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Wave Energy Market - Forecast from 2026 to 2031

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Abstracts

The wave energy market is set to increase at a 18.07% CAGR, growing from USD 93.913 million in 2025 to USD 254.441 million in 2031.

The wave energy market is experiencing rapid growth driven by high energy potential in ocean waves, substantial government investment, and the global transition toward renewable energy sources. Wave energy—a renewable energy type produced from wave motion—uses electricity generators positioned in various configurations on the ocean's surface. Multiple technologies capture energy from wave rise and fall through absorbers utilizing buoys, with linear or rotational generators transforming recovered energy into electrical energy for daily life applications.

Primary Market Drivers

Wave Energy Potential

The energy potential of waves off coastlines in the United States reached 2.64 trillion kWh in 2021. Electric generators having generating capacity of at least one megawatt are used for utility-scale power. Potential locations for wave energy use include the west coasts of the United States, Europe, Japan, and New Zealand. Several emerging techniques and technologies for capturing wave energy and transforming it into power are fueling the industry. These techniques include positioning equipment on water surfaces or just below, and anchoring equipment to the ocean floor.

Market Growth Factors

The rapid growth of the renewable energy sector and rising electricity needs from the marine industry represent main drivers propelling wave energy market growth over the anticipated timeframe. While high capital expenditures involved in developing

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infrastructure for generating wave energy previously constrained market growth, governments in various nations are now investing in such projects, fueling market expansion. Top players in the global wave energy market are anticipated to gain from increasing government initiatives and financial support for the renewable energy industry.

Fossil Fuel Transition

Companies are responding to the energy transition transforming the global energy industry from fossil-based energy production and consumption systems to renewable energy sources. Renewable power capacity is projected to increase by 50% globally between 2019 and 2024. Wave energy represents the most economical kind of marine energy, accounting for up to 80% of all marine energy worldwide. Wave energy has high-power density typically at 30 kW/m, making it 5 times more powerful than wind energy, propelling the industry. Waves may be predicted using sophisticated prediction algorithms 10 hours to several days in advance, enabling better integration with power grids.

Government Support Programs

Various tactics are being employed by nations to support renewable energy initiatives, including target-based growth, subsidies, and restrictions on conventional power plant expansion. Governmental organizations can provide scalable, affordable solutions that reach beyond the entire energy supply by using infrastructural resources. Countries like the UK have started projects for clean energy spread involving cost reduction in technology, carbon emissions reduction, and development of cutting-edge technologies to evaluate the viability of unique electricity types.

Power Generation Applications

Wave energy use in power generation is projected to have the largest market share. The core utilization can be linked to strong emphasis on electrical energy production from renewable sources. Increasing the power sector's capacity is required to satisfy growing global demand. Electricity produced from the sea is becoming well-liked and is predicted to dominate the industry due to its potential, dependability, and high availability compared to other conventional renewable resources. The desalination sector also represents a critical area as saltwater use to create drinking water and potable water has grown in popularity.

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International Collaboration and Commercialization

Countries and organizations are working together on R&D and deployment projects to hasten market growth, including the European Marine Energy Centre and the Ocean Energy Systems of the International Energy Agency. Several early-stage commercial deployments and pilot projects are now in progress, demonstrating the promise of wave energy as a dependable and sustainable energy source. These initiatives offer insightful information for future technological advancement and cost-cutting.

Regional Dynamics

Europe is anticipated to hold the largest wave energy market share. Wave energy is the most advanced ocean energy technology. The EU aspires to have built 100 GW of wave capacity by 2050. To achieve these objectives, the wave energy industry must overcome various challenges, including those relating to technical readiness, funding, market development, administrative and environmental issues, and accessibility of grid connections, particularly in remote areas. These limitations are currently impeding the sector's capacity to attract inward investments and engage with the supplier chain to unlock cost-reduction strategies.

Government Initiatives

United Kingdom: By 2031, the UK government wants to produce 30% of the nation's power from offshore renewable sources, allocating ?160 million toward wave-generating project development.

European Union: With emphasis on research, innovation, and market adoption, the EU has committed €300 million for wave energy projects between 2021 and 2027 under the Horizon Europe program.

United States: For improvements to current wave energy infrastructure, the U.S. Department of Energy offered financing of USD 35 million.

Australia: Wave power projects have received more than AUD 50 million from the Australian Renewable Energy Agency.

Recent Developments

In May 2023, AW-Energy, a pioneer in near-shore wave energy technology, signed a

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Memorandum of Understanding with Kaoko Green Energy Solutions in Namibia. The MOU intends to manufacture green hydrogen from renewable energy sources, including wave energy, focused on renewable energy growth.

The wave energy market continues evolving, driven by technological advancement, government support, and the global imperative to transition toward sustainable, renewable energy sources with high power density and predictable generation characteristics.

Key Benefits of this Report:

Insightful Analysis: Gain detailed market insights covering major as well as emerging geographical regions, focusing on customer segments, government policies and socio-economic factors, consumer preferences, industry verticals, and other sub-segments.

Competitive Landscape: Understand the strategic maneuvers employed by key players globally to understand possible market penetration with the correct strategy.

Market Drivers & Future Trends: Explore the dynamic factors and pivotal market trends and how they will shape future market developments.

Actionable Recommendations: Utilize the insights to exercise strategic decisions to uncover new business streams and revenues in a dynamic environment.

Caters to a Wide Audience: Beneficial and cost-effective for startups, research institutions, consultants, SMEs, and large enterprises.

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Report Coverage:

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Historical data from 2021 to 2025 & forecast data from 2026 to 2031

Growth Opportunities, Challenges, Supply Chain Outlook, Regulatory Framework, and Trend Analysis

Competitive Positioning, Strategies, and Market Share Analysis

Revenue Growth and Forecast Assessment of segments and regions including countries

Company Profiling (Strategies, Products, Financial Information, and Key Developments among others.

Wave Energy Market Segmentation

By Technology

Oscillating Water Column

Oscillating Body Converters

Overtopping Converters

By Application

Power Generation

Water Desalination

Pumping of Water

Environmental Protection

By Location

Onshore

Offshore

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