

COMPLETE RANGE OF CABLE
SOLUTIONS AND SERVICES
FOR PORTS AND HARBORS WORLDWIDE





EFFICIENT AND SECURE MEGAPORTS REQUIRE...

The globalization of maritime commerce is changing ports from traditional interfaces between land and sea to intermodal megaports which require deepwater docking, easy access for trucks and rail services, massive material handling equipment, and a complete logistics network based on computer and Internet technologies.

With containership volumes set to grow 6-8% by 2015, port terminals are facing pressures to improve productivity and efficiency, especially to accommodate Panamax and Post-Panamax containerships. Established ports like Rotterdam (Europe's largest) have been undergoing expansion on reclaimed land, while completely new facilities are being built from scratch, like Shanghai's Yangshan. In fact, there is a flurry of expansion and "Greenfield" projects in Russia, Brazil, India, Kuwait, Saudi Arabia, Qatar and the UAE, all of them multi-billion dollar projects.

Meanwhile, a number of other trends are shaping the industry. Significant investment is going into cruise terminals, especially in the Caribbean and even in the Far East to accommodate new tourist patterns. Also, oil-producing countries are investing heavily in energy terminals, like Ras Laffan in Qatar which processes and transships liquefied natural gas.

Sustainability is also an important driver of change. In California ships are now obliged by law to turn off engines to reduce CO₂ through shore-to-ship power supply ("cold-ironing"), and cranes are being refitted with electrical motors instead of polluting diesel motors. Since 9/11, security is also an important issue, calling for new telecom-based systems for management, surveillance and control.

What you expect from a cable manufacturer:

- Wide range of cables easily available close to megaproject development sites
- Off-the-shelf products where possible, customized solutions where necessary
- Ruggedness, flexibility and longevity in the busy port and marine environment
- Energy and telecom solutions that take into account intermodal terminal needs
- Exemplary stock management especially for maintenance and repair operations (MRO)
- Consolidation of orders, just-in-time delivery, and technical guarantees for specifications
- Security-enhancing cables for tracking, tagging, sensing, surveillance, and intelligent video
- Environmentally-safe cables to lower port pollution and improve energy efficiency
- Services to deal with accessories, installation, maintenance, repair and training

As a port authority, EPC contractor, distributor or crane OEM you are looking for ways to improve productivity. That means meeting the challenges of size, capacity and intermodality. It also means adjusting to new tourism, trade, and energy-processing opportunities, while dealing with the challenges of sustainability and security. All of these issues largely depend on your choice of cables and cable solutions.



... A FULLY-INTEGRATED CABLE INFRASTRUCTURE

To meet the loading, off-loading, and transport challenges of today's intermodal megaports, Nexans has developed a broad range of cables and cable solutions for virtually every energy and telecommunications requirement. Our world presence, often backed up by local manufacturing capacity, means that we are located close to established ports and new megaprojects.

Nexans energy cables and accessories power everything from offices and warehouses to automated cranes and stackers. Where necessary, cables are Low Fire Hazard (LFH) to protect people and infrastructure. Access-road lighting cables provide efficient illumination for the 1,000 to 5,000 truck movements per day in a busy port terminal.

Since recent attention has been focused on reducing pollution coming from the diesel engines of shoreside ships, Nexans has Alternative Maritime Power (AMP) cables and PLUG systems for cold-ironing. And we have developed lead-free cables for oil and gas terminals, and special cables that can operate in ultra-cold environments or safely transfer liquefied gas.

OEMs will especially appreciate our wide choice of material handling cables for festoons and reels. They come in reduced outer cable diameters, with high tensile strength, flexibility and perennial wear-resistance. The benefits are cost savings, simplified cabling, greater delivery length, accommodation to smaller reeling and guiding systems, and lower shipping charges. For baggage handling conveyor manufacturers for cruise ship homeports, we produce flexible LFH control and power cables which can safely operate at extremely high temperatures.

Since telecommunications are at the core of port operations and critical to issues like security, operational efficiency and safety, we have the most complete offer of any cable company, ranging from optical fiber for harbor monitoring, sophisticated LANs and WANs (including interconnecting components), special cables for cameras

of all kinds, and intelligent Ethernet switch systems for surveillance and automated operations. Wherever possible, we merge energy and telecommunications in special hybrid solutions to save space and consolidate functionality.

Finally, since high performance and reliable support are essential to economic efficiency, Nexans also provides numerous services based on our proven experience in the related market segments of shipbuilding, oil and gas, and transport. This includes network design, testing, marine installation, upgrades, recycling and training.

