OPS (ON SHORE POWER SUPPLY)
ULTRA COMPACT MOTOR CABLE REEL
(MEDIUM VOLTAGE)

2023

INTRODUCTION

The electrical power system (OPS) (On shore Power Supply) electrically connects the ship moored in the port with a medium voltage electrical station (10/100 KV) located near the port

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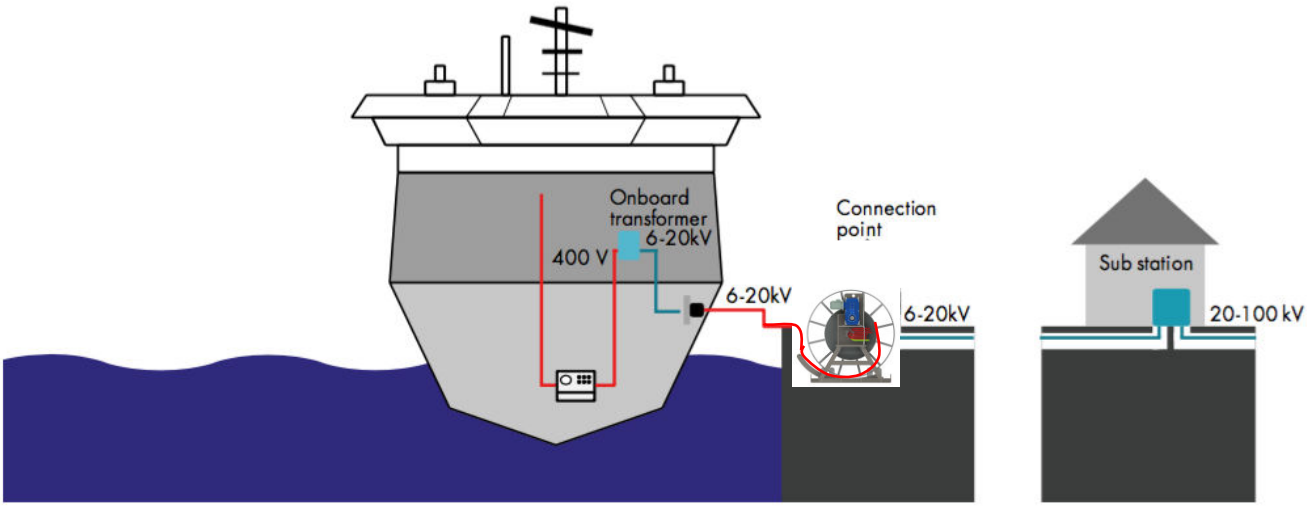
These systems (OPS) are rapidly growing in ports around the world with the main objective of combating greenhouse gas emissions. In addition to reducing carbon emissions for the ship and the port environment, the OPS reduces noise, costs and improves the working environment for seafarers on board the vessel or



With the introduction of these OPS systems,
ships can turn off their engines while moored and connect to a shore-based electrical power source, the ship's energy load is transferred to the shore-based electrical grid without interruption to onboard services.

