DEEP WATER
UMBILICALS

Electro – Hydraulic Umbilicals for Multiplexed Systems

Cable description

Designed and tested to withstand harsh environmental conditions in water as deep as 1,000 meters in both static and dynamic applications, these umbilicals comprise the following typical functions:

- High pressure hydraulic control hoses;
- Electric power and control cables (optical fibre control core can be provided as an option, on demand).

High pressure hydraulic control hoses are made of a nylon extruded liner, reinforced with an extruded polyurethane layer.

Electric power and control cables are insulated and jacketed with SEVEREX high-performance compounds. Electric cable design and performance can meet the most demanding and specific system requirements.

The umbilical components are assembled and sheathed with a polymeric extruded layer and then armoured with a counter-helix double layer flat steel wire armour, to virtually eliminate any torsional tendency due to installation/operation stresses, and improve the umbilical hydrodynamic stability.

The outer jacket is designed to provide excellent performance in terms of abrasion and crushing, besides UV resistance.

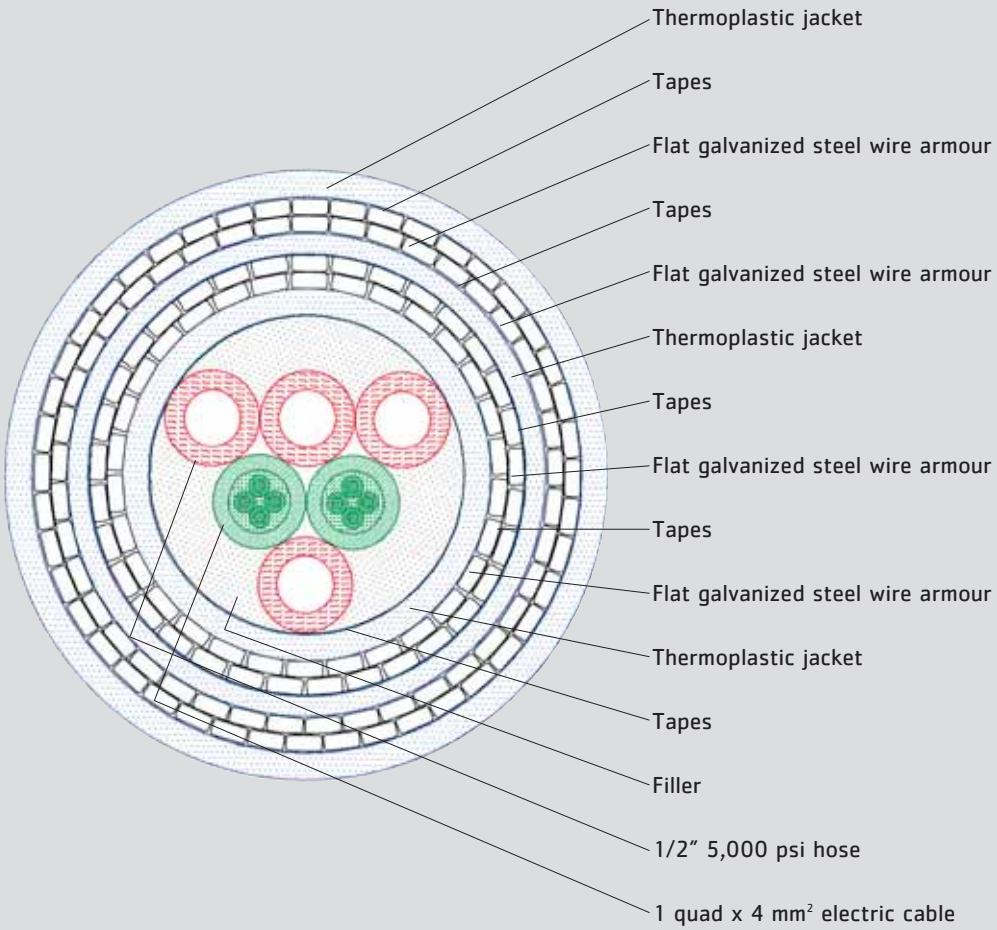
>

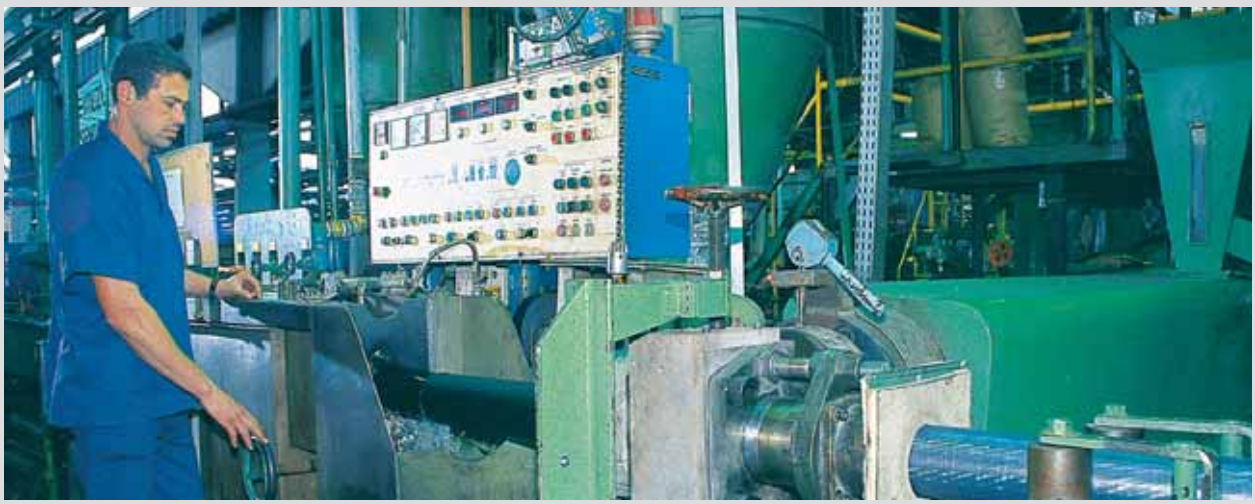
Example
4x1/2" 5,000 psi + 2 quads x 4 mm² 1 kV – WATER DEPTH 1,000 m

Jacket extrusion

PRYSMIAN CABLES & SYSTEMS