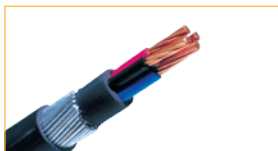
Nexans for safe and efficient port operations

- A broad range of energy and telecom cables customized for ports
- Close proximity to many existing ports and new megaprojects
- Both fixed and flexible cables to meet the needs of superstructure and infrastructure
- LANs and WANs solutions to deal with the complex information needs of port management
- Hybrid solutions to consolidate applications wherever possible in the smallest space
- Land solutions complemented by subsea solutions (e.g. power for large buoys, ship monitoring)
- A complete range of fire safety cables to protect people, goods and equipment
- Products to help create greener, more environmentally-friendly ports
- Cables that can strengthen security and contribute to threat detection
- Services to support expansion of established ports and Greenfield projects worldwide

TODAY'S EXPANDING DEEPWATER PORTS...

ENERGY NETWORKS AND SHORESIDE POWER

LV and MV power cables



A wide range of cables (up to 45 kV) for overall energy supply for lighting, heating, air conditioning, and powering everything from

conveyors to giant STS and RMG Cranes.

> Nexans Korea supplied Consolidated Contractors International Company (CCC) with LV and MV power cables to energize a new oil and gas port in the Ras Laffan Industrial City (Qatar).

Access-road lighting cables



A 3.6/6 kV three single-core twisted cable in XLPE with a polyethylene sheath provides a power backbone for highway lighting along port

access routes.

> Very similar to public highway lighting cables, these robust cables are both water-resistant for near-port conditions and can be safely buried.

LV fire-safety cables



Alsecure® is Nexans range for Low Fire Hazard cables. These cables improve evacuation time during fire by reducing the smoke

opacity and limiting gas emission.

> Alsecure® Premium, our new range of fire-resistant cables, benefits from Nexans patented INFIT® technology. It makes them easier to strip and more resistant to mechanical damage than cables with mica-tape or silicone rubber technologies.



Power accessories



Junctions and terminations using various technologies (heat shrink, cold shrink, "tape and resin" for watertightness); unpluggable dead-break connectors, and touchable screened connectors; lightning and surge arrestors; junction boxes; jumpers between transformers and switchgear; single or double-branch joints.

> All Nexans accessories are customized for port environments, especially where human activities and power supply are in close proximity, or where oil and gas refining and transfer operations constitute a special hazard.

... DEPEND ON RELIABLE CABLE SOLUTIONS



Flexible hybrid cables



Nexans has numerous cable designs that facilitate control, surveillance and communications, often combining LV power with

copper LAN cables, coaxial cables, and increasingly, singlemode optical fibers.

> To SSA Mexico (a Carrix subsidiary) Nexans supplied a reinforced hybrid cable containing Cat 7 data, 250V energy and coaxial cables for a pylon-mounted digital video surveillance network in a container storage area.

Alternative Maritime Power (AMP) and PLUG systems



This tough and flexible polyurethane-sheathed reeling cable with 6.6 kV power supply, control cores and optical fiber provides

alternative power, data transfer and telecommunications to reduce exhaust pollution and increase data flow in container ports. A new reel-less submersible PLUG version offers automatic quayside connection.

> Nexans supplies reeling cable for Cavotec's AMP system which is used worldwide for both merchant marine and navy applications.



MATERIAL AND BAGGAGE HANDLING

LV and HV material handling cables for port cranes



Flexible rubber cables for festoon, reeling and spreader applications for cranes of all types and sizes: STSs, RTGs, RMGs and

ASCs. Smaller and lighter cables make it possible to use smaller reels and motors and accommodate all-electric drives, while quality designs eliminate the "corkscrew" effect, even at high operating speeds.

> For the port of Antwerp, Nexans delivered high-speed MV reeling cable for ASCs that have been functioning for five years at 270 m per minute without disruptive corkscrewing.

Flexible PVC or LFH control, power and bus cables



Although PVC can be used in open areas, Low Fire Hazard cables protect personnel and equipment from smoke and corrosive

gases, and operate at up to 90°C, providing signalling, control and power supply for conveyer belts, motors, sensors, and sorters. Profibus, Asi Bus and Hybrid bus are also used, in addition to easy-to-install plastic optical fiber.

> Aside from baggage handling systems developed for Cruise Terminals, bus cables can integrate other port applications, like security, surveillance, building management and climate control.

COMMUNICATION NETWORKS

Optical fiber monitoring cables (including subsea)



Developed for offshore subsea applications, a special umbilical combining optical fiber and energy cables can be terminated with sensors for

environmental monitoring in ports.

> Apart from pollution control, subsea monitoring is also used to guide vessels into their berth and to detect dangerous or unwanted traffic in the harbor vicinity.

LAN/WAN cabling systems



Fiber for both backbones and horizontal cabling; and copper solutions, from Category 5e to Category 6A and 7A for horizontal cabling.

Because of the distribution of buildings, operating terminals, storage areas and intermodal transfer depots over a wide area, ports have campus-like requirements, often using hybrid fiber/copper solutions.