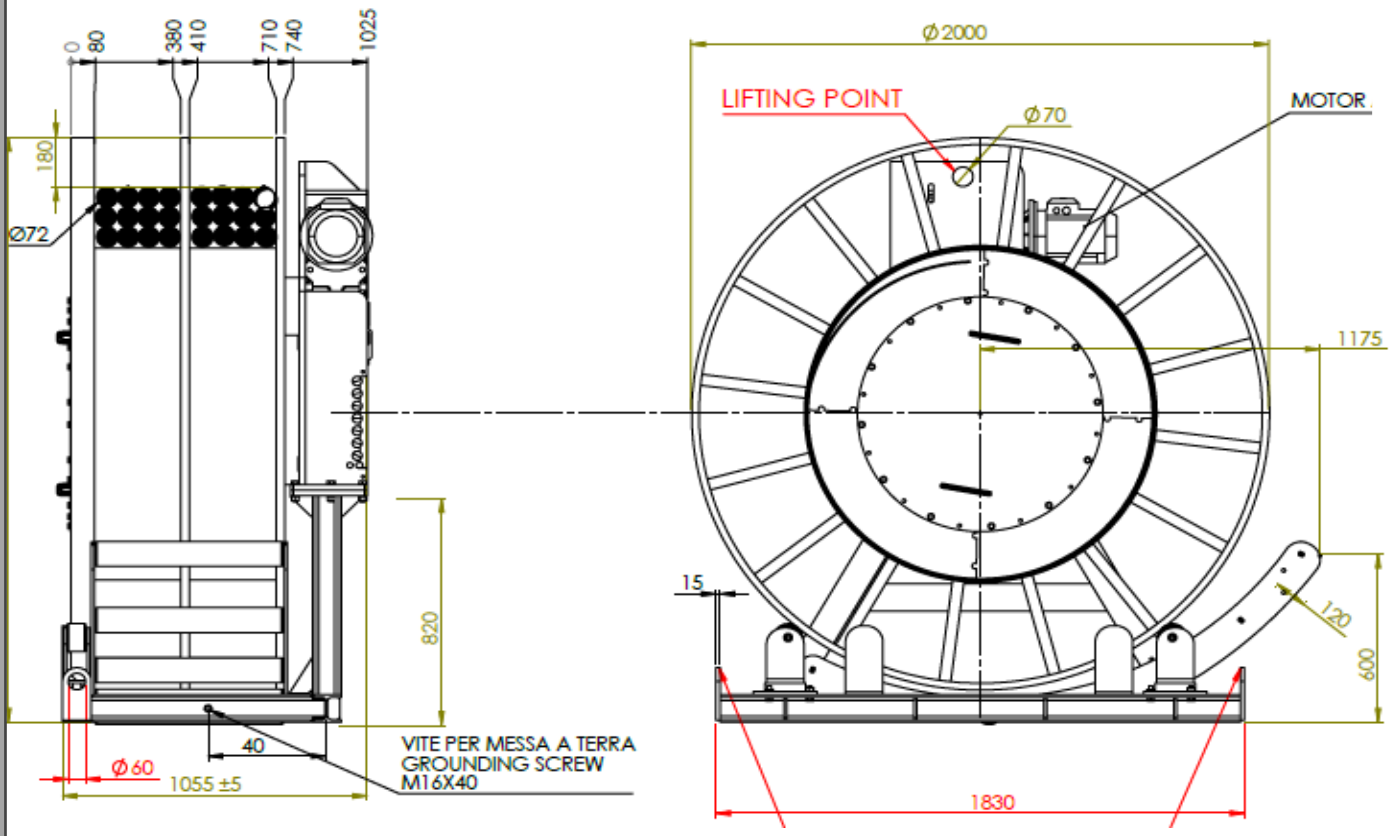
With the end result that emissions into the surrounding environment are eliminated.

An OPS installation typically requires an electrical station, containing the necessary technical equipment including switchboards, transformers or frequency converters whose purpose is to adapt the electrical characteristics of the shore to those of the ship (voltage, frequency).

Near the ship's mooring there is the ship's connection system which consists of a lifting system for the power and connection cables and a system for winding and unwinding the cables (Motor Cable Reel)
In addition to reducing carbon emissions for the ship and the port environment, OPS reduces noise, costs and improves the working environment for seafarers on board the ship.

STANDARD IEC 80005-1 (2019)

