

ANMD-MRS32-316 · Sustainable Aviation & Maritime

Hydrogen-Powered Propulsion Systems

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

Hydrogen-powered propulsion systems deliver zero-emission power for hard-to-electrify transport. Marine hydrogen fuel cells, aviation hydrogen propulsion and hydrogen combustion engines let shipowners, airlines and transport operators decarbonise routes batteries cannot reach. This decision-grade study sizes the global market three ways — value, units shipped and installed MW — across system 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 propulsion performance, hydrogen systems deliver measurable zero-emission propulsion, hard-to-abate decarbonisation and fossil-free transport, while hydrogen sourcing shapes the natural-capital story.

Mapped Sustainable Development Goals:

SDG 7	SDG 9	SDG 11	SDG 13	SDG 12
Affordable Clean Energy	Industry & Infrastructure	Sustainable Cities	Climate Action	Responsible Consumption

Measurable sustainability outcomes assessed:

- Zero tailpipe emissions on hard-to-abate duty cycles
- Hard-to-electrify decarbonisation and fossil-free transport
- Green-vs-grey hydrogen sourcing, safety and lifecycle emissions as material risks
- Fuel-cell and tank embodied carbon and 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. North America leads aviation hydrogen; Europe scales on maritime and aviation; Asia Pacific advances on propulsion and storage.

MARKET OVERVIEW

From demonstration to duty-cycle power — where long-range, fast-refuel propulsion defines value.

The hydrogen-powered propulsion market is moving from demonstration to early duty-cycle deployment in marine and aviation. Demand is driven by hard-to-abate decarbonisation, zero-emission range needs and hydrogen policy, supported by fuel-cell and storage advances. The market is read three ways — value, units shipped and installed MW — and forecast under four scenarios, each region reported separately.

- North America leads aviation hydrogen, anchored by the United States and Canada, where ZeroAvia, Ballard and Plug Power lead fuel-cell propulsion
- Europe scales on maritime & aviation, with the UK, Germany and the Nordics combining hydrogen policy with marine and air pilots
- Asia Pacific is advancing, as Japan, South Korea and China build hydrogen propulsion and storage
- System type and sub-type segment the value — across marine fuel cells, aviation hydrogen propulsion and hydrogen combustion

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
North America	Aviation leader	United States, Canada — aviation hydrogen, fuel cells, demonstration programmes
Europe	Maritime & aviation anchor	UK, Germany, Nordics, Netherlands — hydrogen policy, marine & air pilots
Asia Pacific	Build & scale	Japan, South Korea, China, Singapore — propulsion, storage, manufacturing
Middle East	High-growth	UAE, Saudi Arabia — hydrogen production, sovereign capital, diversification
Latin America	Emerging	Brazil, Chile — green-hydrogen, transport pilots
Africa	Frontier	South Africa, Egypt, Morocco — green-hydrogen, export routes

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Hard-to-abate decarbonisation targets • Zero-emission range & duty-cycle needs • Hydrogen policy & infrastructure build-out • Marine & aviation pilot momentum • Fuel-cell, tank & power-electronics technology gains	• Green-hydrogen availability & cost • Storage, tank & refuelling infrastructure • Safety, certification & handling • Powertrain integration complexity • Grey-hydrogen lifecycle-emissions risk

SEGMENTATION SNAPSHOT

By System Type	Marine fuel cells · aviation hydrogen propulsion · hydrogen combustion
By Sub-Type	PEM fuel cell · SOFC · H2 internal combustion
By Application	Marine · aviation · heavy transport
By End User	Shipowners · airlines · transport operators · OEMs
By Component	Fuel cells · H2 tanks · compressors · power electronics · powertrain integration
By Business Model	System sale · powertrain · hydrogen-as-a-service

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 — Hydrogen-Powered Propulsion Systems
- › 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

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- › Chapter 12. North America Market Intelligence
- › Chapter 13. Europe Market Intelligence
- › Chapter 14. Asia Pacific Market Intelligence
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Part IV — Technology, Innovation and Category-Specific Intelligence

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- › 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

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

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- › 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

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- › 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 powertrain and fuel-cell majors, specialist clean-tech providers and integrators. Deal activity — propulsion partnerships, fuel-cell programmes and hydrogen-supply agreements — signals a market consolidating around bankable, demonstrable systems.

Representative players profiled in the full report:

ZeroAvia, Inc. · Cummins Inc. (Accelera) · Ballard Power Systems Inc. · Plug Power Inc. · Universal Hydrogen Co. · and 20+ further profiled players across fuel cells, tanks and powertrain integration.

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 hydrogen-powered propulsion market, and how fast will it grow to 2032?
- ? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- ? How does zero-emission range change returns versus battery and combustion options?
- ? 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 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 airlines, transport operators and OEMs, energy and hydrogen suppliers, 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.