

Marine Propulsion Systems Market Assessment, By Product [Wind and Solar Propulsion, Steam Turbine Propulsion, Gas Turbine Propulsion, Fuel Cell Propulsion, Others], By Propulsion [2-Stroke, 4-Stroke], By Application [Commercial, Defense, Passenger], By Region, Opportunities and Forecast, 2018-2032F

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Report description:

Global marine propulsion systems market is projected to witness a CAGR of 4.05% during the forecast period 2025-2032, growing from USD 14.59 billion in 2024 to USD 20.04 billion in 2032.

Increasing marine trade, new routes, and the advent of alternative energy sources are likely to fuel market growth across industries. The advanced propulsion technology with the integration of technology like machine learning, AI, and new product designs is likely to shape market growth. Long-term propulsion factors will probably include liquid nitrogen, compressed air, and hydrogen. The latter two choices are energy storage media, but hydrogen is a fuel produced using land-based power sources and emits neither CO2 nor SOX into the atmosphere.

While green fuel availability, scalability, regulations, and pricing remain flexible, owners who do not future-proof their investments will risk stranded assets. The trend involves retrofitting, multiple engine systems, and the incorporation of green fuel.

Environmental regulation is also driving digitalization, with more vessel operators enhancing fleet efficiency and reporting through data-driven solutions. Charterers are also seeking better visibility and control over Scope 3 emissions. Companies invest heavily in R&D to develop new propulsion technologies that improve thrust-to-weight ratios, fuel efficiency, and reliability. This includes exploring hybrid-electric systems and advanced rocket engines.

For instance, in September 2024, Scania AB launched a new 13-litre marine engine for propulsion and auxiliary applications. With improved fuel efficiency, the new engine promises a potential improvement of up to 8% in reduced fuel consumption compared with its current Scania generation at the same power output. This does correspond to a possible saving of up to 6.7 liters of diesel per engine hour at full load.

Rising Maritime Trade, Investment in Infrastructure, and Regulations to Fuel Market Growth

Increased demand for marine propulsion systems has significantly boosted the global maritime trade, which has witnessed an increase in trade volumes globally. International trading volumes are constantly rising, thereby demanding efficient and reliable shipping solutions. This, in turn, requires building new ships with cutting-edge propulsion systems, thus taking bigger cargo and better turnaround times at ports.

Investments in port and shipping infrastructure by both the private and government sectors are improving the maritime sector's capabilities. Port facilities, shipping lanes, and logistics networks are being improved thereby setting a friendly environment for deploying new marine vessels, which increases the demand for advanced propulsion systems. Furthermore, stricter environmental regulations imposed by international bodies like the International Maritime Organization (IMO) are compelling ship operators to opt for cleaner and more efficient propulsion systems. The emission standards are forcing a shift towards low-sulfur fuels and alternative energy sources. The company keeps upgrading the propulsion engines with advanced power propositions that are compliant with the emission standards.

For instance, in December 2023, MAN Engines, a business unit of MAN Truck & Bus SE launched a 30 L V12 marine engine named D3872. The new V12 engine has a 30 L displacement which is destined for medium- and heavy-duty applications. The modified engine management system complies with present emission standards, such as EPA Tier 4, IMO Tier III, or IMO Tier II. The D3872 is also compatible with the "MAN Smart HYBRID Experience" hybrid system and is authorized for operation with HVO. Technological Advancements and Renewable Energy Initiative to Fuel Market Growth

Hybrid and electric propulsion technologies are the new revolution that will transform the marine industry. This results not only in improved fuel efficiencies but also in lower emissions, allowing better compliance with ever-tightening environmental rules. Dual-fuel engines capable of running on LNG and other alternative fuels are gaining ground and will add fuel to further market growth momentum.

The growth in the focus on renewable energy and offshore wind also supports the development of marine propulsion. With a constantly increasing investment by countries in renewable energy projects, requirements for specialized vessels to support the initiatives are ever-growing including the installation and maintenance of ships with efficient propulsion technologies. This is due to the rise in the demand for high-speed, high-performance vessels across the board-from commercial shipping to tourism and defense. The demand requires advanced propulsion systems with higher power and efficiency and continues to fuel investments in new engine technologies.

For instance, in November 2023, At Europort 2023 in Rotterdam, BeHydro, a Belgian joint venture between CMB.TECH and ABC, unveiled the Evolve 6EL23 hydrogen dual-fuel marine engine, which gained approval in principle (AiP) from Lloyd's Register, while Finnish engine designer Wartsila Corporation was first to market with a four-stroke ammonia dual-fuel engine, Wartsila 25, reeling in a commercial contract with Viridis Bulk Carrier.