MAIN CHARACTERISTICS OF THE MOTOR CABLE REEL

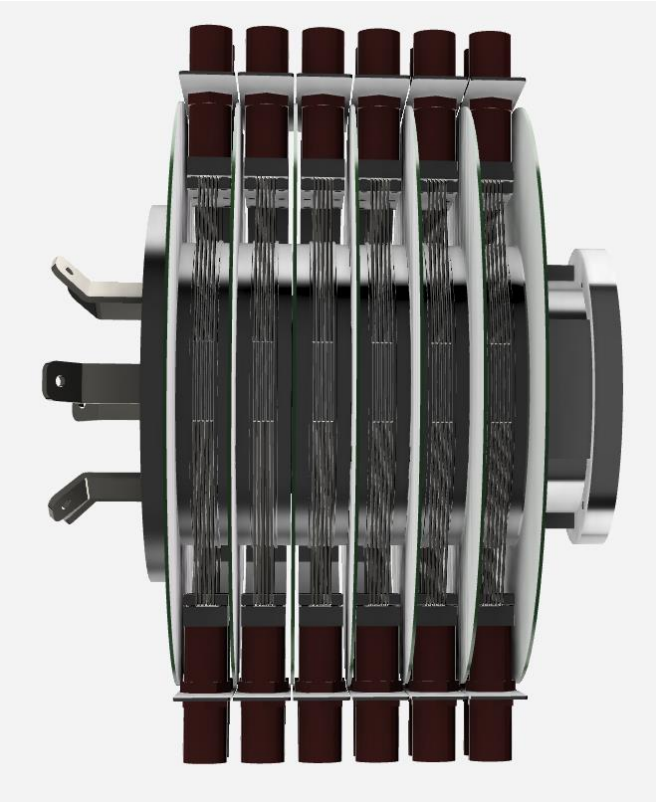


MAIN FEATURES	
VOLTAGE slip ring	6/24 kV
Current Icc slip ring	16KA
Nominal current slip ring	400 A
Maximum length of wrapped CABLE 3x185+PE	60 Mt
Stainless steel drum	AISI 316L
Painting	Marine
Slip ring protection level	IP66

SLIP RING ULTRA COMPACT SLIP RING
MEDIUM VOLTAGE

The VPS SLIP RING system is a particular device where conductive elements (multi-bladed brushes slide on the surface of a ring made of conductive material (bronze, brass, aluminium) coated with a galvanic treatment (high phosphorus nickel plating, hard chrome plating).
It has the function of transmitting electrical power energy from a fixed point (brush) to a mobile rotating point (ring) (input = ring / output = brush)

The VPS SLIP RING system essentially consists of:
A brush body made of insulating material suitable for low and medium voltage 0.6/1 KV up to 36 KV for which the dimensions depend on the current flow rate and the type of electrical termination and electrical potential.



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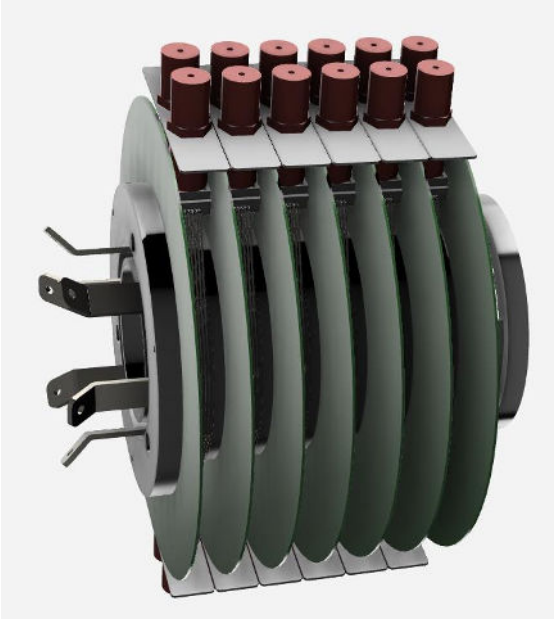
Slip Ring
Medium
Voltage

- the sliding element is made up of a lamella/or monofilaments of beryllium copper or silver alloy material with a thickness of a few tenths of millimetres. The slats are placed in layers with respect to each other depending on the current flow rate they must transmit (see table).

- A terminal which is in pressurized contact with the slats or monofilaments by means of screws. It is constructed in various ways depending on the operating electrical potential 0-/36KV
- Circulating electric current of 20/2000A

- Depending on the type of use and working environment we can have an ad hoc combination of sliding contacts with the main objective of reducing the electrical resistance of the electrical contact as low as possible.

so as to have a low thermal power, consequently low working temperatures.
The second objective of the VPS slip ring system is to have excellent resistance to corrosion especially in marine environments. The final objective is the integrity of the slip ring system in the event of large fault currents.



cThe main advantages of the VPS slip ring system compared to traditional carbon graphite brush systems are:

1) Compactness and construction simplicity (see drawing);
2) Ease of maintenance;
3) Low electrical resistivity values (0.2 <R<0,4 mohm)
4) Good values of the characteristic impedance of the ring/brush system
5) Low friction value (Good ring/brush smoothness).
7) Low superheating at the contact point.
8) Low terminal overtemperature values in the event of a fault.
9) Rapid cooling in case of failure at the contact point
10) Low debris levels due to wear.

