

Flexible HVDC Cable Market Forecasts to 2034 – Global Analysis By Cable Type (Mass-Impregnated (MI) Cables, Extruded Cables (XLPE) and Oil-Filled Cables), Installation Method, Voltage Rating, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Flexible HVDC Cable Market is accounted for \$2.7 billion in 2026 and is expected to reach \$5.4 billion by 2034 growing at a CAGR of 8.9% during the forecast period. Flexible HVDC cables represent modern transmission technology engineered to deliver high-voltage direct current efficiently across extended distances with greater versatility. Featuring extruded insulation such as XLPE, they offer improved heat resistance and flexibility over conventional cable types. These cables are commonly used in offshore renewable projects, cross-border links, and underground networks because they are easier to install and maintain. They play a crucial role in integrating renewable energy sources, reducing energy losses, and enhancing grid reliability. With a modular structure enabling faster installation, flexible HVDC cables are becoming essential in the advancement and transformation of global power transmission systems.

According to the International Energy Agency (IEA, 2024), global investment in power transmission grew by 10% in 2023 to USD 140 billion, with advanced economies and China accounting for about 80% of the total. HVDC technology is highlighted as essential for offshore wind integration and cross-border electricity trade.

Market Dynamics:

Driver:

Rising integration of renewable energy

Growing adoption of renewable energy, including offshore wind and solar power, is significantly boosting the flexible HVDC cable market. Since these power generation sites are usually distant from major demand areas, efficient transmission systems are essential. Flexible HVDC cables provide dependable long-distance connectivity while reducing energy losses. Their flexible structure makes them suitable for challenging environments like underwater and uneven terrains. With increasing global emphasis on reducing carbon emissions and achieving sustainability goals, governments are investing heavily in clean energy infrastructure. This trend is driving demand for flexible HVDC solutions that enhance grid reliability and support greater inclusion of variable renewable energy.

Restraint:

High initial installation costs

Elevated upfront costs associated with flexible HVDC cable systems act as a major challenge to market expansion. The need for high-quality materials, sophisticated insulation, and advanced installation techniques significantly increases project expenses. Deployments in underwater or underground environments further raise costs due to technical complexity and labor intensity. Moreover, the inclusion of converter stations and related equipment adds to total investment requirements. Financial limitations in developing economies and among smaller utility providers restrict widespread adoption. Despite long-term operational advantages, these high initial expenditures can slow decision-making, discourage investors, and delay the execution of large-scale transmission infrastructure projects globally.

Opportunity:

Growth in cross-border power interconnections

Expanding cross-border electricity connections is creating strong opportunities in the flexible HVDC cable market. Nations are increasingly integrating their power grids to improve energy security and manage electricity more efficiently. Flexible HVDC cables are well-suited for such applications due to their ability to transmit power over long distances with low losses. They facilitate energy trading, help stabilize supply-demand dynamics, and improve overall grid performance. As international collaborations in energy infrastructure grow, especially across Europe and Asia-Pacific, the need for

reliable transmission systems increases. This development is opening new avenues for flexible HVDC cable deployment globally.

Threat:

Competition from alternative transmission technologies

The presence of competing transmission technologies represents a major challenge for the flexible HVDC cable market. Conventional HVAC systems and newer solutions like energy storage and smart grids can reduce the need for HVDC in specific use cases. HVAC remains a practical and economical option for shorter transmission distances, while battery storage systems help manage local power fluctuations. Ongoing enhancements in AC transmission efficiency further intensify competition. Many utilities continue to rely on established technologies due to familiarity and lower complexity. This competitive pressure may slow the adoption of flexible HVDC cables, particularly in markets where alternative technologies are sufficient and cost-effective.

Covid-19 Impact:

The outbreak of COVID-19 significantly influenced the flexible HVDC cable market by causing disruptions in global supply chains and delaying infrastructure projects. Lockdowns, workforce limitations, and factory closures hindered manufacturing and installation processes. Several transmission projects were postponed or slowed due to economic uncertainty and reduced capital spending. Despite these challenges, the crisis emphasized the need for reliable and robust power systems to handle changing electricity consumption patterns. During the recovery phase, increased government emphasis on clean energy and grid upgrades led to renewed investments. This shift supported the gradual rebound and long-term growth of the flexible HVDC cable market.

