Vessel Battery Energy Storage Systems Market Size & Share Analysis - Growth Trends and Forecast (2026 - 2031)
Industry: Energy Storage & Batteries (BESS)
URL: https://www.mordorintelligence.com/industry-reports/vessel-battery-energy-storage-systems-market

Vessel Battery Energy Storage Systems Market Size and ShareMarket OverviewStudy Period | 2021 - 2031 |
Market Size (2026) | USD 138.20 Million |
Market Size (2031) | USD 253.41 Million |
Growth Rate (2026 - 2031) | 12.89 % |
Fastest Growing Market | Europe |
Largest Market | Europe |
Market Concentration | Medium |
Major Players*Disclaimer: Major Players sorted in no particular order

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Vessel Battery Energy Storage Systems Market Analysis by Mordor IntelligenceThe Vessel Battery Energy Storage Systems Market size is expected to increase from USD 126.21 million in 2025 to USD 138.20 million in 2026 and reach USD 253.41 million by 2031, growing at a CAGR of 12.89% over 2026-2031. The vessel battery energy storage systems market is expanding as battery-assisted propulsion moves from a compliance response toward a way to reduce operating costs on suitable routes. Lower cell costs, emissions rules, and rising investment in shore power support demand across vessel classes. Operators are increasingly standardizing proven battery designs across new vessels, which can reduce engineering work on later orders. Autonomous vessel programs also raise the need for redundant onboard power systems that can support reliable operations and certification. The vessel battery energy storage systems market still depends on charging investment outside established Northern European routes, where limited port capacity can delay deployments.

Key Report Takeaways* By chemistry, NMC held 79.1% by value in 2025, while LFP is forecast to expand at a 15.8% CAGR through 2031.
* By installation configuration, newbuild installations held 75.2% of the vessel battery energy storage systems market in 2025, while retrofits are forecast to grow at a 15.6% CAGR through 2031.
* By vessel type, passenger ships accounted for 43.6% in 2025 and are forecast to grow at a 13.9% CAGR through 2031.
* By application, hybrid power systems held 33.9% of the vessel battery energy storage systems market in 2025, while main propulsion systems are forecast to grow at a 14.2% CAGR through 2031.
* By geography, Europe accounted for 70.8% of the vessel battery energy storage systems market share in 2025 and is forecast to grow at a 14.1% CAGR through 2031.
Note: Market size and forecast figures in this report are generated using Mordor Intelligence’s proprietary estimation framework, updated with the latest available data and insights as of January 2026.

Market Trends and InsightsDrivers Impact Analysis of Vessel Battery Energy Storage Systems Market*Driver | (~) % Impact on CAGR Forecast | Geographic Relevance | Impact Timeline |
Rising Demand for Hybrid and Electric Vessels to Reduce Emissions | +3.20% | Global, concentrated in Europe and Asia-Pacific | Short term (≤ 2 years) |

Stringent Environmental Regulations Driving Adoption of Clean Energy Solutions | +2.80% | Europe (FuelEU Maritime), Global (IMO MARPOL Annex VI) | Medium term (2-4 years) |
Technological Advancements in Marine Battery Systems are Improving Efficiency | +2.00% | Global; development led by Europe and China | Medium term (2-4 years) |

Increasing Investments in Renewable Energy Integration for Maritime Operations | +1.40% | Asia-Pacific and Europe; spill-over to MEA | Long term (≥ 4 years) |
Growing Demand for Shore Power and Port Electrification is Supporting Vessel Battery Adoption | +1.50% | Europe and North America; early-stage in South America and MEA | Medium term (2-4 years) |
Expansion of Autonomous and Digitally Connected Vessels is Increasing Demand for Reliable Onboard Energy Storage | +1.00% | Japan, Norway, China; spill-over to global | Long term (≥ 4 years) |
Source: Mordor Intelligence |
Rising Demand for Hybrid and Electric Vessels Drives Battery System VolumeHybrid and all-electric propulsion have become more attractive for short-haul routes with frequent operating cycles. The vessel battery energy storage systems market benefits when battery cycling can reduce total operating costs rather than only support compliance. Wärtsilä received its third successive electric propulsion order for a Molslinjen high-speed ferry at Incat Tasmania in January 2026. The repeated selection shows that operators can standardize a proven architecture across related vessels. This approach reduces the engineering effort needed for follow-on ships and can shorten procurement decisions. It also supports wider battery deployment among ferry operators that have predictable routes and charging access[1]Wärtsilä, “Wärtsilä Electric Propulsion Solution Selected for Third Molslinjen High-Speed Ferry,” Wärtsilä, wartsila.com.