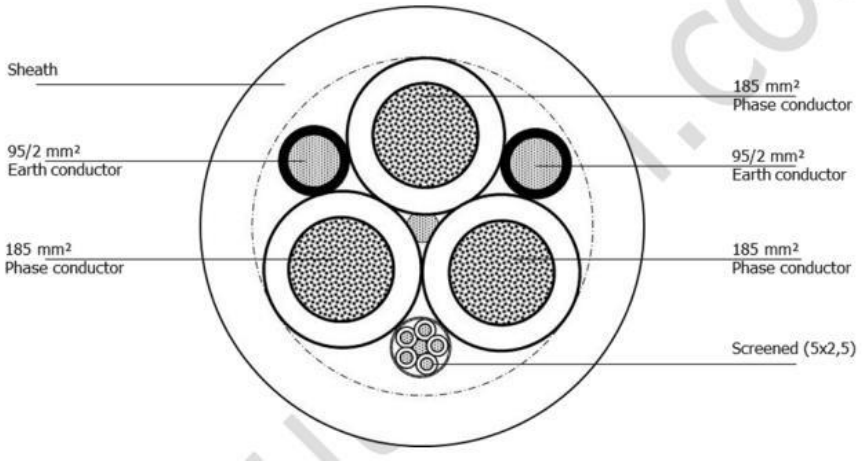
SPECIAL CABLE UTVFLEX

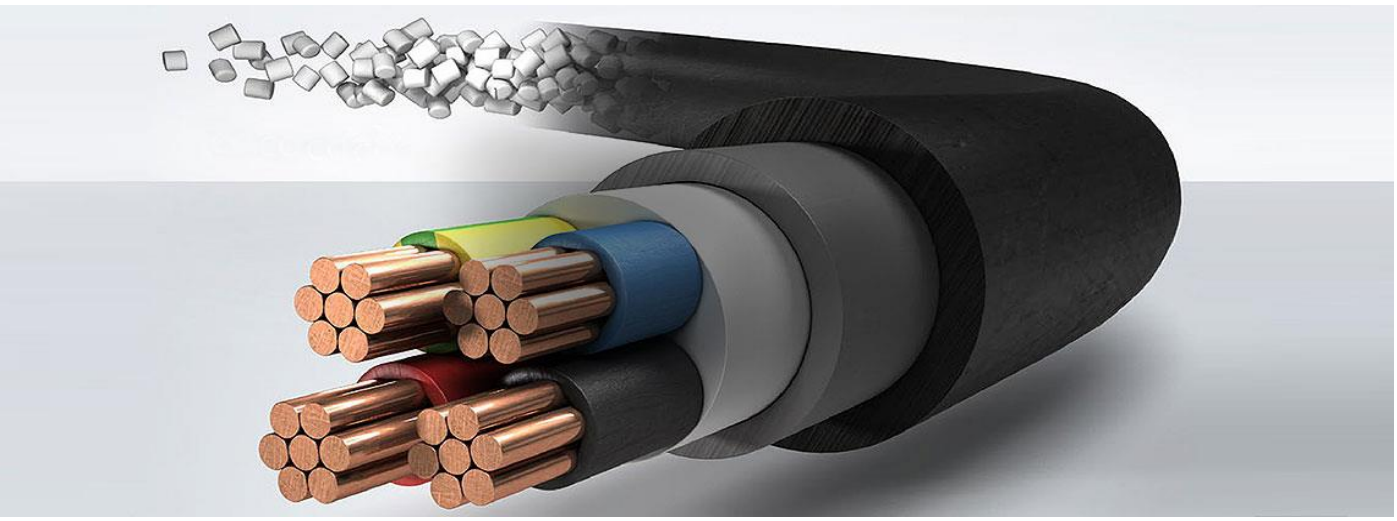
UTVFLEX-PUR MT 6/10 kV 3x185+2x95/2+1x(5x2,5)St

in line with:

IEC 60092-300 (series) std. and IEC/IEEE 80005-1 (2019) std. where applicable.

For ambient temp. not below -30°C





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