DEEP WATER
UMBILICALS





dega design group

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PRYSMIAN CABLES & SYSTEMS

DEEP WATER
UMBILICALS

Electro – Hydraulic Control Umbilical

Cable description

Designed and tested to withstand harsh environmental conditions in water depths as deep as 1,000 meters in both static and dynamic applications, these umbilicals comprise the following typical functions:

- High pressure hydraulic control hoses;
- Electric control cable (optical fibre control core can be provided as an option, on demand).

High pressure hydraulic control hoses are made of a nylon extruded liner, reinforced with a polyaramid braid and sheathed with an extruded polyurethane layer.

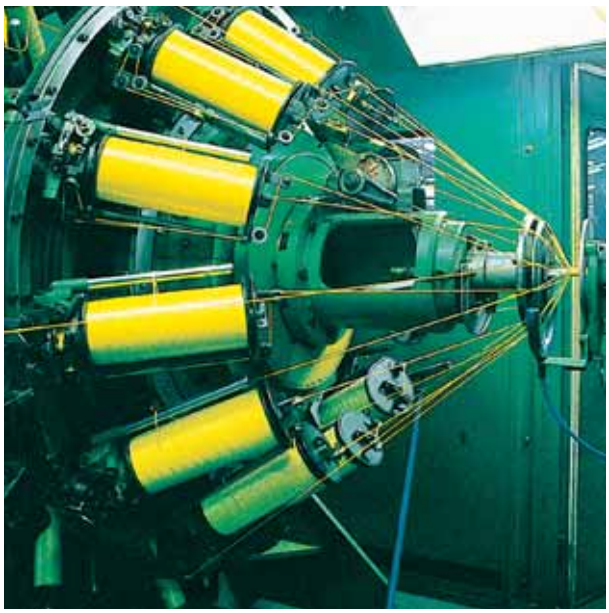
Electrical control cables are insulated and jacketed with SEVEREX high performance compounds. Electrical cable design and performance can meet the most demanding and specific system requirements.

The umbilical components are assembled and sheathed with a polymeric extruded layer and then armoured with a counter-helix double-layer flat steel wire armour, to virtually eliminate any torsional tendency due to installation/operation stresses, and improve the umbilical hydrodynamic stability.

The outer jacket is designed to provide excellent performance in terms of abrasion and crushing, besides UV resistance.

