

ANMD-MRS32-313 · Sustainable Aviation & Maritime

Low-Emission Ship Engines

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US\$

WHY THIS REPORT

Low-emission ship engines run on alternative fuels to decarbonise shipping toward IMO net-zero. Methanol, ammonia and LNG / dual-fuel engines let shipowners, shipyards and engine OEMs cut CO₂, SO_x and particulates while preserving operational range. This decision-grade study sizes the global market three ways — value, units shipped and installed MW — across engine type, sub-type, component and application, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone, not an afterthought. Beyond engine performance, low-emission ship engines deliver measurable shipping-emissions reduction, IMO compliance and future-fuel transition, while fuel-lifecycle and safety shape the natural-capital story.

Mapped Sustainable Development Goals:

SDG 7 Affordable Clean Energy	SDG 9 Industry & Infrastructure	SDG 13 Climate Action	SDG 14 Life Below Water	SDG 12 Responsible Consumption
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Measurable sustainability outcomes assessed:

- Lifecycle CO₂, SO_x, NO_x and particulate reduction
- IMO compliance and future-fuel readiness
- Ammonia toxicity, methane slip and fuel-lifecycle emissions as material risks
- Engine embodied carbon and retrofit circularity

Framework alignment: Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

WHAT'S INSIDE AT A GLANCE

53 Chapters	9 Report Parts	7 Regions Covered	40+ Country Markets
2025–32 Forecast Horizon	4 Forward Scenarios	25+ Companies Profiled	5 SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. Asia Pacific dominates newbuild; Europe leads engine technology; North America is selective on alternative-fuel trials.

MARKET OVERVIEW

From single-fuel diesel to multi-fuel readiness — where future-fuel capability defines asset value.

The low-emission ship engine market is moving from single-fuel diesel toward multi-fuel, future-ready platforms. Demand is driven by IMO net-zero regulation, charterer decarbonisation pressure and future-fuel asset value, supported by methanol and ammonia engine advances. The market is read three ways — value, units shipped and installed MW — and forecast under four scenarios, each region reported separately.

- Asia Pacific dominates newbuild, anchored by South Korea, China and Japan, where shipyards and engine licensing drive volume
- Europe leads engine technology, with Germany, Finland and Switzerland hosting MAN Energy Solutions, Wärtsilä and WinGD
- North America is selective, combining Jones-Act fleets with alternative-fuel trials
- Engine type and sub-type segment the value — across methanol, ammonia and LNG / dual-fuel engines

REGIONAL OUTLOOK

Across seven reporting regions, the report separates early commercialisation leaders from high-growth and emerging markets — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Markets & Drivers
Europe	Technology leader	Germany, Finland, Switzerland, UK — engine OEMs, IMO / EU rules, R&D;
Asia Pacific	Newbuild leader	South Korea, China, Japan, Singapore — shipyards, engine licensing, manufacturing
North America	Selective	United States, Canada — Jones-Act fleets, alternative-fuel trials
Middle East	High-growth	UAE, Saudi Arabia — bunkering, sovereign capital, fleet investment
Latin America	Emerging	Brazil, Panama — fleet decarbonisation, canal logistics
Africa	Frontier	South Africa, Egypt, Morocco — shipping routes, port bunkering

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
<ul style="list-style-type: none"> • IMO net-zero & emissions regulation • Charterer & cargo-owner decarbonisation pressure • Future-fuel readiness & asset value • SOx / NOx & particulate-reduction mandates • Methanol & ammonia engine technology gains 	<ul style="list-style-type: none"> • Alternative-fuel availability & cost • Ammonia toxicity & safety handling • Bunkering & infrastructure gaps • Methane slip on dual-fuel engines • Newbuild CAPEX & retrofit complexity

SEGMENTATION SNAPSHOT

By Engine Type	Methanol · ammonia · LNG / dual-fuel
By Sub-Type	Two-stroke · four-stroke · retrofit-ready
By Application	Container · bulk · tanker · other vessels
By End User	Shipowners · shipyards · engine OEMs · operators
By Component	Engine blocks · fuel-injection · fuel-supply · aftertreatment · controls
By Business Model	Engine sale · licensing · service contract

TABLE OF CONTENTS — PARTS & CHAPTERS

The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

Part I — Report Foundation, Discovery and Strategic Intelligence

- › Chapter 1. Scope, Methodology and Report Architecture
- › Chapter 2. Industry Discovery Summary — Low-Emission Ship Engines
- › Chapter 3. Executive Intelligence and Decision Dashboard
- › Chapter 4. Strategic Findings, Materiality and Investment Verdict Preview

Part II — Market Intelligence, Sizing, Forecasting and Segmentation

- › Chapter 5. Industry Overview and Market Evolution
- › Chapter 6. Market Dynamics
- › Chapter 7. Global Market Size and Forecast, 2020–2032
- › Chapter 8. Market Segmentation Analysis
- › Chapter 9. End-User and Demand-Side Intelligence
- › Chapter 10. Pricing, Cost and Commercial Model Intelligence

