ANMD-MRS32-317 · Sustainable Aviation & Maritime

Wind-Assisted Ship Propulsion (Rotor Sails, Kites)

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

Wind-assisted ship propulsion harnesses free wind to cut ship fuel — propulsion's oldest renewable, reborn. Rotor sails (Flettner), suction wings and towing kites add thrust that reduces engine load, letting shipowners, operators and shipyards cut fuel and emissions on existing and new vessels. This decision-grade study sizes the global market three ways — value, units shipped and vessels equipped — across system type, automation 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 operational performance, wind-assisted propulsion delivers measurable renewable propulsion, fuel-and-emissions reduction and zero-fuel thrust, while material circularity shapes the resource-security story.

Mapped Sustainable Development Goals:

SDG 2	SDG 6	SDG 7	SDG 13	SDG 15
Zero Hunger	Clean Water	Affordable Clean Energy	Climate Action	Life on Land

Measurable sustainability outcomes assessed:

- Direct fuel savings from free-wind thrust on existing and new vessels
- Lower CO2, SOx and particulate emissions per voyage
- Zero-fuel propulsion assist that reduces engine load
- Equipment embodied carbon and end-of-life circularity as material risks

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. Europe leads technology and adoption; Asia Pacific scales on newbuild integration; North America trials wind assist on bulk fleets.

MARKET OVERVIEW

From demonstrators to fleet adoption — where free wind cuts engine load and fuel burn.

The wind-assisted ship propulsion market is moving from demonstrators to fleet adoption. Demand is driven by IMO CII/EEXI compliance, bunker-fuel cost and zero-fuel thrust, supported by maturing rotor-sail and kite technology. The market is read three ways — value, units shipped and vessels equipped — and forecast under four scenarios, each region reported separately.

- Europe is the technology leader — Finland, the United Kingdom and France, on rotor-sail and kite innovation
- Asia Pacific scales on newbuild integration in major shipyards
- System type and sub-type segment the value — across rotor sails, suction wings and towing kites
- Free-wind thrust is the differentiator — zero-fuel propulsion assist engine-only vessels cannot match

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	Finland, UK, France — rotor-sail & kite OEMs, IMO/EU rules
Asia Pacific	Scaling on newbuild	China, Japan, South Korea — shipyard integration
North America	Emerging	United States, Canada — bulk-operator trials
Middle East	Frontier	UAE, Saudi Arabia — bunkering, sovereign capital
Latin America	Emerging	Brazil, Panama — fleet decarbonisation, canal routes
Africa	Frontier	South Africa, Egypt — shipping-route exposure

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• IMO CII / EEXI compliance pressure	• Route and wind-dependence variability
• Bunker-fuel cost and direct fuel savings	• Deck-space and stability constraints
• Zero-fuel propulsion-assist value	• CAPEX and payback uncertainty
• Charterer and cargo-owner demand	• Equipment cost and installation downtime
• Rotor-sail, wing and kite technology gains	• Performance-verification gaps

SEGMENTATION SNAPSHOT

By System Type	Rotor sails (Flettner) · suction wings · towing kites
By Sub-Type	Fixed · tiltable / foldable · automated
By Component	Rotor sails · suction wings · kites · control systems · foundations
By Application	Bulk · tanker · ro-ro · general cargo
By End User	Shipowners · operators · shipyards · charterers
By Business Model	Equipment sale · savings-share · lease

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 V — Company, Competition, Patent and Project Intelligence

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

Part VII — Supply Chain, Policy, Legal, Economics and Finance

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

Part IX — Annexes, Directories and Reference Material

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans established engine and marine majors, specialist clean-tech providers and systems integrators. Deal activity — wind-assist partnerships, charterer-backed installations and newbuild integration — signals a market consolidating around bankable, repeatable designs.

Representative players profiled in the full report:

Norsepower Oy Ltd. · Anemoi Marine Technologies Ltd. · Airseas SAS · Cargill, Incorporated · Wärtsilä Oyj Abp · and further profiled players across the value chain.

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

KEY QUESTIONS THIS REPORT ANSWERS

? How large is the global wind-assisted ship propulsion market, and how fast will it grow to 2032?

? Which regions, countries and segments offer the strongest risk-adjusted opportunity?

? 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 disclosure 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 assessment in a single architecture.

› **Triangulated sizing —** every market read three ways (value, units shipped and vessels equipped) so value, volume and vessels equipped 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, condition-based bankability view.

WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, equipment manufacturers, system integrators, shipowners, operators, shipyards, charterers, classification societies, lenders, policymakers, and corporate strategy and ESG teams.

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.