

# Oil & gas applications

## Offshore solutions





# Reliable solutions

- even under harsh environmental conditions





### Your partner for system solutions

We offer our customers around the globe outstanding products and services for their electrical and optical connectivity needs. We focus on combining products from the three technologies of radio frequency, fiber optics and low frequency into system solutions for communication, transportation and industrial applications. When developing these systems, our engineers often work so closely with customers that they are included in their projects as partners and experts from the very start.

### Offshore and marine solutions

Offshore facilities are generally difficult to access, hence replacement, upgrade and maintenance rapidly become a costly endeavour for operators. Our products also provide maximum resistance to interference, absolute electrical isolation between all communication groups and have proven to be extremely watertight, dust tight and resistant to corrosion.





## New impulses for the oil and gas offshore sector needed

Since 2014, the Oil & Gas industry has been challenged by falling oil prices. These lower prices have reduced both global investment levels and corresponding industrial revenues to their lowest levels since 2009.

Driven by this low oil price, offshore operators have massively reduced or cancelled new greenfield investments. New investments are only made if they have a significantly lower total cost of ownership in the long term. These are technologies that make it possible to produce more cost-effectively and flexibly (e. g. FPSOs). This trend will also continue with rising oil prices in order to be able to cope better with future market fluctuations in production costs.

Particularly with existing installations on oil platforms, flexibility is in demand, as many oil fields are at the end of their service life, but can be continued by new production techniques (e. g. conversion to LNG, underwater production). These maintenance or upgrade projects are looking for solutions that clearly optimise the existing systems, but can also be implemented quickly and easily.

## Market demands

For the Greenfield or Brownfield projects, weight and space requirements are still the most important requirements for the offshore sector. For new installations, the platform foundation structure can be set up more easily, which leads to considerable cost savings. Existing installations where the foundation is still in use require a new and simple future design. The same is true for FPSOs where high weights require higher buoyancy.

Safety to the people is the key focus for any offshore platform. For this reason the use of products with high reliability and longer life time with easy and fast installation has become the highest requirement.

In order to keep a low total cost of ownership, products need to have a longer lifespan and grant easy installation and replacement with low maintenance.

Focus on total cost of ownership

## Challenges of the market

The cables for signal, control, instrumentation and power supply are on the same level as they were decades ago due to very old standards and norms. These are protected and defended by the lobbying work of renowned manufacturers. However, this blocks innovations that are urgently needed in the offshore market.

New high-tech plastic compounds enable to develop cables that do not fully comply with the offshore cable standards but assure to provide better electrical values, withstand higher ambient temperatures as well as lighter weight and smaller dimensions without neglecting the safety aspect. With the RADOX<sup>®</sup> material, HUBER+SUHNER has developed an electron-beam-crosslinked high-performance plastic that meets the extreme offshore requirements. This has been approved and certified by classification societies such as DNV, ABS, BV, CCS among others.

Innovations need new paths



HUBER+SUHNER offers a wide range of special cables to meet the high requirements of the sophisticated offshore market.





Lowest weight and  
less space requirement

### Weight & space

Up to 60% weight and 70% space reduction is the result of the light-weight cable design. With several 10km of cables this will lead into several hundred thousand dollars in structural design savings.

Lowest installation time

### Installation time

RADOX® OFL is proven to have up to 60% less stripping time compared to today's offshore cables. Over several 10km of cables and hundreds of main and branch lines this sum up in many days saving in installation time.

Reduce your cable  
accessory cost

### Accessory costs

As cable diameter is approx. half of standard cables all accessories like cable glands, high expensive offshore connectors and cable trays can be chosen smaller and therefore reduce cost and additional weight and space.

## Lifetime


All RADOX® cables are fully e-beam cross-linked for highest mechanical strength and extreme resistant against mud and weather. The cable lifetime is enhanced by factor 8 compared to standard 90°C offshore cables.

Lifetime guarantee

## Digitalisation

RADOX® cables offer a wide range of databus cables to transfer high amount of data from remote I/O terminals to the DCS control room. Even fieldbus operated field devices can be connected directly.

Digitalisation with high-speed databus cables



The electron-beam crosslinked cable sheath surface can withstand very high temperatures. In normal operating temperatures, this results in a service life that is up to eight times longer than conventional cables.

## Product portfolio

### Instrumentation cables



#### RADOX® 125 - single core

RADOX® 125 is the ideal signal cable for demanding offshore and marine switch board applications. These cable types are free of halogen and particularly distinguished by their resistance to fuels and lubricants, alkalis and acids as well as high and low temperatures.

DNV approval



#### RADOX® OFL

For fixed and moving installations in dry, damp or wet locations, inside and outside of ships, offshore platforms, FPSO's and other industrial equipment.

Following NEK 606  
DNV pending



### Databus cables



#### RADOX® Marine CAT5e - Ethernet

For permanent inside and outside installation on ships, offshore platforms, FPSO's and other harsh environment.

