



**SHIPLINK®**

**Cable solutions and services  
for safety and reliability in ships and platforms**

# Bringing safety and security onboard...

After several years of double-digit growth, the shipbuilding business is managing contraction and downsizing, while positioning itself for an eventual recovery. In the previous boom period some 25% of the world's existing fleet was replaced, including bulk carriers, containerships, FPSOs, tankers, LNG/LPG carriers, ROROs, cruise ships and offshore supply and support vessels. Because today's ship assets are devaluated, shipping companies wish to reduce the price of new vessels; if possible, by as much as 15-20%.

At the same time, the dynamics of shipyards, prime contractors, designers and suppliers are continuing to change. All major players want to increase production efficiency and assembly speed, while assuring the highest levels of quality, onboard safety, security and reliability.

Increasingly, many shipyard actors see themselves as "integrators." Prefabricated modules are now put together in a coordinated series of supply, assembly, and installation activities. Maritime cables are essential elements in this process. Although cables account for only 1-2% of a ship's overall cost, they provide the energy and data to enable onboard operating efficiency and safety.

That is why you, as a shipbuilder, have high expectations of a cable manufacturer in terms of quality and performance, support services, and cost reduction through e-purchasing, progressive procurement and on-time delivery.

## **What you expect from a cable producer:**

- Lower overall costs for shipboard cables without compromising quality
- Multi-standard capability to deliver the right, certified cable worldwide
- Reliable cables that optimize operational and passenger safety onboard
- Pre-cut and pre-assembled solutions to facilitate modular construction
- Ability to quickly meet unexpected design changes and modifications
- Quality solutions that shorten installation time and increase installer efficiency
- Energy and propulsion efficiency through lighter high-performance cables
- Increased data capacity both for ship administration and passenger/crew comfort
- Flexible, strippable, paint-resistant, environmentally-friendly cables



...through high performance **SHIPLINK®**

Nexans is the worldwide cable leader. Rather than depend on separate suppliers, Nexans draws on its own production facilities in Europe, Asia and the Americas to produce every type of cable used on a modern vessel, from bulk carriers, anchor handling tug supply (AHTS) ships, ocean station vessels (OSVs) and FPSOs to cruise liners and oceanic research ships.

A truly global manufacturer and supplier, Nexans provides a wide family of marine cables for ships being built around the world. In fact, Nexans and its subsidiaries (Kukdong and Nexans Ficap) currently supply more than 20% of the global shipbuilding cable market.

With a vast product range, extensive global production and research facilities, Nexans is continuing to innovate and develop new products and services for shipbuilding: making cables easier to install and more flexible, ensuring that they are operationally and environmentally safe, improving fire performance and survivability, and developing new customer services in design, custom cutting, labeling, pre-assembly, and just-in-time delivery worldwide.

#### **SHIPLINK® offers quality and performance**

- Complete family of shipbuilding and offshore marine cables from the world's leading cable manufacturer
- Reliable performance in terms of heat, cold, humidity, oil, vibration, salt corrosion, etc.
- Advanced fiber and copper LANs for next generation maritime telecommunications
- LV/MV power cables for all yard and shipboard energy needs
- Reduced weight and volume through advanced material and cable designs
- Global presence and fast delivery wherever you are located in the world

#### **Commercial, offshore and naval compliancy**

- International IEC 60092 series
- Norwegian NEK 606 version 2009 and BS6883, Type P for offshore
- Japanese JIS specification
- IEEE 1580 and UL
- German VG095218 for all kind of naval vessels
- Mil-Dtl-224543 and Mil-Dtl-21640 for naval vessels
- IEC advanced fire performance
- ABS, BV, CCS, DNV, GL, LR, RINA, US Coast Guard approved
- ISO 9001 quality standards
- Qualified Products List (QPL)

# SHIPLINK® : a comprehensive range of cable solutions and services...

## SHIPLINK® POWER CABLES

### Medium-voltage cables

Nexans produces MV energy cables for power backbone and propulsion (1.8/3 kV, 3.6/6 kV, 6/10 kV up to 12/20 kV). Like all Nexans shipboard products, these stranded copper cables are Halogen-Free Fire-Retardant (HFFR). Once the cable route is known at the ship's design stage, Nexans can pre-cut and mark the cable (bulkhead point, beginning and end indicators) for faster, easier installation.