Stringent Environmental Regulations Accelerate Clean Energy AdoptionRegulation has made emissions performance a current operating issue that supports the vessel battery energy storage systems market in European and international trades. The IMO approved its Net-Zero Framework at MEPC 83 in April 2025, combining a global marine-fuel greenhouse gas intensity standard with an emissions pricing mechanism. The framework is anticipated to enter into force in 2027. FuelEU Maritime has applied fully since January 1, 2025, and requires verified 2025 greenhouse gas intensity data by January 31, 2026. Penalties for noncompliance apply from May 1, 2026. Battery-assisted operations can lower attained greenhouse gas intensity and may create bankable or transferable compliance surplus units when performance exceeds the regulation’s requirements.

Technological Advancements Improve Marine Battery Performance and Lifecycle EconomicsLFP chemistry, modular system design, and battery management systems are improving the operating case for marine batteries in the vessel battery energy storage systems market. Corvus Energy launched its cobalt-free Blue Whale NxtGen LFP system in December 2025. The system has a projected 15-year operating life, a 1C charge and discharge rate, and a fourth-generation battery management system with cybersecurity standards. Its modular design allows cell replacement without replacing the full system. That feature can reduce concern about stranded assets as battery technology evolves. ABS and Siemens Energy are also developing thermal-runaway simulation capability, showing that safety verification is becoming an important factor alongside energy performance[2]Corvus Energy, “Corvus Energy Launches Next-Generation Marine LFP Energy Storage System,” BW Group, bw-group.com.

Shore Power and Port Electrification Reshape Vessel Battery UtilityShore power allows vessels to rely on planned charging at port rather than carry battery capacity for extended independent operation. The vessel battery energy storage systems market benefits when charging access is predictable along a defined route. Portsmouth International Port became the United Kingdom’s first multi-berth, multi-user shore power facility, supported by GBP 19.8 million in funding from the UK Department for Transport, and its first commercial vessel connection occurred in 2025. ICO, part of the NYK Group, began operating Belgium’s first commercial s

hore power facility for RoRo vessels at Zeebrugge in June 2026. Iberdrola completed an onshore power supply connection at Spain's Port of Pasaia in May 2026. These facilities make charging access more predictable and strengthen the commercial case for battery-electric and hybrid vessels on defined routes[3]NYK, "ICO Launches Belgium's First Commercial Shore Power Facility for RoRo Ships," NYK, nyk.com.

Restraints Impact Analysis of Vessel Battery Energy Storage Systems Market*Restraint | (~) % Impact on CAGR Forecast | Geographic Relevance | Impact Timeline |
High Initial Cost of Battery Energy Storage Systems for Vessels | -2.80% | Global; most acute among smaller operators and developing-market fleets | Short term (≤ 2 years) |
Limited Charging Infrastructure in Ports and Marine Routes | -2.00% | Global excluding Northern Europe and East Asia; pronounced in MEA and South America | Medium term (2-4 years) |
Safety Concerns Related to Battery Thermal Management and Fire Risks | -1.50% | Global | Short term (≤ 2 years) |
Short Lifecycle and Performance Degradation In Harsh Marine Environments | -1.00% | Global; most pronounced in tropical, ice-class, and high-vibration offshore environments | Long term (≥ 4 years) |
Source: Mordor Intelligence |
High Initial Capital Cost Constrains Adoption Beyond Lead-Operator SegmentsInitial investment remains a barrier for smaller shipping companies, fishing fleets, and operators in lower-income trade regions. An Aalborg University analysis found that a baseline electric ferry produced EUR 3.28 million in 10-year total cost of ownership, compared with EUR 2.48 million for a diesel-electric equivalent. The study found parity only at higher daily route utilization. Marine-certified systems include vibration protection, safety enclosures, and class-certification requirements that add cost. High-frequency short-sea ferry routes can therefore reach a workable economic threshold earlier than offshore or low-utilization cargo applications. This cost divide shapes the vessel battery energy storage systems market by favoring early users who can build experience and cost advantages[4]Aalborg University, "Electrification of Short-Haul Ferries, Modelling Battery Degradation, Lifetime, and Total Cost of Ownership," Aalborg University, aau.dk.