Wind and Solar Segment Becomes the Fastest Growing Segment with Advanced Technology

Based on the product, wind and solar segments have become the fastest growing segment in the market. Stricter environmental regulations focused on emission cuts to greenhouse gases force the maritime industry to adapt to clean propulsion technologies. The International Maritime Organization (IMO) has set ambitious targets for emission reduction, prompting ship operators to look at wind and solar solutions that can greatly reduce their carbon footprint. Innovations in wind and solar technologies have made such systems more efficient and practical for marine applications. For example, lightweight sail materials, sophisticated control systems that optimize the usage of wind, and even solar panels onboard improve the efficiency of hybrid propulsion systems. Consequently, it improves some key performance indices and, hence, is sought for modern shipping needs.

For instance, in August 2023, the Pyxis Ocean launched the test EU-funded WindWings technology, bringing cutting-edge wind propulsion for commercial shipping. The creation of the WindWings fixed-wing sail system is the focal point of the CHEK project, backed by the EU and led by the University of Vaasa in Finland. This initiative united 17 partners, each with expertise in various areas.

Asia-Pacific Lead in the Marine Propulsion Systems Market

Based on the region, Asia-Pacific holds the largest portion of the market. Asia-Pacific is home to the world's top three shipbuilding countries: China, South Korea, and Japan. These nations have advanced shipbuilding capabilities and infrastructure, allowing them to produce a significant number of vessels equipped with modern propulsion systems. The concentration of shipyards in these countries supports a robust supply chain for marine propulsion technologies. Significant investments in port and shipping

infrastructure are enhancing the capabilities of the maritime sector in Asia-Pacific.

Upgrades to ports and logistics facilities improve operational efficiency, creating a favorable environment for deploying advanced marine propulsion systems. Companies are investing in research and development to create more fuel-efficient engines and hybrid systems that comply with stringent emission regulations. This focus on innovation helps meet the growing demand for environmentally friendly solutions. Companies target the Asia-Pacific and launch special marine equipment.

For instance, in March 2023, Cummins Inc. announced a new B4.5 powerhouse for Asia Pacific marine markets. Offered in standalone form, with a controls system, as a generator set, or as a package ready for hybrid use, the compact yet powerful B4.5 is crafted for both leisure and business marine uses.

Future Market Scenario (2025 - 2032F)

- The marine propulsion systems market is likely to shift towards alternative fuels such as LNG, biofuels, and hydrogen to reduce emissions and enhance environmental sustainability.

- The adoption of LNG-powered engines is anticipated to increase due to their lower emissions than conventional marine fuels, making them a viable option for compliance with stringent regulations.

- The incorporation of digital technologies for predictive maintenance and real-time performance optimization is projected to enhance the efficiency and reliability of marine propulsion systems.

- [Fuel cell technology, particularly hydrogen fuel cells, is expected to gain traction as a potential solution for achieving zero-emission propulsion in marine applications.

Key Players Landscape and Outlook

The marine propulsion systems market is characterized by a competitive landscape where key players adopt various strategies to enhance their market presence and meet the evolving demands of the maritime industry. A significant focus is on innovation and technological advancement, with companies investing in research and development to create efficient propulsion systems, including hybrid and electric solutions that comply with stringent environmental regulations. Many players are also pursuing strategic partnerships and collaborations to leverage complementary strengths, share resources, and accelerate the development of advanced technologies. Additionally, there is an emphasis on sustainability, as companies seek to reduce emissions and improve fuel efficiency in response to growing regulatory pressures and consumer demand for greener solutions. For instance, in February 2022, Wartsila Corporation announced its collaboration with Solstad Offshore for fleet decarbonization to achieve a 50% reduction in CO2 emissions by 2030 for the vessel fleet. The objective of the agreement is to identify, evaluate, and implement solutions that will enhance fuel efficiency and substantially decrease greenhouse gas (GHG) emissions from offshore vessels.

Table of Contents:

1. □Project Scope and Definitions 2. Research Methodology 3. ∏Executive Summary 4. □Voice of Customer 4.1. □Product and Market Intelligence 4.2.
☐Mode of Brand Awareness 4.3. Factors Considered in Purchase Decisions 4.3.1. □Type of Propulsion System 4.3.2. ||Fuel Efficiency and Emissions 4.3.3. ⊓Reliability and Maintenance 4.3.4. Technological Advancements 4.3.5. □Operational Profile 4.4. □Consideration of Privacy and Regulations 5. Global Marine Propulsion Systems Market Outlook, 2018-2032F 5.1. Market Size Analysis & Forecast 5.1.1. By Value