>

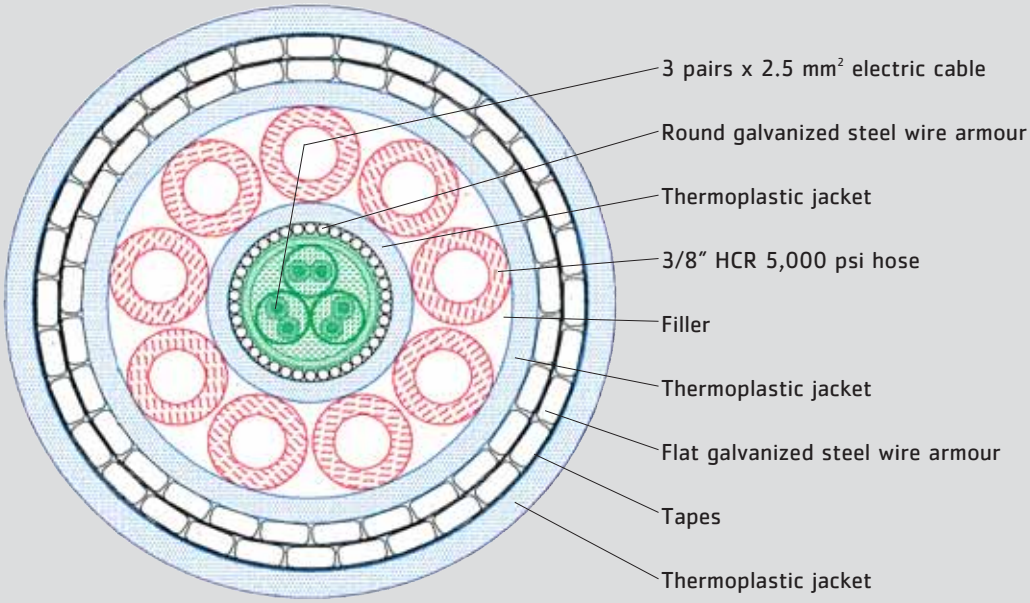
Example
9x3/8" 5,000 psi + 3 pairs x 2,5 mm² 1 kV – WATER DEPTH 1,000 m

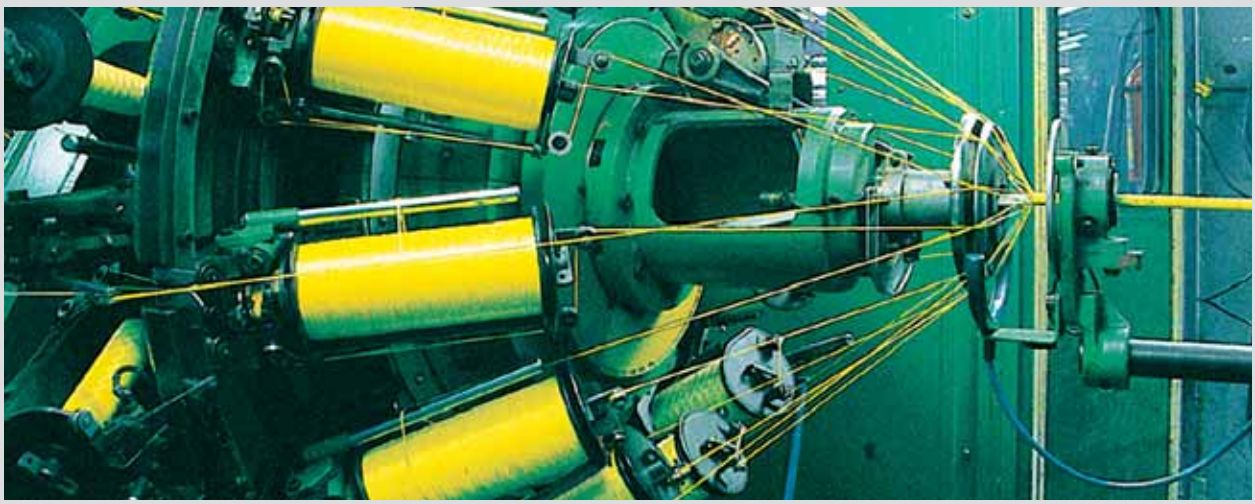


Polyaramid braiding

PRYSMIAN CABLES & SYSTEMS

DEEP WATER
UMBILICALS





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PRYSMIAN CABLES & SYSTEMS

DEEP WATER
UMBILICALS

Chemical Injection Control Umbilical

Cable description

Designed and tested to withstand harsh environmental conditions in water depths as deep as 1,000 meters in both static and dynamic applications, these umbilicals comprise the following typical functions:

- High pressure hydraulic control hoses;
- High pressure chemical and ethanol injection hoses;
- Electric control cable (optical fibre control core can be provided as an option, on demand).

