

World Markets for HV and EHV Cable

Underground and Subsea Cable Market Report Ed 1 2020



A comprehensive report on the current usage, consumption, future demand and supply of EHV and HV cable, both underground and subsea, throughout the world.

- ◆ Current installations of UGC and subsea cable - analysed by voltage by km of cable.
- ◆ Market forecasts for EHV & HV UGC and subsea in km of cable and \$ value, 2019 to

The report is based on two comprehensive surveys of cable length in km by voltage:

1. The land based transmission and distribution networks of 162 countries. The objective is to position EHV and HV cable within the entire network systems from EHV transmission to LV distribution in 2019, analysing each national grid by overhead lines, underground cables, and voltages. The data is derived from a survey of 186 utilities, together with secondary research of national sources.
2. Worldwide subsea cables - land-to-land interconnections, export cable for wind farms, power-from-shore cables for oil & gas platforms, analysing interconnector cable and export cable by voltage. Based on secondary research of 202 subsea power cable systems.

Analysis by five voltage groups:

EHV	EHV	HV	MV	LV
≥330 kV	200<330 kV	100<200 kV	>12<100 kV	≤400 V<12 kV

The market for HV and EHV cable is changing, on both the supply and demand sides. Suppliers are developing new technology with higher voltage cables and thinner dielectric insulation. On the demand side, regulation is being enacted for the new generation of EHV transmission corridors, city networks and environmental hazards. User practices are changing, with MV cable migrating to HV. These issues are identified and discussed.

Opportunities for HV underground cable - UGC amounts to 17.4% of total network mileage and 2.4% of the HV networks, but in both grids is on the increase in niche segments. Globally, transmission is in a phase of growth and modernisation involving large expenditures. Many national studies have outlined the pros and cons and made recommendations for EHV & HV UGC (≥ 330 kV/≥ 200 kV/ ≥100 kV) and identified cases for full and partial undergrounding. The report lists these opportunities and relevant national policies which will shape future markets.

Opportunities for HV subsea cable - The current state of the three major subsea cable segments are outlined and future developments flagged; land and island connections, offshore wind power, oil & gas power-from-shore and umbilicals. The report identifies the growth areas including trends from MV cable to HV.

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The technologies of HV and EHV underground and subsea cables are outlined; high pressure fluid filled pipe (HPFF), high pressure gas filled pipe (HPGF), self-contained fluid filled (SCFF)/mass impregnated MI, EPR and XLPE dielectric insulated cable. The differences of composition are outlined, with advantages and disadvantages for each type, with historical and present usage trends.

New HV technologies are being commercialised; **superconductors** are already well established in medical robotics, and are starting to be installed in power transmission applications; **GTW, Gas to Wire**, is being promoted and the first project is about to take off, converting gas to electricity at the offshore platform site and transporting it to land grid via offshore wind turbine export cables, using surplus capacity. Manufacturers are pushing the boundaries to develop thinner cables and higher voltages for EHV and HV dielectric cables.

Company profiles of key HV and EHV cable players.

Prysmian	J-Power Systems (JPS)
Nexans	LS Cable & System
NKT High Voltage Cables	Iljin Cable
Cable® Hellenic Cables	Finolex J-Power Systems Private Ltd (FJPS)
Southwire	Ningbao Orient Cable
Parker Scanrope	Far East Cable Co Ltd
Leoni	Wanda Group Holdings Co Ltd
Sumitomo	Baosheng High Voltage Cable Co Ltd BHVC
Fujikura	Jiangsu Shangshang Cable Group.
Hitachi Cable	

Production of HV and EHV cable is a complex process taking quite a long time and demanding continuous monitoring. Several of the leading international manufacturers were unwilling to divulge production capacity. We have assessed capacity on a regional basis, from company reports, from actual production and estimated utilisation.

Production of subsea cable is more complicated than for underground cable, requiring longer cable lengths and additional mechanical protection. Subsea cable is ordered as a customised product with longer lead times than underground cable.

Suppliers of subsea cable are outlined. Production capacity is still limited, but new entrants are coming into the market in regions where subsea cable is starting a growth trend.

Rights of Way are critical in deciding between overhead lines and underground cable. Combined with EMF - electromagnetic fields - the issue may not always be clear cut and is subject to increasing regulation. Parts of UGC paths produce higher EMF than overhead aerial lines. These issues are discussed in the report.

192 pages

89 figures

40 tables

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