Following NEK 606  
DNV approval



#### RADOX® Marine 1200hm databus

For permanent inside and outside installation on ships, offshore platforms, FPSO's and other harsh environment.

Following NEK 606  
DNV approval





# Product portfolio

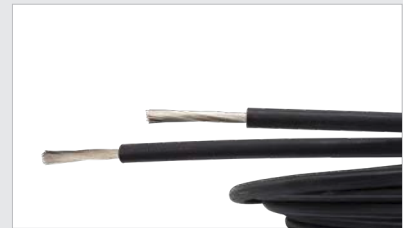
## Power / control supply cables



### RADOX® 125 - single core

RADOX® 125 is the ideal signal cable for demanding offshore and marine switch board applications. These cable types are free of halogen and particularly distinguished by their resistance to fuels and lubricants, alkalis and acids as well as high and low temperatures.

**DNV approval**



### RADOX® OFL (0.6/1kV)

For fixed and moving installations in dry, damp or wet locations, inside and outside of ships, offshore platforms, FPSO's and other industrial equipment.

**Following NEK 606  
DNV pending**



### RADOX® 4GKW (1.8/3kV) - single and multicore

RADOX® 4 GKW are double insulated, compact, flexible single core power cables, designed for minimum cable weight and diameter. These cables meet the requirements of the modern offshore industry. They are halogen free, flame retardant, low smoke and have a low toxicity index. Demands for temperature, abrasion, ozone, oil and mud resistance are also fulfilled.

**Following NEK 606**



### RADOX® 9GKW (3.6/6kV) - single and multicore

RADOX® 9 GKW are double insulated, compact, flexible single core power cables, designed for minimum cable weight and diameter. These cables meet the requirements of the modern offshore industry. They are halogen free, flame retardant, low smoke and have a low toxicity index. Demands for temperature, abrasion, ozone, oil and mud resistance are also fulfilled.

**Following NEK 606**



# Product portfolio

## Fiber optics



### Fiber optic connectors

- ODC-2/-4, Q-ODC-2, Q-ODC-12
- Q-ODC - robust Push-Pull- Connection mechanism - unique connection status
- High number of fibres for rough environmental conditions
- ODC - bolted connections
- Waterproof IP67/68 (Q-ODC-12)
- Extension connector for cable chains



### Fiber optic cable systems

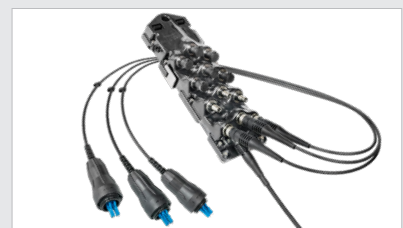
- Preassembled «plug&play» cable systems
- Wide temperature range
- IP67 protection during and after installation
- Can be configured with RADOX® fiber optic cables and fiber optic connectors for adverse ambient conditions
- 100 % tested, including documentation for every system



### Masterline Ultimate

Pre-connectorised, factory sealed fiber optic FTTA solutions for LTE deployment.

- Pre-terminated «plug & play» solution
- Robust connector head with 6 or 12 Q-ODC jacks
- Rodent protection and UV-resistant
- Simple, time-saving installation



### Mobile cable systems

- Easy storage of cable assemblies
- Assemblies with multi-pole connectors
- MASTERLINE Mobile with standard connectors and removable protective sheaths
- Both cable ends accessible





# Product portfolio

## Fiber optics



### Optibox

Passive, wall-mounted connection enclosure.

- Interface between the optical access network of the service provider (drop cable) and the internal «Fiber-in-the-Home» network
- Passive connection enclosure at the Building Entry Point (BEP) is used for splicing, routing or connecting fibers



### H3RO

Ultra-robust fiber distribution unit.

- Passive network system reducing active switching equipment
- Does not require fiber technicians to install, true "plug & play" functionality
- IP68 rated, electrostatic protection, extremely sturdy
- Massively reduces cost, complexity and physical footprint of network installations



### Transition boxes

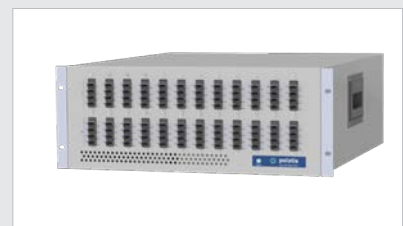
High density modules for in-rack fiber distribution.