Part III — Regional and Country Intelligence

- › Chapter 11. Global Regional Intelligence Framework
- › Chapter 12. North America Market Intelligence
- › Chapter 13. Europe Market Intelligence
- › Chapter 14. Asia Pacific Market Intelligence
- › Chapter 15. Latin America Market Intelligence
- › Chapter 16. Africa Market Intelligence
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- › Chapter 18. Rest of World Market Intelligence

Part IV — Technology, Innovation and Category-Specific Intelligence

- › Chapter 19. Technology Landscape and Architecture
- › Chapter 20. Emerging and Next-Generation Technology Intelligence
- › Chapter 21. Category-Specific Intelligence Module
- › Chapter 22. Research, Innovation and Funding Landscape

Part V — Company, Competition, Patent and Project Intelligence

- › Chapter 23. Competitive Landscape
- › Chapter 24. Company Profiles
- › Chapter 25. Mergers, Acquisitions, Partnerships and Ecosystem Intelligence
- › Chapter 26. Patent Landscape and Intellectual Property Intelligence
- › Chapter 27. Project, Deployment and Case-Study Intelligence

Part VI — Sustainability, ESG, SDG, Climate and Natural-Capital Intelligence

- › Chapter 28. Sustainability Intelligence Suite
- › Chapter 29. ESG Intelligence and Double Materiality
- › Chapter 30. ESG and Sustainability Framework Alignment
- › Chapter 31. SDG Intelligence
- › Chapter 32. Carbon, Net-Zero and Climate-Mitigation Intelligence
- › Chapter 33. Water, Biodiversity and Natural-Capital Intelligence
- › Chapter 34. Circular Economy and Resource-Security Intelligence
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Part VII — Supply Chain, Policy, Legal, Economics and Finance

- › Chapter 37. Value Chain, Supply Chain and Geopolitical Intelligence
- › Chapter 38. Policy, Regulation and Incentive Intelligence
- › Chapter 39. Legal, Contracting and Risk-Allocation Intelligence
- › Chapter 40. Unit Economics, CAPEX, OPEX and Return Analysis
- › Chapter 41. Investment, Sustainable Finance and Bankability Intelligence

Part VIII — Scenario, Future Intelligence and Final Due Diligence Verdict

- › Chapter 42. Scenario Analysis and Future Intelligence
- › Chapter 43. Sustainability Due Diligence Framework and Data-Room Index
- › Chapter 44. Risk Register, RAG Rating and Anti-Greenwashing Screen
- › Chapter 45. Bottom-Line Verdict and Strategic Recommendations
- › Chapter 46. Implementation Roadmap and Stakeholder Playbooks

Part IX — Annexes, Directories and Reference Material

- › Chapter 47. Methodology Annex
- › Chapter 48. Corporate Directory and Company Intelligence Annex
- › Chapter 49. Patent Directory and Patent Intelligence Annex
- › Chapter 50. Project Intelligence Annex
- › Chapter 51. Forecast Annex
- › Chapter 52. Sustainability KPI Annex
- › Chapter 53. Reference Annexes

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans established engine majors, specialist clean-tech providers and licensors. Deal activity — engine-licensing partnerships, ammonia programmes and shipyard agreements — signals a market consolidating around bankable, future-fuel engines.

Representative players profiled in the full report:

MAN Energy Solutions SE · Wärtsilä Oyj Abp · Winterthur Gas & Diesel Ltd. (WinGD) · Caterpillar Inc. · Yanmar Holdings Co., Ltd. · and 20+ further profiled players across engines, fuel systems and aftertreatment.

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a clear, evidence-based investment recommendation.

KEY QUESTIONS THIS REPORT ANSWERS

- ? How large is the global low-emission ship engine market, and how fast will it grow to 2032?
- ? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- ? How does multi-fuel capability change asset value versus single-fuel engines?
- ? Who leads, and where is the competitive and patent white space?
- ? Is the investment case bankable — and under what conditions?
- ? How does the technology align with the SDGs and emerging IMO regulation?

WHY ANMD — THE DIFFERENCE

Most market studies stop at units and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate, water and natural-capital intelligence and a decision-ready bankability verdict in a single architecture.

- › Triangulated sizing — every market read three ways so value, volume and adoption views reconcile rather than conflict.
- › Region-honest forecasting — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- › Integrated evidence base — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- › No-fabrication discipline — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- › Anti-greenwashing rigour — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- › Decision-first structure — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear, evidence-based investment recommendation.

WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, shipowners and shipyards, engine OEMs and operators, classification societies, lenders and policymakers, and corporate strategy and ESG teams, alongside strategic corporate planners and decision-makers.

Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at www.anewmarketdynamics.com · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at www.anewmarketdynamics.com. The full detailed table of contents will be sent directly to your registered company email address.