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**Catenaries for trains, tramways and light rail  
for security, strength, and proven performance**

# Nexans, worldwide leader in cables and cabling systems

As a global expert in cables and cabling systems, Nexans brings an extensive range of advanced copper and optical fiber solutions to three key sectors of the economy: **infrastructure, industry and buildings.**

Its cables and systems can be found in every area of people's lives, from rolling stock and railway infrastructure to telecommunications and energy networks, aeronautics, aerospace, automobiles,

petrochemicals, windmills, medical applications, etc.

The presence of Nexans in over 65 countries gives it a full mastery of both national and international standards. Its 10 Competence Centers and International Research Center work closely with customers to constantly improve its standard range of products and technologies and to develop customized, country and industry-specific solutions.



# Complete catenary systems to assure your infrastructure growth

The efficiency of any train system is dependent on an infrastructure which provides reliable energy for rolling stock, and data and telecommunications for train management and control. Whether for a tramway, subway or high-speed train, operators are anxious to streamline costs, future-proof their systems, upgrade customer services, and assure a high level of public safety.

Nexans produces a wide range of energy and telecommunication cables and components specifically adapted to the various rail environments, many with enhanced fire-performance characteristics. We also give expert advice about network architecture and evolving standards, and can provide customized engineering, installation and maintenance worldwide.

Whether it is for high-speed trains or mass transit vehicles, you expect a high coefficient of security for catenaries, meaning an ideal balance between electrical conductivity and mechanical resistance (breaking load). To maintain contact with the pantograph and avoid "creep" or sagging, contact wires must be tightly strung, and this requires exceptional stress resistance. Also, they must be compact, light, with minimal joints, and capable of operating under high temperatures (+ 140°C) without annealing which could produce dangerous breaks.

To help you achieve this, Nexans offers high-performance **catenary systems**.

## Catenaries

for trains, tramways,  
and light rail systems



# Catenaries for trains, tramways and light rail: tough and efficient for secure train movement



Nexans' full range of copper-alloy contact wires guarantee that wear resistance matches network parameters: train type, frequency, outside temperatures and national standards. Equally efficient messenger wires (which support the contact wires) come in two families: larger pure copper, or smaller copper-alloy for "light" catenary systems. Finally, Nexans copper-alloy dropper wires guarantee the flexibility needed to handle millions of times a pantograph passes below it, producing violent cycles and vibrations.

## This Nexans solution gives you:

- **The right alloy** for the catenary application: main line, bullet trains, tramways, etc.
- **Full in-house metallurgical capability** for improved quality, and continuous innovation
- **Proven performance** with some of the world's major railways
- **High tensile strength and wear resistance**, meaning a high coefficient of security with a minimum of section
- **Improved electrical performance** according to design and copper-alloy used
- **Greater heat resistance**, meaning less risk of accidents from annealing and breaks
- **Continuous long runs** (1,500 meters) without joints for tighter spans
- **Low lineic resistance**, which means fewer copper feeders to boost line voltage
- **Minimal maintenance** and maximal life (20 years and more)
- **Easy recycling** since copper alloys containing silver, tin and magnesium are not toxic



## Nexans electrifies Chinese Tianjin Binhai light transit line

When a new light transit line was being built between Tianjin and Binhai by Balfour Beatty Germany,

the China Railway Electrification Design Institute wanted the cable products quickly to meet tight deadlines. Nexans complied, delivering some 700 tons of copper products in record time. Seven different products were involved, with specifications according to the exacting German DIN standards.



# Catenaries for trains, tramways and light rail systems



Product families	Product family names	Standards / Specs
<b>Trolley wires</b>	<b>Contact wire or trolley wire</b>	<ul style="list-style-type: none"><li>• European standard (EN 50149), Japanese JIS, ASTM, Indian or Chinese spec.</li></ul>
<b>Bronze messengers</b>	<b>Messenger</b>	<ul style="list-style-type: none"><li>• National standards</li></ul>
<b>Bronze droppers</b>	<b>Dropper</b>	<ul style="list-style-type: none"><li>• National standards</li></ul>
<b>Conductors for catenaries</b>	<b>Feeder and earth wire</b>	<ul style="list-style-type: none"><li>• National standards</li></ul>



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