The extruded cables (XLPE) segment is expected to be the largest during the forecast period

The extruded cables (XLPE) segment is expected to account for the largest market share during the forecast period owing to their advanced technical advantages and operational efficiency. They provide strong thermal resistance, improved electrical performance, and require less maintenance than conventional cable types. Their flexible and lightweight structure allows easy installation in challenging environments such as underwater and underground systems. These cables are highly suitable for modern energy projects, including offshore wind farms and urban power networks. With the

ability to handle high voltages and enable quicker installation, they are widely preferred. Rising emphasis on efficient power transmission and renewable energy integration continues to boost their global adoption.

The renewable energy developers segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the renewable energy developers segment is predicted to witness the highest growth rate, driven by the rapid development of offshore wind and solar power projects. These developers increasingly depend on efficient transmission technologies to transfer electricity from remote generation sites to major demand centers. Flexible HVDC cables offer minimal power losses, high efficiency, and strong compatibility with renewable energy systems. Global sustainability goals and supportive regulatory frameworks are encouraging large-scale investments in clean energy infrastructure. Consequently, the rising need for reliable long-distance transmission is significantly boosting demand from renewable energy developers worldwide.

Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share owing to its strong commitment to renewable energy expansion and regional grid integration. The region is a major hub for offshore wind development, particularly across the North Sea and Baltic Sea, which significantly increases demand for HVDC transmission solutions. Leading countries like Germany, the United Kingdom, and Denmark are actively developing subsea interconnection projects to enhance energy security and achieve climate targets. Favorable regulatory frameworks, advanced power infrastructure and substantial investments in clean energy further reinforce Europe's leading position. These combined factors establish Europe as the largest market for flexible HVDC cables globally.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, driven by rapid urban growth, industrial expansion, and surging electricity demand. Major economies like China, India, Japan, and South Korea are heavily investing in modernizing power grids and expanding renewable energy capacity. The development of offshore wind farms, hydropower projects, and remote generation facilities is boosting the need for efficient long-distance transmission solutions. Flexible HVDC cables are increasingly used to link distant energy sources with high-demand

urban areas. Strong policy support and continuous infrastructure development further accelerate the region's rapid market growth trajectory.

Key players in the market

Some of the key players in Flexible HVDC Cable Market include Prysmian Group, Nexans, NKT A/S, Sumitomo Electric Industries, LS Cable & System, Southwire Company, ABB Ltd, Siemens Energy AG, General Electric Company, Hitachi Energy Ltd, Mitsubishi Electric Corporation, Toshiba Corporation, Wartsila Corporation, Eaton Corporation plc, Schneider Electric SE, Furukawa Electric, Fujikura Ltd. and J-Power Systems Corporation.

Key Developments:

In December 2025, GE Vernova has signed an agreement with Greenvolt Power to supply onshore wind turbines for the Gurbanesti wind farm in Călărași county, Romania. The contractual scope covers the supply, installation, and commissioning of 42 units of 6.1MW, 158m rotor turbines. This marks the second major onshore wind agreement for GE Vernova Romania within two months, following an earlier announcement to deliver another 42 turbines for the Ialomița wind farm in the country.

In November 2025, Hitachi Energy India and Bharat Heavy Electricals Ltd (BHEL) have executed a novation agreement that transfers contractual rights and obligations for the Rajasthan HVDC project from Rajasthan Part I Power Transmission Ltd (RPPTL) to an Adani Group entity. The agreement, completed, formalises the replacement of RPPTL with AESL Projects Ltd (APL) as the contracting party.

In November 2025, Siemens Energy has signed a contract to design and deliver the power conversion system for Oklo's Aurora powerhouse reactors. The contract will see Siemens Energy conduct detailed engineering and layout activities for a condensing SST-600 steam turbine, an SGen-100A industrial generator, and associated auxiliaries to support Oklo's first advanced reactor, the Aurora powerhouse at Idaho National Laboratory.

Cable Types Covered:

Mass-Impregnated (MI) Cables

Extruded Cables (XLPE)

Oil-Filled Cables

Installation Methods Covered:

Submarine

Underground

Overhead

Voltage Ratings Covered:

Below 320 kV

320-500 kV

Above 500 kV

Applications Covered:

Offshore Wind Power Transmission

Grid Interconnection

Long-Distance Bulk Power Transmission

Urban & Industrial Power Supply

End Users Covered:

Utilities

Industrial Enterprises

Renewable Energy Developers

Infrastructure Operators

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

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