

Tidal Energy Market By Method (Tidal Stream, Tidal Barrage, Tidal Turbine, Others), By Application (Power Generation, Desalination): Global Opportunity Analysis and Industry Forecast, 2024-2033

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Abstracts

The tidal energy market was valued at \$1.2 billion in 2023, and is estimated to reach \$8.6 billion by 2033, growing at a CAGR of 21.9% from 2024 to 2033.

Introduction

The tidal energy market harnesses the power of ocean tides to generate electricity, offering a promising avenue for sustainable energy production. Utilizing the gravitational forces between the Earth, moon, and sun, tidal energy systems capture the kinetic energy of tidal currents and the potential energy of tidal height differentials. With its renewable nature and predictability, tidal energy presents a reliable alternative to fossil fuels, contributing to global efforts to combat climate change.

There are three methods to harness the power from tides such as tidal stream system, tidal barrage system, and tidal fence system.

Tidal stream systems, also known as tidal current systems or tidal turbines, harness the kinetic energy of moving water similar to underwater wind turbines. These systems consist of turbines placed underwater in areas with strong tidal currents. As the tidal currents flow, they cause the turbines to rotate, generating electricity through a generator connected to the turbine. Tidal stream systems are typically deployed in areas with high tidal flow velocities, such as narrow channels or straits.

A tidal barrage is a dam-like structure built across the mouth of a bay or estuary. It includes sluice gates or turbines that allow water to flow in and out of the bay during tidal cycles. As the tide rises, water is trapped behind the barrage. When the tide falls, the sluice gates or turbines allow water to flow out, driving turbines to generate electricity. Tidal barrages can generate significant amounts of electricity but may have environmental impacts on local ecosystems and navigation routes.

Tidal fence systems are a relatively new concept for harnessing tidal energy. They consist of rows of submerged turbines or other energy-capturing devices arranged in a fence-like structure across a tidal channel. As the tidal currents flow through the channel, they interact with the turbines, causing them to generate electricity. Tidal fence systems can be more flexible in deployment than tidal barrages since they don't require large-scale infrastructure construction across an entire waterway. They can also be designed to minimize environmental impacts.

Market Dynamics

Technological advancements in the tidal energy sector have propelled significant growth, serving as a primary driver for its expansion. Innovations in turbine design, materials, and underwater infrastructure have enhanced the efficiency and reliability of tidal energy generation, making it increasingly competitive with conventional sources. These advancements not only improve energy output but also reduce operational costs, thus attracting more investment into the sector.

However, regulatory hurdles pose significant restraints to the widespread adoption of tidal energy. Complex permitting processes, environmental concerns, and regulatory uncertainties often delay or deter the development of tidal projects. Striking a balance between environmental protection and energy development remains a key challenge, requiring close collaboration between industry stakeholders and regulatory bodies to streamline approval processes and mitigate risks.

Despite regulatory challenges, the tidal energy market presents substantial export potential for countries with abundant marine resources. As nations strive to diversify their energy mix and reduce carbon emissions, there is a growing global demand for clean and renewable energy solutions. Tidal energy technologies, once matured and proven, can be exported to regions with suitable coastal conditions, providing a sustainable energy source and stimulating economic growth through exports and technology transfer initiatives.

Segments Overview

The tidal energy market is segmented into method, application, and region. On the basis of method, the market is divided into tidal stream, tidal barrage, tidal turbine, and tidal fences. On the basis of application, the market is bifurcated into power generation and desalination. On the basis of region, the tidal energy market is analyzed across North America, Europe, Asia-Pacific, and LAMEA.

Major players operating in the global tidal energy market include European Marine Energy Centre, Andritz AG, Orbital Marine Power Ltd., Sustainable Marine Energy Ltd., Nova Innovation Ltd., SIMEC Atlantis Energy Ltd, HydroQuest SAS, Verdant Power Inc., Hammerfest Strom AS, and Minesto AB.

Key Benefits For Stakeholders

This report provides a quantitative analysis of the market segments, current trends, estimations, and dynamics of the tidal energy market analysis from 2023 to 2033 to identify the prevailing tidal energy market opportunities.

The market research is offered along with information related to key drivers, restraints, and opportunities.

Porter's five forces analysis highlights the potency of buyers and suppliers to enable stakeholders make profit-oriented business decisions and strengthen their supplier-buyer network.

In-depth analysis of the tidal energy market segmentation assists to determine the prevailing market opportunities.

Major countries in each region are mapped according to their revenue contribution to the global market.

Market player positioning facilitates benchmarking and provides a clear understanding of the present position of the market players.

The report includes the analysis of the regional as well as global tidal energy market trends, key players, market segments, application areas, and market

growth strategies.

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Capital Investment breakdown

Installed Base analysis

Investment Opportunities

Upcoming/New Entrant by Regions

Technology Trend Analysis

Market share analysis of players by products/segments

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Regulatory Guidelines

Strategic Recommendations

Additional company profiles with specific client's interest

Additional country or region analysis- market size and forecast

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Key player details (including location, contact details, supplier/vendor network etc. in excel format)

Market share analysis of players at global/region/country level

Volume Market Size and Forecast

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By Method

Tidal Stream

Tidal Barrage

Tidal Turbine

Others

By Application

Power Generation

Desalination

By Region

North America

U.S.

Canada

Mexico

Europe

France

Germany

UK

Spain

Italy

Rest of Europe

Asia-Pacific

South Korea

China

Japan

India

Australia

Rest of Asia-Pacific

LAMEA

Brazil

Saudi Arabia

South Africa

Rest of LAMEA

Key Market Players

European Marine Energy Centre (EMEC)

Andritz AG

Orbital Marine Power Ltd

sustainable marine energy ltd

nova innovation ltd

SIMEC Atlantis Energy

HydroQuest SAS

Verdant Power

Hammerfest Strom AS

Minest%li%AB

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