High pressure hydraulic control hoses are made of a nylon extruded liner, reinforced with a polyaramid braiding and sheathed with an extruded polyurethane layer.

Chemical and ethanol injection hoses are similar to control hoses, and may also be provided with an internal anti-collapse metallic interlocking reinforcement, depending on the system's operating conditions such as internal fluid density and water depth.

Electrical control cables are insulated and jacketed with SEVEREX high-performance compounds. Electrical cable design and performance can meet the most demanding and specific system requirements.

The umbilical components are assembled and sheathed with a polymeric extruded layer and then armoured with a counter-helix double layer flat steel wire armour, to virtually eliminate any torsional tendency due to installation/operation stresses, and improve the umbilical hydrodynamic stability.

The outer jacket is designed to present excellent behavior regarding abrasion and crushing, besides UV resistance.

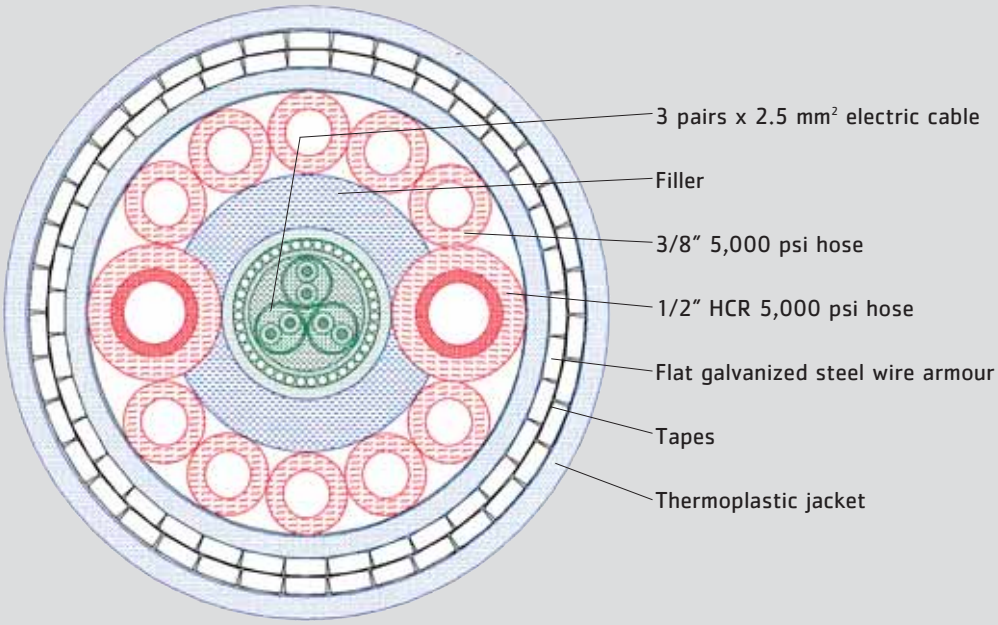
>

Example
10 x 3/8″ 5,000 psi + 2 x 1/2″ HCR 5,000 psi + 3 pairs x 2.5 mm² 1 kV – WATER DEPTH 1,000 m

Metallic wire armoring

PRYSMIAN CABLES & SYSTEMS

DEEP WATER
UMBILICALS



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PRYSMIAN CABLES & SYSTEMS

ULTRA DEEP
WATER UMBILICALS

Production Well Umbilical

Cable description

Designed and tested to withstand harsh environmental conditions in water depths as deep as 2,000 meters in both static and dynamic applications, these umbilicals, which require a high level of structural resistance comprise the following typical functions:

- High pressure hydraulic control hoses;
- High pressure chemical and ethanol injection hoses;
- Electrical power and control cables (optical fibre control core can be provided as an option, on demand).

