

Lithium-Ion Battery Systems

ANMD-MRS17-161 · Energy Storage & Grid Flexibility Technologies

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

Lithium-ion battery systems are the dominant workhorse of the energy-storage transition — the NMC and LFP battery energy storage systems (BESS), containerized and modular-rack units and integrated AC-block solutions that store and dispatch electricity across utility, commercial and residential applications. With LFP driving down cost and improving safety, lithium-ion has become the default technology enabling renewable integration and grid flexibility at scale. This decision-grade study sizes the global market three ways — value, capacity (MWh) and power (MW) — across system type, form factor, application and end-user, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone. Lithium-ion storage enables renewable integration, grid reliability and decarbonisation, with footprint shaped by mineral sourcing, manufacturing and recycling that the analysis screens throughout.

Mapped Sustainable Development Goals:

SDG 7 Affordable Clean Energy	SDG 9 Industry & Innovation	SDG 11 Sustainable Cities	SDG 12 Responsible Consumption	SDG 13 Climate Action
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Measurable sustainability outcomes assessed:

- Renewable integration and firming at scale
- Grid reliability and flexibility services
- Falling LFP cost widening storage access
- Critical-mineral sourcing, fire safety and end-of-life recycling 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. Asia Pacific dominates supply (China, South Korea) on cell giants; North America leads integration and deployment (United States) on system integrators; Europe drives demand and balancing (Germany, Finland, France); other regions assessed on their own merits.

MARKET OVERVIEW

From cell to grid — where LFP cost and safety anchor stationary storage.

Lithium-ion storage is scaling on falling costs and renewable build-out. Demand is driven by solar-and-wind firming, grid services and falling LFP prices, against critical-mineral and supply-chain risk, fire-safety concerns and supply concentration. The market is read three ways — value, capacity (MWh) and power (MW) — and forecast under four scenarios, each region reported separately.

- **Asia Pacific dominates supply** — anchored by CATL, BYD, EVE and Gotion in China and LG Energy Solution and Samsung SDI in South Korea
- **North America leads integration and deployment** — Tesla, Fluence and Powin scaling system integration and project pipelines
- **Europe drives demand and balancing** — Saft and Wärtsilä and strong renewable-firming and grid-services markets
- **LFP cost and safety are the differentiator** — lithium-iron-phosphate's lower cost, longer cycle life and thermal safety now anchor stationary storage

REGIONAL OUTLOOK

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

Region	Stage	Lead Country Markets & Drivers
Asia Pacific	Supply leader	China, South Korea — CATL, BYD, LG ES, Samsung SDI
North America	Deployment & integration	United States — Tesla, Fluence, Powin
Europe	Demand & balancing	Germany, France, Finland — Saft, Wärtsilä, grid services
Latin America	Emerging	Brazil, Chile — renewable-firming storage
Africa	Frontier	South Africa — grid-resilience & solar storage
Middle East	Emerging	Saudi Arabia, UAE — solar + storage at scale

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Renewable firming & integration • Falling LFP cell costs • Grid-services & arbitrage revenue • Round-trip efficiency & cycle-life gains • Policy incentives & capacity markets	• Critical-mineral & supply-chain risk • Fire-safety & thermal-runaway concerns • Supply concentration in China • Degradation & end-of-life recycling • Interconnection & permitting delays

SEGMENTATION SNAPSHOT

By System Type	NMC storage systems · LFP storage systems · containerized BESS · modular rack systems · integrated AC-block systems
By Form Factor	Containerized · modular rack · integrated AC-block
By Application	Front-of-meter · commercial & industrial · residential
By End User	Utilities · IPPs · developers · C&I · residential
By Business Model	Equipment sales · integration · storage-as-a-service
By Chemistry	LFP · NMC · other

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 — Lithium-Ion Battery 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 21. Category-Specific Intelligence Module
- › Chapter 22. Research, Innovation and Funding Landscape

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Part IX — Annexes, Directories and Reference Material

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- › Chapter 51. Forecast Annex
- › Chapter 52. Sustainability KPI Annex
- › Chapter 53. Reference Annexes

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans cell giants, system integrators and balancing-market players. Deal activity — M&A, technology acquisition and platform expansion — signals a market consolidating around scalable, bankable, deployment-ready solutions.

Representative players profiled in the full report:

Contemporary Amperex Technology Co., Limited (CATL) · BYD Company Limited · Tesla, Inc. · LG Energy Solution, Ltd. · Samsung SDI Co., Ltd. · Fluence Energy, Inc. · Sungrow Power Supply Co., Ltd. · and further profiled cell and integration players

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

KEY QUESTIONS THIS REPORT ANSWERS

- ? How large is the global lithium-ion storage market, and how fast will it grow to 2032?
- ? Which regions, system types and chemistries offer the strongest risk-adjusted opportunity?
- ? How do LFP cost, RTE and cycle life change LCOS and bankability?
- ? Who leads, and where is the competitive and patent white space?
- ? Is the investment case bankable — and under what conditions?
- ? How does the category align with the SDGs, critical-minerals and fire-safety regulation?

WHY ANMD — THE DIFFERENCE

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

- **Triangulated sizing** — every market read three ways (value (US\$), capacity (MWh) and power (MW)) so value, capacity and volume 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, conditions-based investment verdict.

WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, utilities and IPPs, storage developers and integrators, C&I and residential buyers, cell and component makers, policymakers, lenders and ESG teams, plus 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.