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The Global Advanced Battery and Energy Storage Market 2026-2036

https://marketpublishers.com/r/G6BED7C40359EN.html
Date: April 2026
Pages: 1006
Price: US$ 1,600.00 (Single User License)
ID: G6BED7C40359EN

Abstracts

The global advanced batteries and energy storage market has entered a new structural phase defined by industrial policy, geopolitical realignment, and the technological consolidation of lithium-ion as the dominant chemistry across both mobility and stationary applications. LFP has emerged as the cost leader anchoring mass-market EV and battery energy storage system deployments, while high-nickel NMC and NCA formulations retain the performance leadership position for premium, long-range, and high-specific-energy applications. Silicon-carbon composite anodes have transitioned from laboratory research to mass commercial deployment, first in premium consumer electronics and increasingly in automotive applications, establishing themselves as the dominant near-term pathway for energy-density improvement ahead of the longer-term solid-state transition.

Three developments in late 2025 and early 2026 have materially reshaped competitive dynamics. First, China announced export restrictions in October 2025 targeting batteries with energy densities above 300 Wh/kg, directly affecting Western supply of high-energy-density cells and accelerating the commercial case for domestic production across the United States, Europe, Korea, and Japan. Second, defence and military drone battery demand has emerged as a material new segment, driven by the operational effectiveness of battery-powered drones demonstrated in the Ukraine conflict and the Pentagon's accelerated procurement response, with national-security venture capital including IQT (the CIA-founded investment firm) flowing into high-energy-density cell developers. Third, the solid-state battery commercialisation landscape is undergoing significant differentiation: Factorial Energy has secured development agreements with Mercedes-Benz (a 745-mile EQS demonstration in late 2025), Stellantis, Hyundai, Kia, and Karma Automotive, while other Western players face commercial headwinds as automotive OEMs recalibrate their EV investment timelines.

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The industrial-policy landscape is reshaping supply chains fundamentally. The US One Big Beautiful Bill Act preserves the 45X Advanced Manufacturing Production Credit while tightening foreign-entity-of-concern restrictions affecting Chinese-supplied materials and equipment. The EU Critical Raw Materials Act establishes ambitious targets for domestic mining, processing, and recycled content by 2030, supported by the Green Deal Industrial Plan and Innovation Fund. The UK Cap and Floor Scheme provides revenue certainty for long-duration energy storage developers. These frameworks collectively create structural advantages for non-Chinese cell manufacturers and materials producers while simultaneously raising the competitive bar for the Western battery industry to achieve cost and operational parity with incumbent Asian producers.

Battery energy storage systems have emerged as arguably the fastest-growing clean-energy technology globally, with demand driven by accelerating renewable energy penetration, rising data-centre power requirements linked to AI compute growth, and the continuing build-out of electric vehicle charging infrastructure. Beyond lithium-ion, emerging chemistries including sodium-ion, redox flow (vanadium and non-vanadium), iron-air, and CO?-based systems are establishing application-specific positions in the broader energy storage landscape, particularly in stationary, long-duration, and specialty applications where lithium-ion's structural cost and duration characteristics become less favourable. The overall market is transitioning from a phase of rapid capacity build-out toward a phase of operational excellence, cost optimisation, and technology differentiation as competition intensifies across all segments.

The Global Advanced Battery and Energy Storage Market 2026–2036 provides an authoritative analysis of the global advanced battery and energy storage market from 2026 to 2036, delivered across more than 2,000 pages of technical, commercial, and strategic content. The report covers the complete spectrum of lithium-ion and beyond-lithium battery technologies, spanning electric vehicle applications, stationary energy storage, off-highway machinery electrification, commercial and industrial power systems, and emerging defence and specialty applications.

The report tracks the rapidly evolving competitive and policy landscape including the October 2025 China export restrictions on advanced batteries, the US One Big Beautiful Bill Act, the EU Critical Raw Materials Act, the UK Cap and Floor Scheme for long-duration energy storage, and the accelerating industrial response driving domestic cell, cathode, anode, and precursor manufacturing capacity across the United States, Europe, Korea, and Japan. Detailed market forecasts are provided across all major application segments and geographic regions.

Technology coverage extends across lithium-ion batteries and their evolving chemistries (LFP, LMFP, high-nickel NMC, NCA), lithium-metal, lithium-sulfur, lithium-titanate, sodium-ion, sodium-sulfur, aluminium-ion, zinc-based, solid-state (including semi-solid-state, sulfide, oxide, and polymer-based architectures), structural battery composites, flexible batteries, printed batteries, transparent and degradable batteries, redox flow batteries (vanadium, iron-based, zinc-based, organic, hydrogen-based, and CO?-based chemistries), and AI-enabled battery technology. Silicon-carbon composite anodes receive dedicated treatment as the dominant near-term energy-density upgrade pathway.