- Fast and tool-less installation
- Capacity 24 ports and 2 QODC 12 / QODC 24
- Plug & play modules for fast deployment



### Polatis Optical Switching Solutions

- Transparent, dark fiber all-optical matrix switches
- Available from 8x8 to 384x384 fiber ports in symmetrical, asymmetrical and single sided any-to-any formats
- Network provisioning, protection, monitoring and test
- Very low power consumption
- Oil & Gas well distributed temperature sensing monitoring



# CONTACT US

## CHINA

HUBER+SUHNER (SHANGHAI) CO., LTD  
7th Floor, Unit B, Eternal Asia Plaza,  
Building 1, No. 202 Jinyue Rd, Pudong  
Shanghai 201206  
Phone +86 (0)21 5190 1111  
Fax +86 (0)21 5190 1371  
infoshanghai@hubersuhner.com

## SINGAPORE

HUBER+SUHNER (SINGAPORE) PTE LTD  
114 Lavendar Street  
#02-67 CT HUB2  
Singapore 338729  
Phone +65 6472 2777  
Fax +65 6252 8330  
sales.sea@hubersuhner.com

## UK

HUBER+SUHNER (UK) Limited  
Telford Road  
Bicester  
Oxfordshire OX26 4LA  
Phone +44 (0)1 869 364 100  
Fax +44 (0)1 869 249 046  
info.uk@hubersuhner.com

## RUSSIA

HUBER+SUHNER Russia  
Office 4-14  
Prospect Andropova 18, kor.6  
115432 Moscow  
Phone + 7 495 775 66 53  
Fax + 7 495 775 77 94  
info.ru@hubersuhner.com

## BRAZIL

HUBER+SUHNER América Latina Ltda.  
Rodovia Presidente Dutra KM 134  
Vila Galvão  
12286-160 Caçapava SP 160  
Phone +55 (12) 3657 1000  
Fax +55 (12) 3657 1028  
info.br@hubersuhner.com

## ALL OTHER COUNTRIES

HUBER+SUHNER AG  
LF Industry  
Tumbelenstrasse 20  
8330 Pfaeffikon  
Switzerland  
Phone +41 44 952 2211  
hubersuhner.com

## INDIA

HUBER+SUHNER (INDIA)  
Electronics Pvt. Ltd.  
Plot 125, Sector 8  
IMT Manesar  
Gurgaon, Haryana  
India 122051  
Phone +91 124 4526100/200  
Fax +91 124 4102704  
info.in@hubersuhner.com

## AUSTRALIA

HUBER+SUHNER (AUSTRALIA) PTY LTD  
Unit 6, 4 Skyline Place  
Frenchs Forest  
NSW 2086  
Phone +61 (0)2 8977 1200  
Fax +61 (0)2 9972 7549  
webenq.au@hubersuhner.com

## DENMARK

HUBER+SUHNER A/S  
Kirke Vaerløsevej 14  
DK-3500 Vaerløse  
Phone +45 48 100 500  
Fax +45 48 100 555  
info@hubersuhner.dk

## GERMANY

HUBER+SUHNER GmbH  
Mehlbeerstr. 6  
DE-82024 Taufkirchen  
Phone +49 (0)89 612 01 0  
Fax +49 (0)89 612 01 162  
info.de@hubersuhner.com

## SOUTH KOREA

HUBER+SUHNER (HONG KONG) LTD  
Unit A1, 17/F., TML Tower  
3 Hoi Shing Road  
Tsuen Wan, N.T. Hong Kong  
Phone +852 2866 6600  
Fax +852 2866 6313  
info.hk@hubersuhner.com

## MALAYSIA

HUBER+SUHNER (MALAYSIA) SDN.BHD.  
No. 6 & 8, PJ51 Business Park  
Jalan Tandang 51/205A,  
Section 51  
46050 Petaling Jaya  
Selangor Darul Ehsan  
Phone +6 03 7454 5111  
Fax +6 03 7454 5112  
sales.my@hubersuhner.com

## HONG KONG

HUBER+SUHNER (HONG KONG) LTD  
Unit A1, 17/F., TML Tower  
3 Hoi Shing Road  
Tsuen Wan, N.T. Hong Kong  
Phone +852 2866 6600  
Fax +852 2866 6313  
info.hk@hubersuhner.com

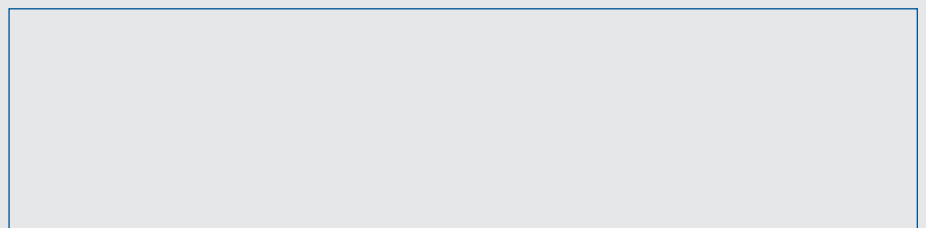
## FRANCE

HUBER+SUHNER France  
21 E, rue Jacques-Cartier  
FR-78960 Voisins-le-Bretonneux  
Phone +33 (0)1 61 37 25 55  
Fax +33 (0)1 30 64 73 68  
info.fr@hubersuhner.com

## NORTH AMERICA

HUBER+SUHNER, Inc.  
Steele Creek Commerce Park  
8530 Steele Creek Place Drive  
Suite H  
Charlotte, NC 28273  
Phone +1 866 482 3778  
Fax +1 704 587 1238  
info.na@hubersuhner.com

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### Waiver

Fact and figures herein are for information only and do not represent any warranty of any kind.