High pressure hydraulic control hoses are made of a nylon extruded liner, reinforced with a polyaramid braiding, and sheathed with an extruded polyurethane layer.

Chemical and ethanol injection hoses are similar to control hoses, and may also be provided with an internal anti-collapse metallic interlocking reinforcement, depending on the system's operating conditions such as internal fluid density and water depth. Electric power/control cables are insulated and jacketed with SEVEREX high-performance compounds. Electrical cable design and performance can meet the most demanding and specific system requirements.

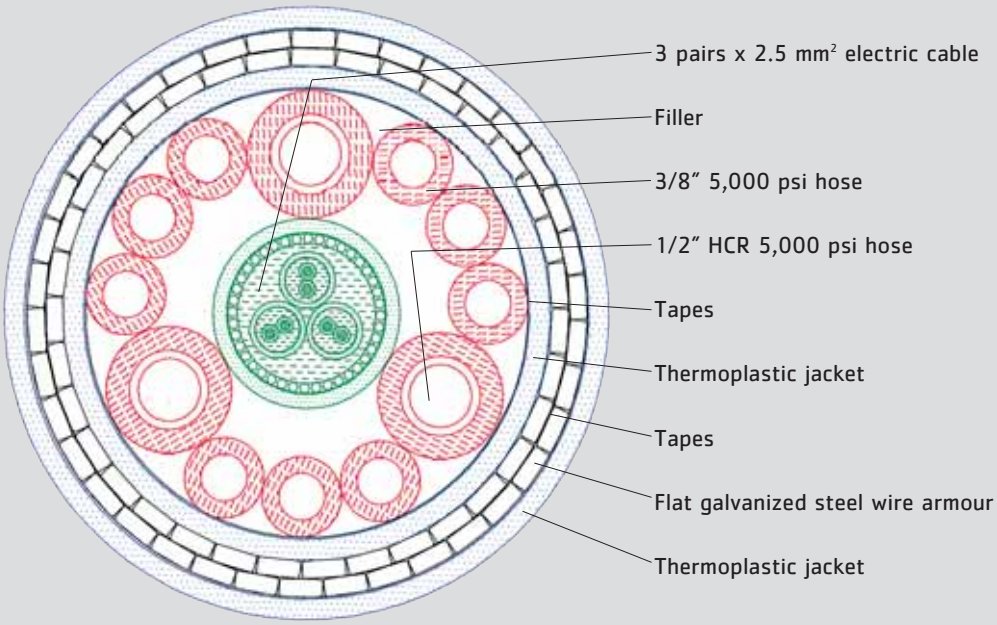
The umbilical components are assembled and sheathed with a polymeric extruded layer and then armoured with a counter-helix double-layer high-strength flat steel wire armour, to withstand the suspended cable higher weight, while virtually eliminating any torsional tendency due to installation/operation stresses, and improving the umbilical hydrodynamic stability. The outer jacket is designed to provide excellent performance in terms of abrasion and crushing, besides UV resistance.

Example
9x3/8" 5,000 psi + 3x1/2" HCR 5,000 psi + 3 pairs x 2.5 mm² 1 kV – WATER DEPTH 2,000 m

Metallic wire armoring

PRYSMIAN CABLES & SYSTEMS

ULTRA DEEP
WATER UMBILICALS



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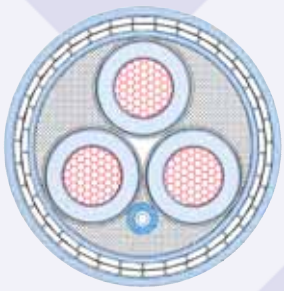
PRYSMIAN CABLES & SYSTEMS

ULTRA DEEP
WATER UMBILICALS

Power
(Power Optical) Umbilical

Cable description



Submarine power-optical cables are used in the offshore industry in the following applications:

- Power distribution and two-way communication between production units;
- Single/Dual Subsea Electrical Submersible Pumping Systems;
- Vertical Annular Separation and Pumping System (VASPS);
- Subsea Multiphase Pumping System (M.V. Power feeding), operational control and data transfer of subsea multiphase pumping systems.

Designed and tested to withstand harsh environmental conditions in water depths as deep as 2,000 meters in both static and dynamic applications, these submarine cables, which require a high level of structural resistance comprise the following functions:

- Low or medium voltage power cores;
- Optical core.