Inadequate Port Charging Infrastructure Limits Battery-Dependent Route Expansion All-electric and high-battery hybrid vessels require reliable charging capacity at both ends of a route. This condition is not yet available across most global port networks. Major charging installations require dedicated cables, switchgear, and local power capacity. Brazil's Port of Pecém is developing the country's first shore power system in 2026, showing that the infrastructure base in South America remains at an early stage. Gaps in charging infrastructure limit the routes on which operators can commit to all-electric vessel specifications. In the vessel battery energy storage systems market, these gaps preserve diesel-backup hybrid systems and limit average onboard capacity outside mature charging corridors.

*Our forecasts treat driver/restraint impacts as directional, not additive. The impact forecasts reflect baseline growth, mix effects, and variable interactions.

Vessel Battery Energy Storage Systems Market Segment AnalysisBy Chemistry:LFP Momentum Challenges NMC's Energy Density PremiumNMC held 79.1% of the vessel battery energy storage systems market by value in 2025 because its energy density supports designs with tight space and weight limits. LFP is forecast to grow at a 15.8% CAGR from 2026 to 2031, the fastest rate among chemistry types. Its thermal stability can reduce fire-risk certification complexity, while Chinese manufacturers have supported a declining LFP cell cost curve. A Singapore Maritime Institute assessment of 7 vessel types identified LFP as suitable for ferries, offshore support vessels, and fishing vessels because of their cycling patterns and sa

fety requirements. The vessel battery energy storage systems industry is balanci ng NMC’s space advantage against LFP’s safety and lifecycle attributes.

Ni-Cd remains relevant in military applications that require operation across ex treme temperatures, while LTO serves short-turnaround ferries and harbor tugs wh ere rapid charging can justify a cost premium. ISO 18962:2026, published in Janu ary 2026, sets installation and operating requirements for swappable ship batter ies. The standard supports modular designs in the vessel battery energy storage systems market and may enable chemistry upgrades during a vessel’s working life without a full system replacement. Corvus Energy and BYD Energy Storage signed a strategic cooperation agreement in May 2026 to develop high-rate LFP marine sys tems. The agreement shows that a major marine battery supplier is pursuing LFP d evelopment while NMC suppliers seek to sustain their position in space-constrain ed applications

Image © Mordor Intelligence. Reuse requires attribution under CC BY 4.0. By Inst allation Configuration:Retrofit Segment Emerges as Structural Growth DriverNewbu ild installations held 75.2% of the vessel battery energy storage systems market in 2025 because new vessels can be designed around battery bays and electrical systems from the beginning. Retrofits are forecast to grow at a 15.6% CAGR from 2026 to 2031 as operators add packs during planned dry-docking periods rather th an wait for vessel replacement. This allows aging diesel-electric fleets to impr ove greenhouse gas intensity performance. It also helps operators manage regulat ory requirements while preserving the use of existing hulls. The vessel battery energy storage systems industry is finding a wider route into fleets that are no t ready for newbuild procurement.

Retrofit projects require careful integration with existing electrical architect ure, vessel layout, and class requirements. Wasaline’s Aurora Botnia received a 10.4 MWh LFP retrofit in early 2026, lifting total onboard capacity to 12.6 MWh with DNV class approval. The project demonstrated that large battery upgrades ca n be completed with limited operational downtime. Everllence and WE Tech Solutio ns were discussing a pilot covering up to 33 vessels for Power Take-Off and Vari able Frequency Drive upgrades during scheduled dry dockings. This installation r oute is particularly relevant for cargo and fishing fleets that operate for long periods before replacement.

