



---

**BUFLEX® X'PREM**  
**Boost the performance and durability**  
**of your cranes and gantries**

# BUFLEX® X'PREM for durability and high performance

**Nexans' new range of BUFLEX® X'PREM reeling cable is a polyurethane-sheathed energy cable which incorporates an innovative design to achieve exceptional long-term performance. It comes in two different categories:**

- **BUFLEX® X'PREM medium-voltage (6 to 20 kV):**

a "red" version for ports and freight terminals which contains 3 phase conductors and 3 earth conductors. One of the earths can be replaced by optical fibers for control, instrumentation, and data applications.

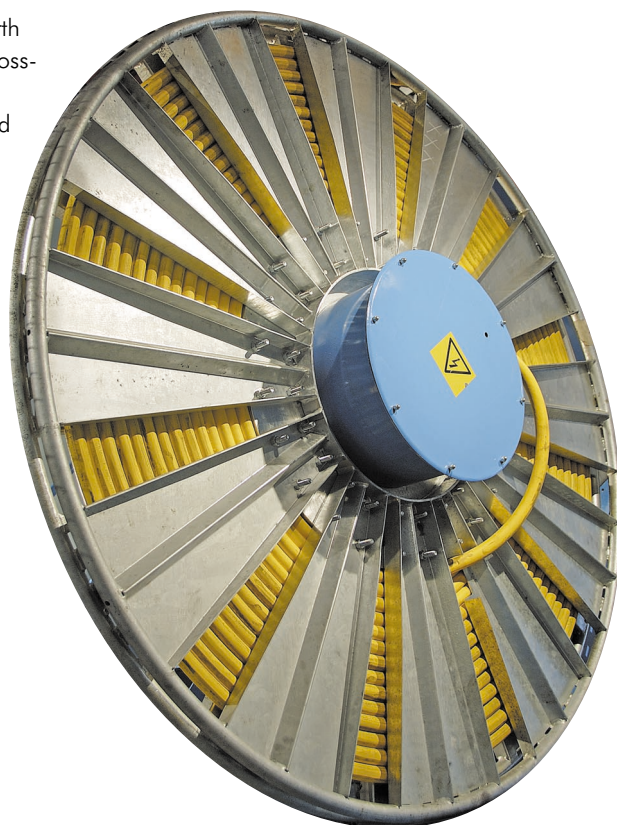
- **BUFLEX® X'PREM low-voltage (1 kV):**

a "yellow" version for the industrial market comes in a 3 phases plus 1 earth for sizes up to 16 mm<sup>2</sup>, and 3 phases plus 3 earth conductors for higher cross-section. Once again, an earth can be replaced by optical fibers.

All of the BUFLEX® X'PREM family are designed in order to eliminate wobbling and twisting, which are often the cause of cable degradation. Not only can this increase cable lifetime up to ten times and more, it allows OEMs to use smaller motorized reels to achieve equal or superior productivity. Also, databus and optical fibers can be integrated within the cable for enhanced control functions.

**Benefits:**

- **Extended life**  
cables last up to 10 times longer on test bench
- **Durability**  
even under severe operating conditions
- **High speed**  
up to 150 meters/minute
- **Rapid acceleration**  
0.3 m/s<sup>2</sup>, from zero to full speed in 8 seconds
- **High tensile load**  
up to 25 N/mm<sup>2</sup> cross-section area
- **Lighter and smaller**  
compared to standard rubber cables
- **High reliability, less maintenance**  
for lower operating costs
- **Advanced control solutions**  
by combining power supply with optical fibers



# Large crane efficiency depends on reliable cables

Material handling is a booming industry worldwide, with global handling equipment demand projected to expand by 4.5% annually through 2010 to some \$117 billion. This growth is driven by a number of factors which include the quadrupling of world trade over the past three decades, and the continuing expansion of Asian and other economies.

Large cranes and gantries are the backbones of steel mills and thermal power plants. These giants also serve the world's superports and intermodal freight hubs.

- As a port/hub authority (or their consultant), you want your cranes to be extremely reliable, with high performance and long life so as to reduce the risk of cargo congestion and costly flow stoppages.
- As a crane manufacturer you would like to support your customers' needs by offering a complete range of innovative equipment, in addition to providing high service levels that include rapid delivery and technical support.

**Nexans' innovative BUFLEX® X'PREM energy cables satisfy both sets of demands by boosting performance, durability and efficiency and reducing unit operating costs over a lifetime.**

Nexans' global offer for material handling is broad and adapted to specific needs. Our cables are lighter and thinner than standard cables, thus reducing the total weight of the reel, and saving money for a complete handling system. Also, these specialized cables usually offer higher tensile strength, ensuring a long life cycle, adding safety for goods and personnel, and maintaining freight flow continuity around-the-clock.

Large cranes have been strained to their limits by larger ships (post-Panamax container vessels/bulk carriers), the dramatic increase in air cargo, and the steady growth of rail freight worldwide.

Infrastructure must expand to accommodate higher container volumes, assure the rapid turnaround of carriers, and accomplish a seamless interchange of goods to various modes of inland transportation.

Gantries and Ship-to-Shore cranes play a key role in this upgrade. They must move faster, both vertically and horizontally over extended periods of time. High velocity puts a great strain on cables in terms of flexibility, durability, tension, torque and overall wear and tear.

