers and patients can rely on excellent primary products.





## NEXANS CONNECTS OFFSHORE WIND FARMS AT HIGHER VOLTAGES

Nexans is introducing new cables and power cable accessories to meet the growing demand caused by the development of wind farms with higher capacities. A new generation of outer cone accessories with interface type F has been developed. This includes EPDM tee connectors, coupling connectors and surge arresters for use in wind farms up to 72.5 kV.

To efficiently transmit the higher voltage between the individual turbines and collection platforms, Nexans has created intermediate area cable systems to convert up to 72.5 kV instead of the current 36 kV. Transformer and switching station manufacturers have similarly optimized their systems to meet the higher capacity requirements. As renewable energies are

becoming increasingly prevalent, the focus is shifting to the economic design of the grid structures. Nexans has now created a new general standard for connecting offshore wind farms up to 72.5 kV – the first standardized connection between accessories and equipment bushings with interface type F. Compared with traditional connection solutions, the new standard

offers many advantages including separable cable connections with single and multiple-cable arrangements as well as the combination with coupling connectors and surge arresters.

Nexans EUROMOLD® power cable accessories up to 170 kV are type tested in accordance with IEC 60840. All connector kits, terminations and joints include connecting contacts and conductor connectors up to 2,500 mm<sup>2</sup> that use the well-established GPH® mechanical connection technology, which is type tested as per IEC 61238-1. For 25 years, GPH® mechanical connectors and cable lugs have been used across cross-sections and materials to connect different types of aluminium and copper conductors. An innovative, patented shear-off-head bolt system ensures the connections are extremely durable and easy to install.



FOTO: © HENNING MOST, MEDIENGRUPPE THÜRINGER ALLGEMEINE

## MEDIUM-VOLTAGE CABLES WITH RECORD CROSS-SECTION FOR WESTERENGEL WIND FARM

Husum-based wind energy project developer WKN AG has chosen three single-phase 20 kV aluminium cables to connect the

Westerengel wind farm in Thuringia to the grid. The cables produced at the plant in Bourg-en-Bresse, France, have an enormous conductor

cross-section of 1,600 mm<sup>2</sup>, which is currently the largest cross-section produced for a Nexans medium-voltage cable. WKN chose such a large cable cross-section not only due to the high current of 700 A per cable. They have chosen it because it can cope with external heat loads coming from other cables on the same route. The cables are used for the low-loss transport of 23.1 MW of power from the seven Vestas V112 wind turbines along the 1.5 km route to the grid connection point.



# Reliable service around the clock



## **24-HOUR HOTLINE FOR HIGH-VOLTAGE CABLE SYSTEMS**

Competence and speed are important when it comes to modernise ageing energy networks or repairing faults in high-voltage systems. Nexans' premium hotline offers technical support for the rapid resolution of faults in energy networks, but also for preventive maintenance. The customer has direct contact to our high voltage experts 24/7, without having to go through a call center. And the availability of contractually guaranteed spare parts ensures fast delivery.

## **24/7 EMERGENCY REPAIR SERVICE FOR MINING**

Mining is a round-the-clock, not 9-to-5 job. The maximum availability of electrical mobile machines and devices is therefore essential. As part of a complete package available in many regions of the world, Nexans offers an emergency repair service around the clock, seven days a week. The service, which can be accessed via a special hotline, covers technical advice from experts and technical support, including sending experts to the site to repair faults and keep mining operations running.



This is not achieved simply by delivering Nexans' cable solutions to our customers – the service also needs to be right. At Nexans Deutschland, this begins as early as the planning and individual product development phase, and does not end with the 24-hour