Image © Mordor Intelligence. Reuse requires attribution under CC BY 4.0. By Vess el Type:Passenger Ships Define Market Scale and Forward DirectionPassenger ships accounted for 43.6% of the vessel battery energy storage systems market share i n 2025 and are forecast to grow at a 13.9% CAGR through 2031. Ferries and hybrid cruise vessels benefit from fixed routes, predictable daily cycles, and chargin g facilities developed with passenger terminals. Ferry programs remain in an ear ly-to-middle phase of deployment in many regions. Leclanché installed 4 MWh of N avius MRS-3 systems aboard a hybrid ocean cruise vessel in October 2025, its fir st deep-sea cruise deployment, to support EU Emissions Trading System compliance . Passenger operations provide a practical setting for battery systems because r oute schedules and charging needs are easier to plan.

Cargo ships form the second-largest vessel group, although their batteries often serve auxiliary loads and at-berth emissions reduction rather than main propuls ion. This limits average battery capacity per cargo vessel. Naval vessels have a separate case because silent operation can support adoption regardless of comme rcial fuel economics. Bibby Marine’s eCSOV is planned with a 25 MWh Corvus Blue Whale LFP system that can support 24 hours of fully electric operation. Fishing vessels, tugs, workboats, and inland craft can also benefit from near-port opera tions that simplify charging logistics.

By Application:Main Propulsion Signals the Transition Beyond Supplemental Hybrid izationHybrid power systems led the vessel battery energy storage systems market with 33.9% share in 2025. Load leveling, peak shaving, and diesel reduction rem ain the main commercial uses across a broad range of vessel types. Main propulsi

on systems are forecast to grow at a 14.2% CAGR through 2031 as fully electric p
ropulsion proves viable on routes up to 20 nautical miles. Falling costs for hig
h-capacity systems also support this shift. The vessel battery energy storage sy
stems market is moving from supplemental battery use toward battery-primary prop
ulsion on routes with suitable charging capacity.

Battery-powered main propulsion depends on high-capacity port connections and sh
ort, predictable route profiles. Scandlines placed its Baltic Whale fully electr
ic freight ferry into service in March 2026 with a 10 MWh Leclanché LFP battery
system and a dedicated charging connection for rapid turnaround. Auxiliary power
 units remain a lower-risk entry point for operators that are cautious about pro
pulsion batteries. Emergency power supply systems serve naval and critical marit
ime applications with high reliability requirements. Renewable integration can c
omplement these uses where vessel operating patterns and port infrastructure sup
port the power arrangement.

Geography AnalysisEurope Vessel Battery Energy Storage Systems MarketEurope held
 70.8% of vessel battery energy storage systems market share in 2025 and is fore
cast to grow at a 14.1% CAGR through 2031. Its lead reflects emissions regulatio
n, established ferry electrification corridors, and marine battery suppliers in
Norway, Germany, Sweden, and the Netherlands. Germany’s HADAG fleet is deploying
 3 fully electric harbor ferries in Hamburg, each with a 3.8 MWh Lehmann Marine
CUBE LFP system. Scandinavia has demonstrated large installed capacity through t
he Aurora Botnia retrofit and the Baltic Whale freight operation. Active ferry r
eplacement programs and the EU shore power requirement for passenger and contain
er ships from 2030 provide continued demand support.

APAC Vessel Battery Energy Storage Systems MarketAsia-Pacific is the most techni
cally active growth region in the vessel battery energy storage systems market.
China commissioned a 10,000-ton-class pure-electric intelligent container ship i
n April 2026 with 20,000 kWh of battery storage and integrated autonomous naviga
tion. The vessel also uses high-voltage shore power and battery-container swappi
ng. Japan’s MEGURI2040 program secured government certification for 4 autonomous
 vessels in 2026, and MOL connected multiple ships in real time to land-based Fl
eet Operation Centers. These developments place reliable battery-backed power qu
ality at the center of autonomous vessel operations.

The Americas and MEA Vessel Battery Energy Storage Systems MarketNorth America i
s advancing through state-procured ferry programs and defense interest in batter
y-electric vessel systems. Washington State Ferries’ hybrid-electric newbuilds u
se 13.2 MWh battery systems through an ABB and Corvus Energy partnership. BC Fer
ries’ Summit Class vessels are designed for up to 70 MWh per vessel. South Ameri
ca remains at an earlier stage because charging infrastructure is still being de
veloped, while the Middle East and Africa are also early in adoption despite int
erest from Saudi Arabia and the United Arab Emirates.