5.1.2. By Volume 5.2. Market Share Analysis & Forecast 5.2.1. By Product 5.2.1.1. Wind and Solar Propulsion 5.2.1.2. Steam Turbine Propulsion 5.2.1.3. Gas Turbine Propulsion 5.2.1.4. Fuel Cell Propulsion 5.2.1.5. Others 5.2.2. By Propulsion 5.2.2.1.∏2-Stroke 5.2.2.2. []4-Stroke 5.2.3. By Application 5.2.3.1. Commercial 5.2.3.2. Defense 5.2.3.3. Passenger 5.2.4. By Region 5.2.4.1. North America 5.2.4.2. [Europe 5.2.4.3. Asia-Pacific 5.2.4.4. South America 5.2.4.5. Middle East and Africa 5.2.5. By Company Market Share Analysis (Top 5 Companies and Others - By Value, 2024) 5.3. Market Map Analysis, 2024 5.3.1. By Product 5.3.2. By Propulsion 5.3.3. By Application 5.3.4. By Region 6. North America Marine Propulsion Systems Market Outlook, 2018-2032F* 6.1. Market Size Analysis & Forecast 6.1.1.∏By Value 6.1.2. By Volume 6.2. Market Share Analysis & Forecast 6.2.1. □By Product 6.2.1.1. || Wind and Solar Propulsion 6.2.1.2. Steam Turbine Propulsion 6.2.1.3. Gas Turbine Propulsion 6.2.1.4. Fuel Cell Propulsion 6.2.1.5. Others 6.2.2. By Propulsion 6.2.2.1.[]2-Stroke 6.2.2.2.[]4-Stroke 6.2.3. By Application 6.2.3.1. Commercial 6.2.3.2. Defense 6.2.3.3. Passenger 6.2.4. By Country Share 6.2.4.1. United States

6.2.4.2. Canada 6.2.4.3. [Mexico 6.3. Country Market Assessment 6.3.1.□United States Marine Propulsion Systems Market Outlook, 2018-2032F* 6.3.1.1. Market Size Analysis & Forecast 6.3.1.1.1. [By Value 6.3.1.1.2. By Volume 6.3.1.2. Market Share Analysis & Forecast 6.3.1.2.1. By Product 6.3.1.2.1.1. || Wind and Solar Propulsion 6.3.1.2.1.2.
☐ Steam Turbine Propulsion 6.3.1.2.1.3. □Gas Turbine Propulsion 6.3.1.2.1.4. Fuel Cell Propulsion 6.3.1.2.1.5. Others 6.3.1.2.2. By Propulsion 6.3.1.2.2.1.[]2-Stroke 6.3.1.2.2.2. 4-Stroke 6.3.1.2.3. By Application 6.3.1.2.3.1. Commercial 6.3.1.2.3.2. □Defense 6.3.1.2.3.3. Passenger 6.3.2. Canada 6.3.3.∏Mexico *All segments will be provided for all regions and countries covered 7. Europe Marine Propulsion Systems Market Outlook, 2018-2032F 7.1.□Germany 7.2. France 7.3. Italy 7.4. United Kingdom 7.5.∏Russia 7.6.

Netherlands 7.7. Spain 7.8.∏Turkey 7.9.
□Poland 8. Asia-Pacific Marine Propulsion Systems Market Outlook, 2018-2032F 8.1. India 8.2. China 8.3.]Japan 8.4. Australia 8.5. **Vietnam** 8.6. South Korea 8.7. Indonesia 8.8. || Philippines 9. South America Marine Propulsion Systems Market Outlook, 2018-2032F 9.1. Brazil 9.2. Argentina 10. Middle East and Africa Marine Propulsion Systems Market Outlook, 2018-2032F

10.1. Saudi Arabia 10.2. UAE 10.3. South Africa 11. Demand Supply Analysis 12. Import and Export Analysis 13. Value Chain Analysis 14. Porter's Five Forces Analysis 15. PESTLE Analysis 16. Pricing Analysis 17. Market Dynamics 17.1. Market Drivers 17.2. Market Challenges 18. Market Trends and Developments 19. Case Studies 20. Competitive Landscape 20.1. Competition Matrix of Top 5 Market Leaders 20.2. SWOT Analysis for Top 5 Players 20.3. Key Players Landscape for Top 10 Market Players 20.3.1. IHI Power Systems Co., Ltd. 20.3.1.1. Company Details 20.3.1.2. Key Management Personnel 20.3.1.3. Products and Services 20.3.1.4. [Financials (As Reported) 20.3.1.5. Key Market Focus and Geographical Presence 20.3.1.6. Recent Developments/Collaborations/Partnerships/Mergers and Acquisition 20.3.2. Scania AB 20.3.3. ABB Ltd. 20.3.4. Cummins Inc. 20.3.5. Caterpillar Inc. 20.3.6. MAN Energy Solutions SE 20.3.7. Anglo Belgian Corporation 20.3.8. Wartsila Corporation 20.3.9. DEUTZ AG 20.3.10. □Deere & Company *Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work. 21. Strategic Recommendations 22. About Us and Disclaimer



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