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**Global cable expertise  
for Shipbuilding**

# Challenges to world shipbuilding

After a steady upward trend in new ship construction through the 90s and strong sales at the turn of the millennium, shipbuilding is continuing to meet challenges. Decreasing order intake and low prices have arisen due to over-capacity, past over-supply, slowing economies and 11 September. Demand has fallen for container and cruise ships, but has also affected crude oil tankers, chemical tankers and liquid natural gas carriers (LNGs). At present, three Asian countries (Korea, Japan and China) hold nearly 80% of market share in terms of compensated gross tons (cgt), with Europe accounting for less than 10%. Korean yards are highly active, and China is aiming at significantly increasing its market share by 2010.

Product tankers and bulk carriers have seen increased orders, due to the replacement of old tonnage following new EU maritime safety and design regulations (in response to the "Erika" and "Prestige" oil spills). Other hopeful segments are ferries (Passenger/Ro-Ro vessels) and small tankers. Also, the stimulus from offshore oil and gas, and a demand for high-performance handysize ships

(20,000 to 50,000 dwt), are creating exciting new opportunities. Naval construction is steady, with some self-sufficient countries (US) now looking overseas for shipbuilders and suppliers. In Europe, there is a strong trend towards multinational naval conglomerates and alliances to promote the sale of warships worldwide. Cabling accounts for about 2-3% of the cost of a commercial ship, compared to 4-5% for a naval vessel, which has strict requirements in terms of watertightness, safety and performance.

- **It is high time for an extensive renewal of commercial ships since the world fleet is aging, and the average ocean-going vessel is over 30-years-old!**
- **To remain profitable, shipbuilders need lower costs, improved manufacturing efficiency, and advanced cabling technologies.**
- **Managing the whole supplier/subcontractor chain is critical to maintaining a strong competitive edge.**
- **Naval defense requires seasoned suppliers who can meet strict military requirements, and operate within large multinational conglomerates.**



# N enhances performance in shipyards and on the high seas

To cut costs and improve efficiency, shipbuilders are modularizing processes and improving shipyard infrastructures. Computer-assisted design (CAD) is now integrated with Web-centric information sharing. Since electrical power and IT (Information Technologies) are vital, electrical and data cables must be reliable, efficient, and easy-to-install. In the integrated onboard environment, shipbuilders are looking for multi-system packages from a single source. They expect quality and conformity to the highest standards. They demand constant innovation and customized solutions. They want products delivered on time, and product availability worldwide for maintenance, upgrades, refits and modernization. Because ships are often floating "mini-cities", every type of wire and cable present on land can be found somewhere onboard. A paramount concern for both commercial shipping and naval defense is safety for the ship, crew and passengers.

## As a global supplier to shipbuilders, Nexans provides:

- a wide family of shipyard and onboard marine cables provided by one manufacturer
- high performance in terms of heat, cold, humidity, oil, vibration, salt corrosion, etc.
- advanced fiber and copper LANs for next generation maritime telecommunications
- a complete range of LV/HV power cables for all yard and shipboard energy needs
- reduced weight and volume through advanced XLPE cable designs
- custom-designed cables with value-added and efficient modular installation
- expertise in connectivity at all levels, and provider of fully-integrated systems
- market-driven innovation in partnership with shipbuilders and installers
- global presence and fast delivery wherever you are located in the world

## Compliant with commercial and naval defense standards:

- European IEC
- American IEEE
- ABS, BV, CCS, DNV, GL, LR, RINA approved
- NEK 606 for offshore
- ISO 9001 quality standards
- Qualified Products List (QPL)
- German VG-95218 for submarines
- Mil-Dtl-24643 and Mil-Dtl-24640 for Naval vessels
- JIS specifications
- advanced fire-performance (IEC 60332-3 and/or IEC 60331), low-smoke (IEC 61034), halogen-free (60754-1/60754-2)
- Superconductors



**Today, Nexans cables are being installed on ships around the world, including every naval defense shipyard in the US. Above all, Nexans is the worldwide leader in the shipboard cable market.**



provides a comprehensive range of shipboard cables...

## Energy

### High and low-voltage energy cables

HV (1.8/3 kV up to 8.7/15 kV) and LV (0.6/1 kV) cables for propulsion and power distribution.

In cooperation with shipyards, Nexans has raised the voltage rate, which increases power capacity, but not conductor cross-section.

*Nexans Korean subsidiary, Kukdong, is fully outfitting a 1,800 ton submarine being built by Hyundai Heavy Industries (Korea) according to strict VG-95218 German standards. Nexans also provided flexible power cables for propulsion for the Queen Mary 2.*

### Low-voltage energy cables

Halogen-Free Fire-Retardant (HFFR) LV (0.6/1 kV) cables for onboard power distribution. To save installation time, Nexans has developed a Rapid Connection Box and flat cable for lighting in corridors.

*By eliminating the need for stripping, this cable can be installed quickly and easily for all public area lighting.*

### Winding wires

Winding wires appear in various motors, transformers, generators, compressors, pumps, relays, etc.

Self-bonding wires speed-up motor manufacturing time; continuous transposed cable is used for medium and high-voltage transformers.

*Since Nexans controls the entire manufacturing process, its winding wires have advanced electrical characteristics, chemical resistance and mechanical features.*

### Instrumentation and Control

#### Instrumentation and Control cables

Standard and thin-walled Halogen-Free Fire-Retardant (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).

*By reducing the section to 0.75 mm<sup>2</sup> the cable is much lighter, making it ideal for express ferries, where weight is a determining factor.*

### Sensor measurement and fieldbus cables

These HFFR cables control all essential industrial functions, like motors, rudder, and hydraulic systems. They have a controlled impedance, and transmit an extremely precise digital signal.