Competitive Landscape

The vessel battery energy storage systems market is moderately concentrated at t
he system-integration level. Corvus Energy, ABB Marine & Ports, Wärtsilä, and Ko
ngsberg Maritime hold the highest installed-capacity positions. Leclanché, Lehma
nn Marine, EST-Floattech, and Echandia Marine compete in ferry, inland vessel, a
nd workboat applications. Corvus Energy states that more than 50% of vessels usi
ng zero-emission technology globally run its battery systems. This installed bas
e supports broad class-certification experience and battery-management data that
 smaller suppliers may find difficult to match.

Competition is also changing as Chinese cell manufacturers expand toward marine system integration. CATL and Maersk signed a global strategic partnership in October 2025 covering maritime electrification, ports, and warehousing. Corvus Energy's agreement with BYD pairs Chinese cell technology with European marine integration experience. Medium-capacity retrofits of 1–5 MWh for cargo and fishing vessels outside Northern Europe remain an opening where suppliers have not established ferry-level certification and service coverage. The vessel battery energy storage systems market rewards suppliers that can offer battery-management analytics and predictive maintenance.

Several recent moves show how leading suppliers are building positions through technology partnerships and delivery contracts. Corvus Energy and BYD are working on high-rate LFP systems through their May 2026 cooperation agreement. Wärtsilä's third Molslinjen electric propulsion order shows the value of repeat fleet programs. Kongsberg Maritime received a contract from Cochin Shipyard in May 2026 for 4 full-electric Svitzer tugs, each using a 4.8 MWh battery pack.

Vessel Battery Energy Storage Systems Industry Leaders* Corvus Energy Holding AS

* Wärtsilä Oyj Abp

* ABB Ltd

* Siemens Energy AG

* EST-Floattech B.V.

* *Disclaimer: Major Players sorted in no particular order
Vessel Battery Energy Storage Systems Market Companies Covered in this Report* ABB Ltd
* AYK Energy
* BorgWarner Inc.
* Corvus Energy Holding AS
* EAS Batteries GmbH
* Echandia Marine AB
* ePropulsion Europe SLU
* EST-Floattech B.V.
* EVE Energy Co., Ltd.
* Kongsberg Gruppen ASA
* KREISEL Electric GmbH
* Leclanché SA
* Lehmann Marine GmbH
* Saft Groupe S.A.S.
* Siemens Energy AG
* Sunlight Group
* Wärtsilä Oyj Abp
* ZEM AS

Recent Industry Developments in Vessel Battery Energy Storage Systems Market* June 2026: ICO, part of the NYK Group, commenced operation of Belgium's first commercial shore power facility for RoRo vessels at the Port of Zeebrugge, validated using an NYK pure car and truck carrier, and enabling renewable electricity at berth.
* May 2026: Kongsberg Maritime secured a contract from Cochin Shipyard to supply integrated electrical and automation technology for 4 of Svitzer's next-generation full-electric TRAnsverse tugs, each powered by a 4.8 MWh battery pack, with options for 4 additional units.
* May 2026: Corvus Energy and BYD Energy Storage signed a Strategic Cooperation Agreement to co-develop high-rate LFP marine battery systems, covering joint res

earch and development, certification, and large-scale deployment of next-generation marine battery solutions.
* April 2026: China’s first 10,000-ton-class pure-electric intelligent container ship commenced commercial operations with 20,000 kWh of battery storage, zero-carbon emissions, and a dual-mode charging system combining high-voltage shore power and rapid container swapping.

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* 7.1 White-Space and Unmet-Need Assessment

Global Vessel Battery Energy Storage Systems Market Report ScopeVessel Battery Energy Storage Systems (BESS) are rechargeable battery-based energy storage systems installed on marine vessels to store electrical energy and supply it to the vessel's propulsion, onboard electrical systems, and auxiliary equipment as needed. These systems typically consist of battery cells/modules, a Battery Management System (BMS), Power Conversion System (PCS), thermal management, safety systems, and associated control equipment. Vessel BESS can be used for fully electric propulsion, hybrid propulsion, peak-load management, engine load optimization, regenerative energy storage, and reducing fuel consumption and emissions.