*To carry more power in today's highly automated vessels, Nexans has raised the voltage rating of mains cables which allows increased power capacity, but not conductor cross-section. For Meyer Werft shipyards, Nexans has supplied 10 km MV cable for two cruise ships owned by an American entertainment company.*

### Low-voltage cables

For onboard power distribution throughout the vessel, Nexans manufactures HFFR low-voltage energy cables (0.6/1 kV). These quality copper cables come in a variety of insulations, sheaths and armoring. Also, special flat cables running along corridors make it possible to quickly add lighting and power outlets using Rapid Connection Boxes. *Nexans has provided 3,000 km of LV cable for the two cruise ships mention above, and also cabling for a series of mega-yachts being built by HDW in Kiel, including the 140-meter Sigma yacht designed by the avant-gard designer, Philippe Stark.*

### FLEXISHIP® cables

These special maritime 0.6/1 kV general power and lighting cables incorporate three compact triangular energy conductors. In addition to being halogen-free and low smoke, they can be installed in 30% less pulling time in tight spaces, using lower pulling force. They are also easy to strip and install. *With its small bending radius, Flexiship® has improved flexibility by 30-50%, thus facilitating hull wiring. It has been fully approved by Norske Veritas for ships and offshore, and obtained IEC qualification.*

### Variable Frequency Drive (VFD) cables

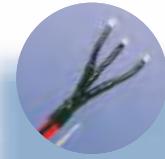
Nexans' VFD cables are designed to improve EMC protection and the operating performance of variable frequency drive systems used with a bow and side thrusters, movable pod propulsion systems, winches, lifts and drives on regular ships and FPSOs. Because of the excellent shielding design and grounding, Nexans VFD cables have proven to be the best overall cable in independent tests of speed drives. *Nexans is providing armored and non-armored VFD cables for two deepwater/arctic drillships.*

### Hybrid ship-to-shore cables

An innovative hybrid ship-to-shore cable provides an alternative power supply, data transfer and telecommunications for quayside ships. Medium-voltage power supply, control cores and optical fibers are laid up in one flexible, rugged and easy-to-reel cable which fully protects the fiber elements. *Increasingly used in the world's harbors and mega-ports, this special cable allows ships to cut their power-supply diesels while in port, thus significantly reducing local pollution levels.*

### ICEFLEX® cables for FPSOs

This marine and offshore cable, available in both rubber and thermoplastic versions, remains highly flexible at extremely low temperatures (-50°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 all exploration, extraction and transportation applications in ultra-cold conditions. Nexans helped ice-protect the Prirazlomnaya stationary oil platform in the Barents Sea with these low-temperature-resistant cables.*



Medium-voltage cables



Shipboard LAN cables



Coaxial





Low-voltage cables



FLEXISHIP® cables



Variable Frequency Drive (VFD) cables



Hybrid ship-to-shore cables



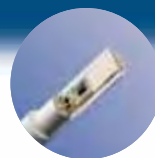
cables



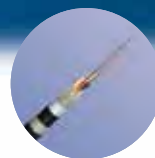
Fieldbus cables



Instrumentation, communication and control cables



LIST fire-detection cables



Shipboard fiber optic cables

... for a new generation of ships

## SHIPLINK® DATA CABLES



**ICEFLEX®**  
cables for  
FPSOs

### Shipboard LAN cables

Nexans provides laser-certified multimode optical fiber for vertical onboard backbones, and horizontal copper links to individual crew cabins based on DNV certified LANmark Category 7 Maritime solutions with GG45 Marine connectors, in addition to maritime patch panels, patch guides and patch cords. Immune to shipboard interference, this robust, reliable and safe system can operate up to 10 Gbit/s.

*Nexans LAN cables have been installed on a Norwegian research vessel, and CroisiMer's new cruise ship, providing television, telephone and data on a single compact cable.*

### Coaxial cables

MIL-C-17 Coaxial cables are usually used for onboard high frequency data transmission (communication equipment, radar, and instrumentation) and also carry video signals for surveillance cameras. Flamex RG offers exceptional fire safety in a single cable.