Application analysis covers passenger EVs across all segments, electric commercial vehicles, off-highway machines (construction, agriculture, and mining), battery storage for data centres and commercial/industrial applications, telecommunications and 5G/6G base-station backup, EV charging infrastructure, grid-scale utility storage, microgrids, consumer electronics, aerospace, defence and military drones, and emerging specialty markets.

Supply chain and materials analysis spans cathode active materials, anode materials (graphite, silicon, silicon-carbon composite, lithium metal), electrolytes, separators, current collectors, binders, conductive additives, pack-level materials (thermal, fire, structural), advanced sensors and wireless battery management systems, and the rapidly expanding battery recycling sector. The report includes extensive discussion of PFAS-free additives and the regulatory transition away from fluoropolymer binders, alongside comprehensive battery recycling market analysis covering hydrometallurgical, pyrometallurgical, and direct recycling approaches.

The report concludes with detailed profiles of the leading companies across the complete global battery value chain.

Executive Summary — The Li-ion Battery Market in 2025; the new battery policy landscape, geopolitics, national security, and defence demand; Global Market Forecasts to 2036

Li-ion Batteries — market drivers, megatrends, advanced materials, battery chemistries, types, anode materials, silicon-carbon composite anodes, electrolytes, cathodes, binders and conductive additives, separators, high-performance Li-ion systems approaching 350 Wh/kg, PFAS-free battery

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additives and regulatory transitions, platinum group metals, Li-ion recycling, global revenues, EV battery cell and pack materials outlook

Lithium-Metal Batteries — technology description, solid-state batteries and lithium metal anodes, energy density, anode-less cells, hybrid batteries, applications, SWOT analysis, product developers

Lithium-Sulfur Batteries — operating principle, costs, material composition, lithium intensity, value chain, markets, SWOT analysis, global revenues, product developers

Lithium Titanate (LTO) and Niobate Batteries — technology description, global revenues, future outlook, product developers

Sodium-Ion (Na-Ion) Batteries — technology description, comparative analysis with other battery types, cost comparison with Li-ion, materials in sodium-ion cells, SWOT analysis, global revenues, market growth drivers, technology roadmap, future outlook, product developers

Sodium-Sulfur Batteries — technology description, applications, SWOT analysis

Aluminium-Ion Batteries — technology description, SWOT analysis, commercialization, global revenues, product developers

Solid-State Batteries — introduction, technology description, features and advantages, technical specifications, types, technology readiness and manufacturing status, automotive OEM strategies and deployment timelines, microbatteries, bulk type solid-state batteries, SWOT analysis, limitations, global revenues, commercialization timeline, product developers

Structural Battery Composites — introduction, materials and architecture, applications, technical challenges, supply chain, market forecasts, safety considerations, environmental profile

Flexible Batteries — technology description, technical specifications, flexible electronics, flexible materials, flexible and wearable metal-sulfur batteries, flexible and wearable metal-air batteries, flexible Li-ion batteries, flexible Li/S batteries, flexible Li-MnO? batteries, flexible zinc-based batteries, fiber-shaped batteries, energy harvesting combined with wearable energy storage, SWOT

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analysis, global revenues, companies

Transparent Batteries — technology description, components, SWOT analysis, market outlook

Degradable Batteries — technology description, components, SWOT analysis, market outlook, product developers

Printed Batteries — technical specifications, components, design, key features, printable current collectors and electrodes, materials, applications, printing techniques, Li-ion printed batteries, zinc-based printed batteries, 3D printed batteries, SWOT analysis, global revenues, product developers

Redox Flow Batteries — technology description, market overview, technology benchmarking, chemistry selection matrix by application, component technologies and cost reduction pathways, component innovation, types (VRFB, Zn-Br, PSB, Fe-Cr, All-Iron, Zn-Fe, H-Br, H-Mn, organic, CO?-based, emerging and hybrid flow batteries), markets for RFBs, global revenues, key trends, regional market analysis, long-duration energy storage positioning, levelised cost of storage vs Li-ion LFP by duration, policy frameworks, market forecast to 2036 by chemistry and region

Zn-Based Batteries — technology description, market outlook, product developers

Batteries in Off-highway Machines — introduction to electric off-highway machines, electric construction, agriculture, and mining machines, battery requirements, turnkey battery technologies, battery suppliers and case studies, future battery technologies, global market forecast, outlook

Battery Storage for Data Centres, Commercial & Industrial Applications — C&I BESS applications and market overview, technology landscape, US LFP manufacturing transition (45X, FEOC, tariff dynamics), Li-ion C&I BESS cost structure, key players, market outlook