The Vessel Battery Energy Storage Systems Market is segmented by chemistry, installation, vessel type, application, and geography. By chemistry, the market is segmented into NMC, LFP, Ni-Cd, LTO, and other chemistries. By installation, the market is segmented into newbuild and retrofit. By vessel type, the market is segmented into cargo, passenger, naval, fishing, offshore support, and other vessel types. By application, the market is segmented into APUs, main propulsion, emergency power, renewable integration, and hybrid power. The report also covers the market size and forecasts for the global Vessel Battery Energy Storage Systems Market across 26 countries in key regions. For each segment, the market sizing and forecasts are provided on the basis of value (USD).

By ChemistryNMC (Lithium Nickel Manganese Cobalt Oxide Battery) |
LFP (Lithium Iron Phosphate Battery) |
Ni-Cd (Nickel-Cadmium Battery) |
Lithium Titanate Oxide (LTO) |
Other Types (NCA, TNO, XNO, etc.) |
By Installation ConfigurationNewbuild |
Retrofit |
By Vessel TypeCargo Ships |
Passenger Ships |
Naval Vessels |
Fishing Vessels |
Offshore Support Vessels |
Others |
By ApplicationAuxiliary Power Units |
Main Propulsion Systems |
Emergency Power Supply |
Renewable Energy Integration |
Hybrid Power Systems |
By GeographyNorth America | United States |
 | Canada |
 | Mexico |
Europe | Germany |

	France
	Italy
	Spain
	United Kingdom
	Poland
	Russia
	Rest of Europe
Asia-Pacific	China
	India
	Japan
	South Korea
	Australia
	Indonesia
	Vietnam
	Thailand
	Rest of Asia-Pacific
South America	Brazil
	Argentina
	Chile
	Rest of South America
Middle East and Africa	Saudi Arabia
	United Arab Emirates
	Egypt
	South Africa
	Morocco
	Rest of Middle East and Africa
By Chemistry	NMC (Lithium Nickel Manganese Cobalt Oxide Battery)
	LFP (Lithium Iron Phosphate Battery)
	Ni-Cd (Nickel-Cadmium Battery)
	Lithium Titanate Oxide (LTO)
	Other Types (NCA, TNO, XNO, etc.)
By Installation Configuration	Newbuild
	Retrofit
By Vessel Type	Cargo Ships
	Passenger Ships
	Naval Vessels
	Fishing Vessels
	Offshore Support Vessels
	Others
By Application	Auxiliary Power Units
	Main Propulsion Systems
	Emergency Power Supply
	Renewable Energy Integration
	Hybrid Power Systems
By Geography	North America	United States
		Canada
		Mexico
	Europe	Germany
		France
		Italy
		Spain
		United Kingdom
		Poland
		Russia
		Rest of Europe
	Asia-Pacific	China
		India
		Japan
		South Korea

	Australia
	Indonesia
	Vietnam
	Thailand
	Rest of Asia-Pacific
South America	Brazil
	Argentina
	Chile
	Rest of South America
Middle East and Africa	Saudi Arabia
	United Arab Emirates
	Egypt
	South Africa
	Morocco
	Rest of Middle East and Africa

Key Questions Answered in the ReportWhat is driving demand for vessel battery energy storage systems? Emissions rules, lower battery costs, shore power investment, and short-haul electric and hybrid vessel programs are supporting demand.

How large is the vessel battery energy storage systems market? The market is estimated at USD 138.2 million in 2026 and is forecast to reach USD 253.41 million by 2031 at a 12.89% CAGR.

Which battery chemistry leads marine applications? NMC led with 79.1% share in 2025, while LFP is expected to be the fastest-growing chemistry at a 15.8% CAGR through 2031.

Why are passenger vessels important for battery deployment? Passenger vessels held 43.6% share in 2025 because their fixed routes and planned charging schedules support battery operations.

What limits wider use of battery-electric vessels? High initial investment, limited charging infrastructure, safety requirements, and performance degradation in harsh marine conditions can slow adoption.

Why are retrofit battery systems growing? Retrofits are forecast to grow at a 15.6% CAGR because operators can install systems during dry docking and improve existing fleet emissions performance.