*To meet stringent insurance specifications, 90 km of Nexans hybrid cables for video surveillance have been installed on cruise ships.*

### Fieldbus cables

These Low Fire Hazard have a fixed impedance and transmit an extremely precise digital signal to control all essential shipboard functions, like motors, rudder and hydraulic systems. Can Bus cable comes in a single or double pair; while Profibus cable is a single pair. Both can be supplied with SHF1 or SHF2 jackets, depending on specification.

*Adapted from the industrial environment, these cables are fully sea-resistant and can operate safely in temperatures from -20°C to +70°C.*

### Instrumentation, communication and control cables

Twisted pairs, with stranded conductors, these Halogen-Free and Fire-Retardant/Resistant (HFFR) cables carry vital technical information for sensors, measurement, control panel, etc. The Nexans range includes all cable types (collective or individual shielding, armored or unarmored).

*Nexans supplied SHF2 sheathed cable for the Umm Shaif FPSO project for Hyundai Heavy Industries (Korea). By reducing the section down to 0.70 mm<sup>2</sup> the cable is much lighter, making it ideal for high-speed craft and express ferries.*

### LIST fire-detection cables

To prevent fires onboard, Nexans provides a complete temperature sensor cable system: LIST: Linear Sensing of Temperature. This flat, four-core cable with hybrid circuits contains an ASIC (Application-Specific Integrated Circuit) temperature sensor which can rapidly detect temperature increases which could be the source of fires. *Not only can LIST cables be used in harsh sea conditions, they can be deployed in lengths up to 2,000 meters to monitor heat conditions throughout the vessel.*

### Shipboard fiber optic cables

This fire-resistant, armored optical fiber cable (QFCI) assures excellent data transmission and exceptional mechanical and environmental properties. In addition to offering low smoke/toxicity/acid gas emissions under fire conditions, it can operate reliably in extreme temperatures (-40°C and +70°C) to maintain vital onboard communications and emergency systems.

*Kukdong, a Nexans company, specializing in shipboard cable solutions, obtained the critical Det Norske Veritas (DNV) classification in keeping with the foundation's objective of safeguarding life, property and the environment.*

### INFIT®-based fire-resistant cables

For offshore support vessels, Nexans produced an IEC 60331-21 fire-resistant cable for power, communications, control and LAN applications. These tough and flexible cables are easy to handle, strip and install. INFIT® technology allows the insulation to harden into a ceramic layer to keep current and data flowing during a fire. *These cables are available in cross-linked or thermoplastic versions. They achieve a full-U bend radius (95°C), can withstand 12 N/mm tensile strength, and deliver up to 1kV at 1,000°C.*



**INFIT®-based**  
fire-resistant  
cables



## Services on the horizon

### **GLOBAL EXPERTISE**

We offer a wide family of customized maritime products common to a variety of ships and platforms. Mastering both shipboard energy and data needs, Nexans has found solutions to make modular, integrated ship construction quicker, easier and more efficient.

### **LOCAL PRESENCE**

Since shipbuilding is a world industry, we support shipyards everywhere, often by a local manufacturing presence (e.g. Korea, China, Brazil, USA, Europe), direct sales offices, or a comprehensive distributor network. With technology transfers, shared maritime cable research, a global supply chain, and full conformity to international certification, Nexans guarantees product quality worldwide.

### **TECHNICAL LEADERSHIP**

Nexans is dedicated to producing maritime cables of the highest quality, made from the best materials to function maintenance-free for the full life-cycle of a ship. Nexans designs all its maritime cable to operate reliably in the harshest sea-going conditions, while offering unsurpassed security and fire-safety.



Global expert in cables and cabling systems

With energy as the basis of its development, Nexans, worldwide leading expert 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 and gas, nuclear power, automotives, electronics, aeronautics, material handling and automation. Nexans is a responsible industrial company that regards sustainable development as integral to its global and operational strategy. Continuous innovation in products, solutions and services, employee development and engagement, and the introduction of safe industrial processes with limited environmental impact are among the key initiatives that place Nexans at the core of a sustainable future. With an industrial presence in 40 countries and commercial activities worldwide, Nexans employs 23,700 people and had sales in 2010 of more than 6 billion euros. Nexans is listed on NYSE Euronext Paris, compartment A.

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