## **INDIVIDUAL CABLE-CUTTING FOR MACHINE AND EQUIPMENT MANUFACTURERS**

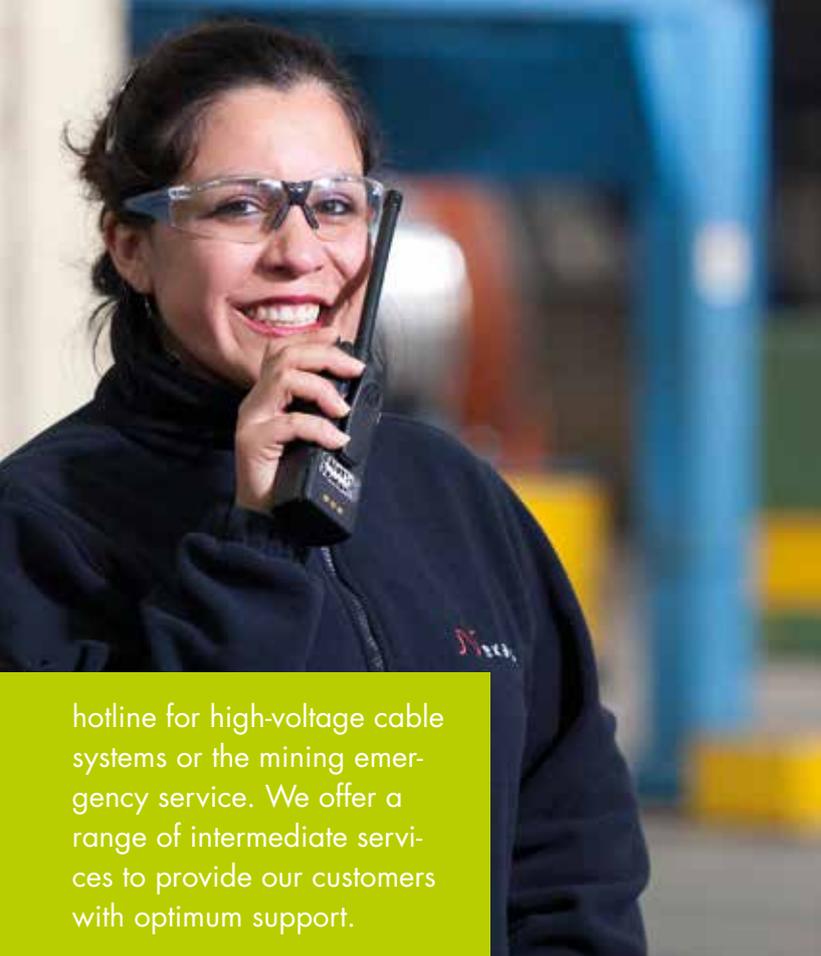
Nexans produces precision-cut cables for different machines and equipment, such as tool machines, and delivers them just in time. That way, our customers save time in the manufacturing process by not having to cut cables themselves.

## **CABLE SETS AND KITS FOR WIND TURBINES**

Nexans offers tailor-made, ready-cut and assembled cable sets and kits to help wind turbine manufacturers respond to requirements and deliver their products more quickly. This reduces inventory levels and simplifies the ordering process.

## **CROSS-DOCKING TO MAKE WORK EASIER FOR TRADE**

Nexans bundles the orders to help traders take account of customers' various requirements. For this, we offer last-minute commissioning for order completion, precision length-cutting upon request and separate paletting for every point of sale. Traders therefore save expensive warehouse space, require less working capital and have a faster stock turnover.



hotline for high-voltage cable systems or the mining emergency service. We offer a range of intermediate services to provide our customers with optimum support.

## CLOSELY ALIGNED TO THE MARKET

Nexans is a major player in the main European markets:

- Utilities & operators (power supply and telecommunications)
- Infrastructure and industry projects (onshore/offshore, power plants, railway networks, airports, mining)
- Industry
  - Transport: Railway vehicles, automotive, on-board devices/applications
  - Industrial applications: Automation, handling, mining
  - Renewable energy: Wind turbines, photovoltaic
  - Marine, mining, automation, wind power
- Distributors and installers

In addition to alignment to these target markets, the globally active, Germany-based business unit High Voltage and Underwater Cables (HVUC) oversees all activities related to high-voltage cables on land and underwater.

## VENDOR-MANAGED INVENTORY (VMI) IN CONSTRUCTION

Nexans' supply chain services are specifically tailored towards the needs of traders in the construction industry. Thanks to a vendor-managed inventory (VMI) for class A products, simplified cutting of class C products and individual packaging options depending on intended use (lengths, variants), customers can considerably reduce their logistics costs. This amounts to a reduction of around 20 percent in the working capital needed.

## KANBAN REFILLING OF CABLE REELS FOR RAILWAY OVERHEAD CABLES

A special Nexans department has been set up that is responsible for refilling the cable reels supplied by railway overhead cable manufacturers. A visual reporting system using a kanban approach is set up according to the definition of an article-based inventory concept (maximum/minimum). This procedure is based solely on the actual consumption of materials at the place of supply and use, which helps to significantly reduce the product inventory needed for production. The inventories of the relevant locations are also recorded on a daily basis, which means that follow-up deliveries can be ensured within 24 hours according to the refilling program.

## CABLE MANAGEMENT FOR TELECOMMUNICATIONS OPERATORS

Nexans has developed a special cable warehouse and logistics program for telecoms operators. It allows customers to ensure that their cable stocks are always available. In addition to simpler warehouse management, the customer's inventory can be reported directly to the vendor. The area used for warehousing can also be considerably reduced.

## FASTER AND EASY – CONNECTION OF OPTICAL FIBER CABLES

Nexans offers complete solutions making it easier to connect optical fiber cables in data centers and storage area networks (SAN). As a result, customers benefit from considerable time and cost savings.

## ONLINE INFORMATION SERVICE

Nexans' online information service allows customers to access their critical supply chain information quickly and securely at any time. That way they can find out the status of orders, delivery times and inventory levels for every product.



## Nexans

Nexans Germany is one of the leading cable manufacturers in Europe. The company is offering an extensive range of high performance cables, systems, and components for the telecommunications and energy sectors, rounded off by superconducting materials and components, Cryoflex transfer systems and special machinery for the cable industry. Producing at manufacturing plants in Germany and abroad. The full integration into the Nexans Group Nexans Germany also benefits from excellent opportunities to use the available synergies in all corporate fields, which not only applies to worldwide projects but also to research and development, the exchange of know how, and to other areas.

[www.nexans.de](http://www.nexans.de)