

# Subsea Power Cables - Medium Voltage

Providing connections for power generation and transfer projects

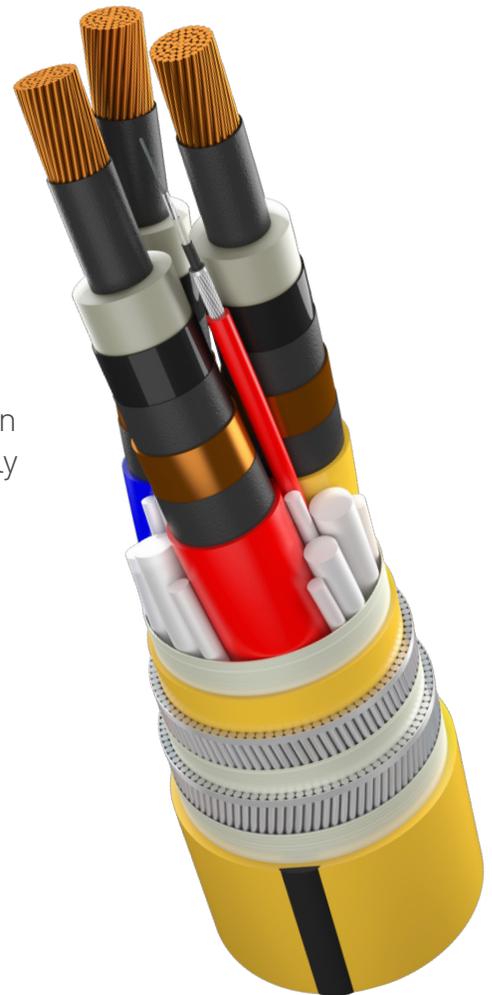
Oceanengineering subsea power cables provide a safe, reliable, field proven, and efficient method for distributing power to and between subsea equipment, shore-to-subsea based facilities, subsea factories, wind turbine generators, and wave and tidal devices. Our equipment and technology has a significant track record in subsea production and energy conversion systems globally and is tasked with operating in some of the industry's harshest environments.

## FEATURES

**MV cable sizes from 16 mm<sup>2</sup> to 1,000 mm<sup>2</sup>**

**Working voltages up to 46 kV**

**Suitable for use in multiple applications**



# Subsea Power Cables

The inclusion of power transmission functions in a production control subsea cable enables operators to overcome power transmission challenges. The depth and breadth of Oceaneering experience enables the supply of reliable power cables that support economic production of challenging projects.



## Advantages and Characteristics

- » Multiphase AC power cables with voltage ratings up to 46 kV
- » Catalog of low voltage and fiber optic cables for complementary power and signaling or temperature, strain, and partial discharge monitoring
- » Detailed analysis completed to determine system limitations and safe operating conditions
- » World class manufacturing, extensive track record, and expert project management
- » Provision of auxiliary hardware including terminations, bend protection, and splice kits

Parameter	Value
Maximum diameter	12.6 in / 320 mm (maximum outside diameter to date)
Strength member	Typically galvanized steel armor wire, helically wound
Manufacturing length limitations	None. Qualified splicing and jointing processes are available.
Axial, bending, and torsional stiffness	Optimized during design
Tension/Torsion Factor	Designs are torque balanced.
Design Life	25 years, as standard. Longer life can be provided.
Packing, transportation, load out	Determined by subsea power cable characteristics and client requirements Reel, carousel
Installation methods	Subsea power cable designed to suit client's installation method
Industry Specification Compliance	ISO 13628-5 / API 17E NORSOK U-001 DNV-OS-F101

# Electrical Power Cores

## Medium Voltage Cores

Oceaneering supplies medium voltage (MV) power cores in a range of conductor sizes, material options, and voltage ratings that are then processed into the required bundled configuration to suit the specific application. Our MV power cores are designed to leading industry standards and provide a reliable method of distributing power in subsea environments.

Parameter	Value
Conductor configurations	Single sheathed core or triad
Conductor Size	24.8 in <sup>2</sup> - 155 in <sup>2</sup> / 8 AWG - 2,000 kcmil
Conductor material	Compacted, water blocked, stranded copper
Core Insulation Material	EPR or XLPE
Outer Jacket Material	HDPe
Maximum Operating Voltage	6 kV - 36 kV (IEC compliant) 5 kV - 46 kV (ICEA compliant)
Operating Temperature	14° F - 185° F / -10° C - 85° C (EPR) 14° F - 194° F / -10° C - 90° C (XLPE)
Screen/Shield	Semiconducting EPR or XLPE conductor and insulation screen/ shield. Copper or tinned copper metallic screen.
Industry Specification Compliance	ISO 13628-5 / API 17E IEC 60502 Part 2 ICEA S-93-639, S-94-649, S-97-682 Cigre TB490

## Fiber Optic Cables

Oceaneering supplies fiber optic cables with a range of fiber modes and quantities. Fiber optic cables can also be included in a power cable bundled design to provide signal transmission/receipt and also temperature and strain and/or partial discharge monitoring for operational monitoring of power cables.

Parameter	Value
Fiber modes	Single mode Cut-off shifted single mode Multi mode
Number of fibers	1 - 96
Construction	Loose tube assembly
Sheath material	Polyethylene
Reinforcement	Galvanized steel wire armor or aramid yarn
Industry Specification Compliance	ISO 13628-5 / API 17E ITU-T G.652, G.654, or G.651 and G.976 IEC 60793 and 60794

## Low Voltage Cores

Oceaneering supplies low voltage electrical cables for use in power cables up to 1.8 / 3.0 (3.6) kV rating. The core includes a fully belted design which is suitable for use in deep water environments. Also available are design options which can reduce common mode and differential mode induced voltages, which are unavoidable in certain power cable applications.

Parameter	Value
Conductor configurations	Pair / Triple / Quad / Other Multicore Designs
Conductor Size	3.9 in <sup>2</sup> 7.8 in <sup>2</sup> / 13 AWG - 1/0 AWG
Maximum Operating Voltage	3.6 kV (IEC Compliant) 5 kV (ICEA Compliant)
Screen/Shield	Multiple screen/shield options available
Reinforcement	Optional metallic wire and/or aramid yarn
Industry Specification Compliance	ISO 13628-5 / API 17E IEC 60502 Part 1, ICEA S-95-658, ICEA S-96-659



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