**Nexans BUFLEX® X'PREM energy cables meet the challenges of greater bulk, higher speeds and long term durability by optimizing cable structure and incorporating new materials to handle the toughest operating conditions.**



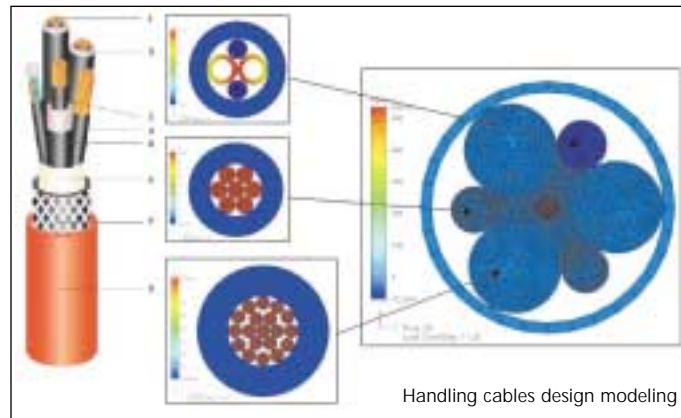
# Simulation and testing for optimum reliability

## Dynamic numerical analysis takes the stress out of new designs

Because cables for large cranes are constantly moving, reeling and unreeling at extremely high speeds, Nexans designers wanted to thoroughly pre-test all performance parameters before producing a prototype.

Dynamic numerical analysis simulation software allows us to evaluate the mechanical performance of reeling cable designs. Designers can accurately predict how stress will be distributed in the cross-section in terms of traction, torsion, bending, and crush load.

**By pinpointing where stress occurs, this simulation tool made it possible for us to arrive at the new design for BUFLEX® X'PREM in record time, creating a cable which could outlast conventional reeling cables by 10 times.**



## The handling cables application center assures optimum reliability

Reeling cables also need to be rigorously tested in actual conditions non-stop to see how prototypes and existing cables perform and compare. To achieve this, Nexans developed a suite of machines in a unique handling cables application center to subject cables to severe accelerated conditions. Sensors pick up all relevant data which is input into PCs to characterize cable performance as it would actually occur on a crane.

These tests include:

- **Reverse reeling machine** to detect and analyze strain in real time
- **Torsion test bench** to speed up cable ageing so as to improve cable design
- **Reverse bending test equipment** to subject cables to 90°C bends around pulleys
- **Stiffness test equipment** to calculate the force needed to bend a cable
- **Alternative roller bending** to measure flexibility to avoid short circuits and breaks

**Precision testing allowed us to design BUFLEX® X'PREM so as to achieve exceptional performance and durability. This means faster time to market, more accurate lifetime prediction for cables, and increased crane reliability.**



## Services and support to keep cranes and gantries operating

### GLOBAL EXPERTISE

Nexans helps you find the right cable for the right crane application, whether a standard or customized state-of-the-art product. Our cables deliver fast acceleration and high tensile strength, while ensuring high reliability. That is why port authorities and crane manufacturers keep coming back for advice, design input and support.

### LOCAL PRESENCE

Because Nexans is present around the world, the international handling business always has experts close at hand who are able to draw on both local and company-wide resources. Permanent emergency stock, and rapid delivery and maintenance support eliminate the need for expensive safety inventories.

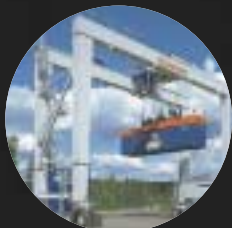
### TECHNICAL LEADERSHIP

A high-tech superport or international hub, often built by an international consortium, requires state-of-the-art products, especially for reeling cables which support large cranes. Through its Competence and Research Centers, Nexans has constantly increased the reliability and durability of its cables.

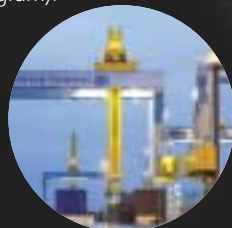
## Meeting challenges with global actors

>Nexans delivered advanced festoon and high-voltage reeling cables to Shanghai Zhenhua Port Machinery Company Ltd. (ZPMC).

>Nexans is the leading supplier of pendant cables for the international original equipment manufacturer, KCI Konecranes Group.



>Gottwald Port Technology is incorporating Nexans' MV cables in their new high-speed Automated Stacking Cranes for the Antwerp Gateway Terminal (Belgium).



>For Stemann, Nexans provides flat-form reeling cables that are ideal for slow applications. Their flat form allow a longer length of cable to be reeled onto one drum.

>Nexans provides reeling cables to OEMs (like the Conductix Group and Cavotec) for motorized reels used in various industrial and bulk handling cranes.

>Nexans supplied spreader cables to the European Container Terminal in Rotterdam, which is the largest container port in Europe, and to the MTL Terminal in Hong Kong.

>The port of Marseille has chosen Nexans BUFLEX® MV cables to equip its STS cranes.

>Nexans supplies BUFLEX® LV and MV cables for RTG's electrical converters.



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 and building markets. Nexans addresses a series of market segments from energy, transport and telecom networks to shipbuilding, oil and 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 21,000 people and had sales in 2006 of 7.5 billion euros. Nexans is listed on the Paris stock exchange.

Nexans S.A. – 170, avenue Jean Jaurès – 69007 Lyon – France  
Tel: +33 (0)4 72 72 24 24 – Fax: +33 (0)4 72 72 95 74  
[www.nexans.com](http://www.nexans.com) - [www.nexans.com/e-service](http://www.nexans.com/e-service)  
[marcom.info@nexans.com](mailto:marcom.info@nexans.com)