> Nexans fiber-copper networks carry data (and often power over Ethernet) to enable diverse port functions, like satellite positioning equipment, DECT telephones, surveillance, and operational control and management.

Interconnecting components



Nexans provides diverse interconnective solutions: splice boxes, branching closures, cable terminations (ODFs) building entry points

for fiber, and optical terminal outlets (OTOs) for the last 100 meters.

> *In the complex port environment, Nexans components cover every need: indoor-outdoor, underground-overhead, maritime-land, singlemode-multimode, etc.*

VDI, CCTV and VOIP cables



Voice-Data-Image (VDI), CCTV and Video-Over-IP cables are being integrated on one platform to assure all surveillance and access

functions. A fiber link (sometimes with coaxial cables) handles multiple cameras where distance is a factor.

> *For sharp digital images and cargo/container tracking, IP cameras will eventually replace expensive CCTV cameras.*

Intelligent Ethernet switch systems



These small and rugged Ethernet switch systems contain up to 3 fiber-optic uplink ports and 8 twisted pair copper ports. They

can be used to build up long distance fiber-optic data communication networks in ports and harbor facilities, have built-in diagnostic functionalities and can provide Power over Ethernet (PoE) to connected IP surveillance cameras, WLAN access points, VoIP phones, etc.

> *Nexans switch systems are used for high speed fiber-optic data communication on automated stacking cranes in a container terminal in Belgium.*



SPECIAL CABLES FOR PORTS

Transfer lines for cryogenic liquefied gas



Nexans Cryoflex® transfer lines consist of concentric, flexible, vacuum-insulated corrugated stainless steel tubes for carrying liquefied

gases between shuttle tankers, LNG carriers and onshore LNG receiving terminals. These pipes are available from 1" to 16" and cover all applications, from Liquid Nitrogen loading on a small scale, LNG bunkering for LNG-powered ships, up to full-scale LNG carrier loading.

> *Not only do these flexible tubes resist stress, strain, and corrosion, the outer corrugated stainless steel pipe provides emergency containment in the case of an inner tube puncture, an important safety feature.*

ICEFLEX® cables



This marine energy cable, available in both rubber and thermoplastic versions, remains highly flexible at extremely low temperatures

(-65°C), while offering Halogen-Free Flame (or Fire)-Retardant/HFFR protection.

> *Responding to a request from the Russian oil and gas market, Nexans developed a cable suited to onshore production facilities and port applications in ultra-cold Arctic conditions.*

HYPRON® cables



These lead-free cables are ideal for portside refineries. They offer the same protection against aggressive chemicals, but are easier to

handle and install due to lower weight and smaller cross-sections.

> *Nexans delivered HYPRON® cables for the control room of Gasco's ABICS refinery in Abu Dhabi, and instrumentation cables for the Shell Pearl GTL in Qatar, both of which also operate as seaside ports.*

SERVICE AND SUPPORT FOR SUSTAINABLE PORTS

GLOBAL EXPERTISE

Our complete range of cables and solutions for the port environment combine both telecommunications and energy essential for multimodal transport since high data capacity and the Internet are often needed to scan and track goods, while power is needed to move them. We also serve growing port needs for security, safety and surveillance.

LOCAL PRESENCE

Port megaprojects currently underway worldwide require a cable supplier with international experience and often local presence. Serving global development is facilitated by our industrial capacity

in 39 countries, and our reputation for encouraging industrial offsets and technology transfers, and providing installation and maintenance training.

INNOVATION

As ports become environmentally-aware, we are providing a new range of customized cables for shore-based power systems, and the electrification of handling equipment. Automation is increasingly being applied to loading, unloading and goods movement, requiring rugged and efficient, high-performance cables to accommodate higher speeds.

Nexans brings energy to life through an extensive range of cables and cabling solutions that deliver increased performance for our customers worldwide. Nexans' teams are committed to a partnership approach that supports customers in four main business areas: Power transmission and distribution (submarine and land), Energy resources (Oil & Gas, Mining and Renewables), Transportation (Road, Rail, Air, Sea) and Building (Commercial, Residential and Data Centers). Nexans' strategy is founded on continuous innovation in products, solutions and services, employee development, customer training and the introduction of safe, low-environmental-impact industrial processes. In 2013, Nexans became the first cable player to create a Foundation to introduce sustained initiatives for access to energy for disadvantaged communities worldwide. Nexans is an active member of Europacable, the European Association of Wire & Cable Manufacturers, and a signatory of the Europacable Industry Charter. The Charter expresses its members' commitment to the principles and objectives of developing ethical, sustainable and high-quality cables. We have an industrial presence in 40 countries and commercial activities worldwide, employing close to 26,000 people and generating sales in 2015 of 6.2 billion euros. Nexans is listed on NYSE Euronext Paris, compartiment A.

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