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Submarine Electricity Transmission Systems Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By System Type (HVDC System, HVAC System), By Application (Offshore Wind Turbine, Offshore Oil & Gas Platform, Intercountry & Island Connectors, Others), By Region, By Competition, 2020-2030F

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Abstracts

Market Overview

The Global Submarine Electricity Transmission Systems Market was valued at USD 11.4 billion in 2024 and is projected to reach USD 16.0 billion by 2030, growing at a CAGR of 5.6% during the forecast period. The market's growth is primarily driven by the rising deployment of offshore renewable energy projects, particularly offshore wind farms, which require reliable underwater power transmission infrastructure. The shift toward clean energy and efforts to reduce carbon emissions are prompting increased adoption of submarine cables. Technological advancements in high-voltage direct current (HVDC) systems are improving transmission efficiency over long distances, enhancing system reliability and reducing energy losses. Interconnection of regional power grids through submarine cables is further supporting energy security and cross-border electricity exchange. Government policies and incentives for renewable energy expansion, along with growing investments in offshore infrastructure by emerging economies, are also fueling demand. Together, these factors are significantly advancing the development of submarine electricity transmission systems worldwide.

Key Market Drivers

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Expansion of Offshore Renewable Energy Projects

A major factor driving the global submarine electricity transmission systems market is the continued growth of offshore renewable energy initiatives, particularly offshore wind farms. With the global push to curb carbon emissions and transition away from fossil fuels, countries are increasingly investing in offshore energy sources like wind, tidal, and wave power. These installations are often located far from shore, requiring robust transmission systems to connect them to onshore grids. Submarine electricity transmission systems—both HVAC and HVDC—are critical to this infrastructure. In 2024, Prysmian Group's USD 4 billion acquisition of Encore Wire exemplified strategic moves to strengthen high-voltage cable capabilities, particularly in the U.S. Concurrently, EU targets for 300 GW of offshore wind by 2050 and China's initiatives under its 14th Five-Year Plan underscore the growing need for submarine cable systems. Companies like Nexans are also expanding their capabilities through acquisitions, such as the purchase of Reka Kaapeli Oy, to meet escalating global demand.

Key Market Challenges

High Installation and Maintenance Costs

A key obstacle to the expansion of the submarine electricity transmission systems market is the substantial cost associated with installation and maintenance. These projects require significant capital for the production of high-voltage cables and the execution of complex marine operations, including planning, seabed surveying, environmental assessments, and cable laying. Installation costs are particularly high due to the need for specialized vessels and marine equipment that can manage undersea challenges. Terrain factors such as ocean depth, seabed composition, and environmental regulations further complicate project design and execution. Maintenance introduces additional complications. Submarine cables face risks from abrasion, marine activity, corrosion, and geological events. When faults occur, locating and repairing them demands advanced tools and costly undersea interventions. These high costs can deter investment and slow project deployment, especially in budget-sensitive regions.

Key Market Trends

Increasing Adoption of High-Voltage Direct Current (HVDC) Technology

A prevailing trend in the submarine electricity transmission systems market is the growing preference for HVDC technology over HVAC. HVDC systems are ideal for long-

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distance, high-capacity transmissions due to their superior efficiency and reduced energy losses. These benefits are particularly critical for intercontinental and remote offshore projects. HVDC systems also enhance grid stability and offer better control over power flow, making them well-suited for integrating renewable energy sources. Furthermore, HVDC enables asynchronous grid connections, allowing power exchange between countries with differing grid standards. This feature supports cross-border projects such as the Viking Link and EuroAsia Interconnector, both relying on HVDC submarine transmission. As such, HVDC is rapidly becoming the backbone of large-scale offshore and interregional energy initiatives.

Key Market Players

ABB Ltd

Sumitomo Electric Industries Ltd

Siemens AG

LS Cable & System

Nexans SA

NKT AS

Norddeutsche Seekabelwerke GmbH (NSW)

Prysmian SpA

Report Scope:

In this report, the Global Submarine Electricity Transmission Systems Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

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Submarine Electricity Transmission Systems Market, By System Type:

HVDC System

HVAC System

Submarine Electricity Transmission Systems Market, By Application:

Offshore Wind Turbine

Offshore Oil & Gas Platform

Intercountry & Island Connectors

Others

Submarine Electricity Transmission Systems Market, By Region:

North America

United States

Canada

Mexico

Europe

Germany

France

United Kingdom

Italy

Spain

Asia Pacific

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China

India

Japan

South Korea

Australia

South America

Brazil

Colombia

Argentina

Middle East & Africa

Saudi Arabia

UAE

South Africa

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Submarine Electricity Transmission Systems Market.

Available Customizations:

Global Submarine Electricity Transmission Systems Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

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Company Information

Detailed analysis and profiling of additional market players (up to five).

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