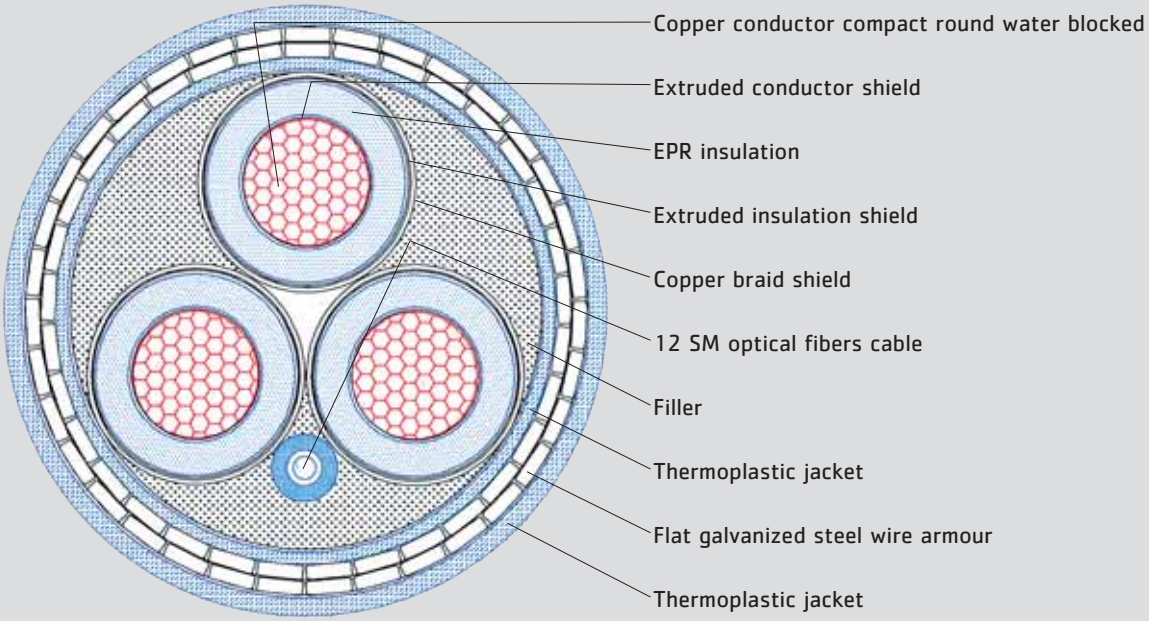
Power cores are insulated with SEVEREX high-performance compound, applied on the conductors by means of triple extrusion and continuous dry-curing process.
The optical cable core features high crushing resistance.
The type and number of fibres can meet the most demanding customer's system requirements.
The submarine cable components are assembled and sheathed with a polymeric extruded layer and then armoured with a counter-helix double layer high strength flat steel wire armour, to virtually eliminate any torsional tendency due to installation/operation stresses, and improve the cable hydrodynamic stability.
The outer jacket is designed to provide excellent performance in terms of abrasion and crushing, besides UV resistance.

Example
3x240 mm² 12/20 kV + 12 SM optical fibers – WATER DEPTH 2,000 m

Complete umbilical reeling

PRYSMIAN CABLES & SYSTEMS

ULTRA DEEP
WATER UMBILICALS



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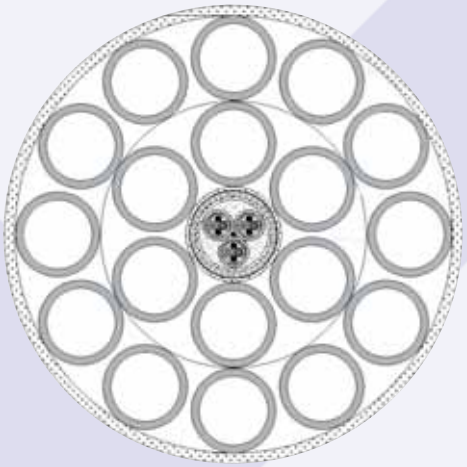
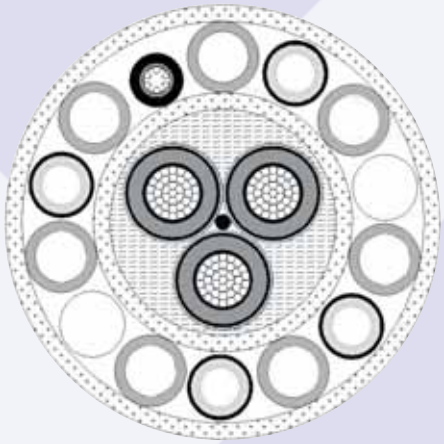
PRYSMIAN CABLES & SYSTEMS