AI Battery Technology — overview, applications

Cell and Battery Design — cell design, cell performance, battery packs, advanced battery pack sensors and remote monitoring, wireless BMS

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Company Profiles — 449 detailed profiles across the complete battery value chain

Research Methodology and References

Companies profiled in this report include: 2D Fab AB, 24M Technologies, 3DOM, 6K Energy, Abound Energy, AC Biode, ACCURE Battery Intelligence, Achelous Pure Metal Company, Accu't, Addionics, Advano, Advanced Solid-state Electrolyte Technology (ASET), AEGIS Critical Energy Defence Corp., Agora Energy Technologies, Aionics, AirMembrane Corporation, Allegro Energy, Allye Energy, AlphaESS, Alsym Energy, Altairnano/Yinlong, Altris, Aluma Power, Altech Batteries, Ambri, AMO Greentech, Ampcera, Amprius, AMTE Power, Anaphite, Anhui Anwa New Energy, Anthro Energy, APB Corporation, Appear, Argylium, Ascend Elements, AZUL Energy, BASF (Sodium-Ion), Basquevolt, Battri, BeePlanet Factory, BESSt, Biwatt Power, Blackstone Resources, Blue Current, Blue Solutions, BrightVolt, BTRY AG, BYD Energy Storage, Calibrant Energy, CATL, CellCube, Chongqing Tailan New Energy, CIC EnergiGUNE, CMBlu Energy, Connected Energy, Contemporary Amperex Technology Co Ltd, Coreshell Technologies, Cornish Lithium, Cymbet, Cuberg, Cylib, DFD Energy, Donut Lab, Dowa Eco-System, Duesenfeld, Dynanonic, Eaton Corporation, EBS Square, ECOPRO BM, EcoBat, Econili Battery, Elestor, Electra Battery Materials Corporation, Elemental Holding, Elite Battery Systems, ElecJet, Emulsion Flow Technologies, ENEOS, Energizer Holdings, Energy Source, Enerpoly, Enerpize, Enim, Enovix, EnPower Greentech, Ensurge Micropower, Eramet, ESS Tech, EticaAG, EVE Energy, Exawatt, Factorial Energy, Faradion, Farasis Energy, FDK Corporation, Fluence, Form Energy, Fortum Battery Recycling, Forge Nano, Forsee Power, Foxess, Freudenberg, FREYR Battery, Front Edge Technology, FuelCell Energy, Ganfeng Lithium, GEM Co., GivEnergy, GLC Recycle, Glencore, Gotion, Graphene Manufacturing Group (GMG), Graphite One, Grepow, Green Energy Storage, Green Graphite Technologies, Green Li-ion, Green Mineral, GQenergy, GRST, Growatt, Guangdong Guanghua Sci-Tech, H2 Inc., Hansol Chemical, Hanwha, Heiwitt, HiNa Battery Technologies, Highstar, Hithium, Honeycomb Battery Company, Huayou Cobalt, HydroVolt, Hyundai, IBC Solar, Idemitsu Kosan, Ilika, Imerys, Immersa, Indi Energy, Infinity Power, Inmetco, Innolith, Ion Storage Systems, Ionblox, Ionomr Innovations, ITEN, J-Cycle, JinkoSolar, Jinghe Energy, JX Nippon Metal Mining, Kemiwatt, Korea Zinc, Korid Energy/AVESS, KoreaGraph, Koura, Kusumoto Chemicals, Kyoei Seiko, Largo, Le System, Lepu Sodium Power, LG Chem, LG Energy Solutions, LI Industries, Li-Cycle, Li-Fun Technology, Li-Metal Corp, Li-S Energy, LiBest, LiCAP Technologies, LiNa Energy, Libode New Material, Librec,

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Lightyear Engine, LIND, Lithium Werks, Livium Australia, Livoltek, LionVolt, Lionrock Batteries, Lohum, LOTTE Energy Materials Corporation, Lucky Sodium Storage, Luxera Energy, Lyten, Materia AI, Mecaware, Meine Electric, Merck, Metastable Materials, Micromet, Microvast, Mitra Future Technologies, Mitsubishi Chemical, Mitsubishi Electric, Mitsubishi Materials, Molyon, Monolith AI, Moonwatt, Morrow Batteries, Murata Manufacturing, Nacelle, Nacoe Energy, Nano One Materials, NanoGraf, NanoPow, Nanom, Nanomakers, Nanoramic Laboratories, Nanoresearch, Nanotech Energy, Narada Power, Nascent Materials, Natrium Energy, Natron Energy, Nawa Technologies, NBD, NDB, NEC Corporation, NEI Corporation, Nexeon, NEU Battery Materials, NGK Insulators, NIO, Nippon Chemicon, Nippon Electric Glass, Noco-noco, Noon Energy and more...

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