*Foam-skin insulation allows air or gas to be injected, optimizing the size of the cable for important weight and volume gains, while maintaining optimum characteristics.*

### Multimode Optical Fiber Cables

to connect antennas to shipboard signal distribution networks



**High and low-voltage energy cables**  
for propulsion and power distribution



**Thin-wall LV cables**  
to provide energy to equipment, conveniences, cabins, etc.

**Hybrid energy and data cables**  
for surveillance cameras  
and information transmission



**Telephone cables (TCX TEL)**  
for complete telephone networks on cruise ships



**Low-voltage energy cables**  
for lighting



**Maritime LAN cables**  
for telecommunications and passenger video service and entertainment



**Sensor measurement and fieldbus cables**  
for hydraulic systems, motors and rudder control



**Coaxial cables and Cat. 7 solutions**  
for onboard entertainment and Internet services



**Instrumentation and control cables**  
to carry technical information



**Winding wires**  
for motors, generators, compressors, etc.



## ...to keep ships sailing right on course

### **Communications, Navigation, and Safety**

#### **Maritime Local Area Networks**

Copper and/or fiber LANs (supporting 10 Gigabit and beyond) provide capacity to handle the operational, navigation and telecommunications information needed to run a large vessel efficiently, while giving crew and passengers advanced video services.

*In addition to fiber, Nexans advocates Lloyds-approved Category 7 cable for future-proofing LANs, and thus eliminating the need for expensive retrofitting.*

#### **Hybrid energy and data cables**

These Halogen-Free Fire-Retardant (HFFR) cables provide power to surveillance cameras and transmit vital information for security, emergencies and fire-monitoring. They allow a command function to control camera movement, and guarantee non-stop surveillance.

*Nexans is supplying cables for a FPSO (Floating Production Storage and Offloading) ship as part of the Russian Sakhalin oil pipeline project.*

### **Comfort & Entertainment**

#### **Thin-wall LV cables**

Low-voltage cables (Flamex HFFR) provide efficient energy for equipment, conveniences, cabin wall outlets, public address systems, automatic doors, lighting, etc.

*Used largely for passenger ships, this time-saving, modular and pre-fitted cable is extremely easy to install.*

#### **Telephone cables**

A new generation of telephone cable provides a complete telephone network on cruise ships, while Cat 7 assures further integration and longevity.

*TCX-TEL cable diameters have been reduced to achieve important space savings.*

#### **Optical fiber cables**

Multimode OF cables provide a downlink from the satellite dish to equipment for television transmissions. A special shielding guarantees high mechanical strength and resistance to vibration, stress, sea salt, chemicals, etc.

*For entertainment and communications, Nexans supplies optical fiber to connect antennas to shipboard signal distribution networks.*

#### **Coaxial cable and Category 7 copper solutions**

Deliver television and data services to every cabin, to meet ship owners' concerns with providing crew and passengers with quality onboard entertainment and Internet services. Lloyds approved Cat 7 avoids the need for expensive active equipment.

*Nexans installed advanced Category 7 cable on the Norwegian research vessel, the G.O. Sars. This world first uses ISO/IEC cabling technology to provide 600 MHz broadband communication. EMC had to be handled carefully to ensure performance of all systems.*

### **Components & Accessories**

A wide range of cable accessories cover all energy and telecom needs: joints and terminations, branching units, amplifiers, etc. All items are custom-fitted and pre-processed to facilitate installation, maintenance and future upgrades.



# Beyond cable, a horizon of services

**To help shipbuilding move into a new era of modular, integrated construction, Nexans offers services that only a worldclass cable manufacturer can provide:**

## **Expertise**

The fact that cables are our core business means that we have the expertise and family of products especially designed for shipyards and ships. As integrators and installers, we work closely with constructors to cut costs and increase efficiency, assuring that all cables are future-safe.

To meet the demands of a safety-conscious industry, we conform to and help set international quality standards, and are approved by numerous world certification bodies.

## **Global presence**

Since shipbuilding and shipping are global, they require a company with global resources. Nexans has the broadest geographical presence in the cable industry, with plants on 5 continents, and representatives in over 65 countries. We have logistics centers in Europe (France and Germany), China and Korea to allow us to keep close to key players. Shipbuilders and repairers are thus assured of getting everything they need from one vendor wherever they are.

## **Performance**

Nexans heavily reinvests in R&D to invent new products and processes, and develop customized solutions with and for customers. In an industry where delay or system failure mean costly downtime or worse, we are dedicated to producing cables and accessories of the highest quality, made from the best materials, which can function for years virtually maintenance-free in harsh marine conditions, and offering unsurpassed fire-safety.

## **Partnership**

Through long-term co-operation with shipyards, engineers, outfitters and repair personnel, Nexans understands the entire "supply chain" and customizes products to the specific needs of each customer. By sharing intelligence, we widen opportunities for major contracts. As a preferred supplier, we offer counseling in terms of design, installation and maintenance, and assume total responsibility for completely integrated shipboard systems. Nexans has developed an industrial software and logistics system to deliver cables just-in-time to shipyards, thus reducing and eliminating inventory for important cost savings.





Global expert in cables and cabling systems

Nexans is the worldwide leader in the cable industry, with an industrial presence in 28 countries and commercial activities in 65. The Group employs 17,150 people. Its sales amount to 4.3 billion Euros. Nexans brings an extensive range of advanced copper and optical fiber cable solutions to the infrastructure, industry and building markets. Its cables and systems can be found in every area of people's lives, from telecommunications and energy networks, to aeronautics, aerospace, shipbuilding, automobiles, railways, buildings, petrochemicals, medical applications, etc.

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