ULTRA DEEP
WATER UMBILICALS

Steel Tube Umbilicals

Cable description





Failure of an umbilical cable which links the platform to the wellhead can result in partial or total loss of production with resulting sever economic consequences. Steel tube umbilicals are designed to operate in the harshest of environments and ultra deep water applications, at depths of up to 3,000 meters.

Individual steel tube umbilicals can contain a number of functional components with the cable. These can include

- High pressure steel tubes
- High pressure hydraulic control hoses and tubes
- High pressure chemical and ethanol injection hoses
- Electrical power and control cables
- Fibre optic cables

The steel tubes are made from superior high-alloy stainless steel. Due to their nature they are not affected by the pressure, which allows for fast response times and prevention of permeation of fluids. In addition the stainless steel prevents corrosion due to high temperature and pressure fluids. In addition, long continuous lengths of steel tube umbilical cable are possible, using the latest laser welding technology and weld checking systems. This is particularly useful for the ultra deep water applications.

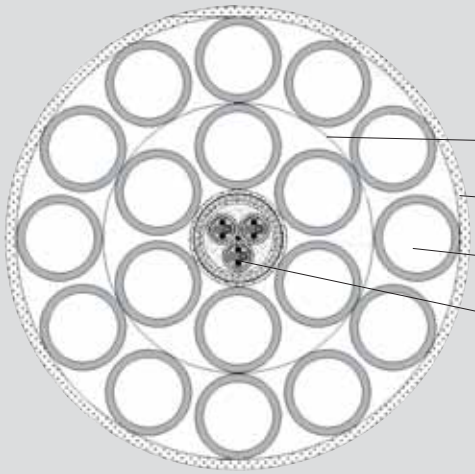
Electric power cables and control cables are insulated and jacketed using the Prysmian Severex high performance compounds. Electric cable designs and performance can meet the most demanding applications.

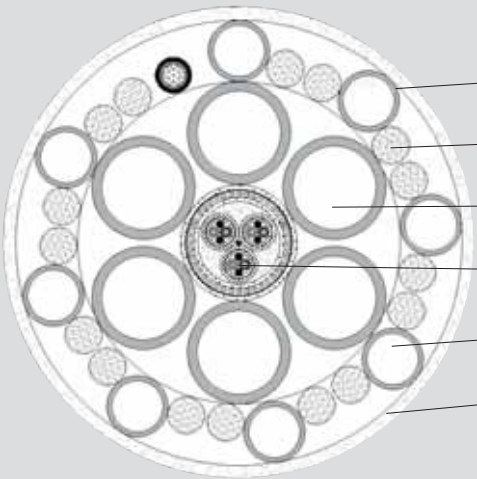
The steel tubes are assembled on a high-capacity planetary stranding machine which is capable of handling steel tubes up to a diameter of 1.5 inches

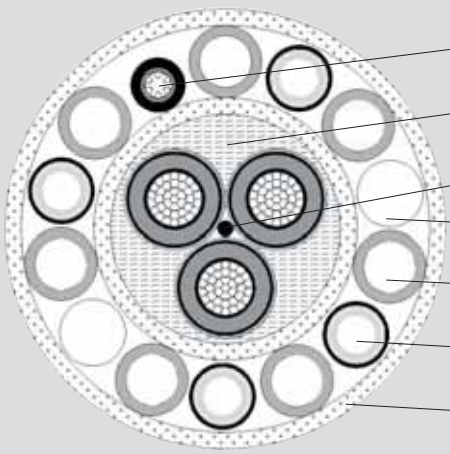
The Prysmian's plant in Vila Velha (Brazilian southeast coast), is equipped with enhanced manufacturing and storage capacity which includes high-load turntables [carousels] and bigger reels, which allows the loadout of very long continuous STU lengths. Situated on the coast, the Prysmian factory has a deep water berth, which allows for direct loading of heavy payloads directly onto installation vessels.

ULTRA DEEP
WATER UMBILICALS

PROTOTYPE UMBILICAL CABLES







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