NextGenEnergyStorage

Weekly Intelligence Report

2026-08-30 | 27 articles | 10 countries

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This Week's Keyword

Battery Geopolitics

US/China decoupling, Na-ion rise, EU recycling

27	10	$1.4B	$50-56
articles	countries	USD	/kWh
Total Articles Analyzed	Source Countries/Regions	DoD Silicon Anode Loan	Na-ion Cell Price (CATL)

All 27 Articles This Week — 5-Axis Evaluation Matrix

How to read columns — Tech Novelty: degree of breakthrough Market Proximity: closeness to commercialization Market Impact: industry-wide effect Data Reliability: quantitative data & peer review US/EU Relevance: direct impact on US/European companies & supply chains

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#01	Na-Ion Low-Temp Electrolyte	Research	●●●○○	●○○○○	●●●○○	●●●●●	●●●●○	Review outlines electrolyte strategies to improve sodium-ion battery performance in cold environments.
#02	24M Semi-Solid Na-Ion	New Product	●●●●○	●●●○○	●●●●○	●●○○○	●●●●●	24M Technologies achieves breakthrough in semi-solid sodium-ion batteries for EVs, backed by DOE/DARPA.
#03	Li-S Energy to US Army	New Product	●●●●○	●●●●○	●●●●○	●●●○○	●●●●●	Li-S Energy delivers high-energy-density lithium-sulfur battery cells to the U.S. Army for defense applications.
#04	Formula X Iron-Air 100hr	New Product	●●●●○	●●●○○	●●●●●	●●●○○	●●●●●	Formula X introduces a low-cost, 100-hour iron-air battery, poised to transform stationary energy storage.
#05	EV Batteries for AI DCs	Applicatio n	●●●○○	●●●●●	●●●●○	●●○○○	●●●●●	US company repurposes end-of-life EV batteries for AI data center energy storage in Nevada.
#06	Zinc-Iodine 60k Cycles	Research	●●●●●	●○○○○	●●●●●	●●○○○	●●●●●	Scientists develop next-gen zinc-iodine batteries with 60,000 cycles, 3-minute charge, and non-flammability.
#07	DeltaX Georgia Hub	Corporat e Strategy	●●○○○	●●●●○	●●●○○	●●●○○	●●●●●	DeltaX plans a $141M battery manufacturing hub in Georgia to boost US energy storage production.
#08	EU Battery Recycling	Analysis	●○○○○	●●●●●	●●●●○	●●●○○	●●●●●	Battery recycling in Europe remains uneconomic, posing a significant challenge to circular economy goals.
#09	CATL Na-Ion Cost Parity	Market Overview	●●●○○	●●●●○	●●●●●	●●●○○	●●●●○	CATL predicts sodium-ion batteries will achieve cost parity with LFP by end of 2026, signaling market shift.
#10	UK ULD EES Challenge	Policy	●●○○○	●○○○○	●●●○○	●●●●○	●●●●●	UK government launches £28M challenge to accelerate ultra long-duration energy storage development.
#11	Capital Dynamics BESS	Market Overview	●○○○○	●●●●●	●●○○○	●●●●○	●●●●●	Capital Dynamics acquires 170MW/4-hour BESS project to accelerate renewable energy integration.
#12	US Bans Chinese BESS	Policy	●○○○○	●●●●●	●●●●●	●●●○○	●●●●●	U.S. government bans Chinese-made BESS via new directive over national security concerns, impacting supply chains.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#13	Gelion Li-S Drone Tests	New Product	High	High	High	Med-High	High	Gelion's lithium-sulfur batteries pass independent drone tests at QinetiQ, accelerating market entry.
#14	Pure Lithium Li-Metal	Research	High	Low	High	Low	High	Pure Lithium announces unprecedented cycling results from its advanced anode lithium metal battery technology.
#15	PNE Cathode Recycling	New Technology	High	Med-High	High	High	High	Princeton NuEnergy secures $50M DOE grant for building closed-loop cathode-to-cathode recycling facility.
#16	Itronics Black Mass Rec	New Technology	Med-High	Low	Med-High	Low	High	Itronics advances critical minerals processing with breakthrough battery 'black mass' recovery technology.
#17	Invinity 2.1GWh Flow Bat	New Product	Low	High	High	High	High	Invinity Energy Systems secures EPC contract for landmark 2.1GWh flow battery project in Switzerland.
#18	Bendable Li-S (China)	Research	High	Low	Med-High	Low	Med-High	Chinese researchers develop bendable, cuttable Li-S battery prototype with PAA coating for enhanced safety.
#19	US DOE $500M Supply Chain	Policy	Low	High	High	High	High	U.S. DOE invests $500M to bolster domestic battery supply chain, expanding recycling and manufacturing.
#20	Silicon Anode Market $13B	Market Overview	High	Med-High	High	Med-High	High	Silicon anode battery market to hit $13.5B by 2034, driven by EV demand; Sila Nanotechnologies lands $1.4B DoD loan.
#21	CATL Naxtra Commercial	New Product	High	High	High	Med-High	High	Sodium-ion batteries enter full commercialization in 2026; CATL launches mass-produced 175Wh/kg Naxtra cells at $50-56/kWh.
#22	LGES Michigan LFP/NMC	Corporate Strategy	Low	High	High	High	High	LG Energy Solution commences LFP and NMC battery cell production at Michigan plant for North American ESS market.
#23	L&T; 6GWh Middle East	Market Overview	Low	High	Low	Med-High	Low	L&T;'s Renewable Energy secures three 6GWh BESS projects in the Middle East for grid modernization.
#24	Certain Energy Mn Flow	New Technology	High	Low	High	Med-High	High	UK's Certain Energy raises £10M for manganese flow batteries, aiming for 1/10th vanadium cost in LDES.
#25	Europe BESS Accelerates	Market Overview	Low	High	High	Med-High	High	European BESS deployment accelerates, with Czech Republic adding 318MWh and Portugal allocating 1GVA to storage.
#26	Italy 320MW BESS Project	Market Overview	Low	High	Low	Med-High	High	Italy plans a 320MW nationally strategic BESS project adjacent to a Terna substation to support grid stability.
#27	ESS Inc. Pivots to Na-Ion	Corporate Strategy	Low	Med-High	Med-High	Med-High	High	ESS Inc. pivots to sodium-ion BESS, shifting focus from iron flow batteries to overcome commercialization challenges.

High | Med-High | Med | Low | Yellow highlight = featured article

Three Questions That Demand Your Decision This Week

❶ Is your supply chain resilient to US BESS import bans?

The US government has banned Chinese-made BESS due to national security concerns (#12). This mandates a rapid shift to domestic or allied sourcing. Does your procurement strategy account for this immediate disruption and the accelerated growth of US manufacturing capacity (e.g., DeltaX #07, LGES #22)?

❷ Does CATL's Na-ion cost parity make your LFP strategy obsolete?

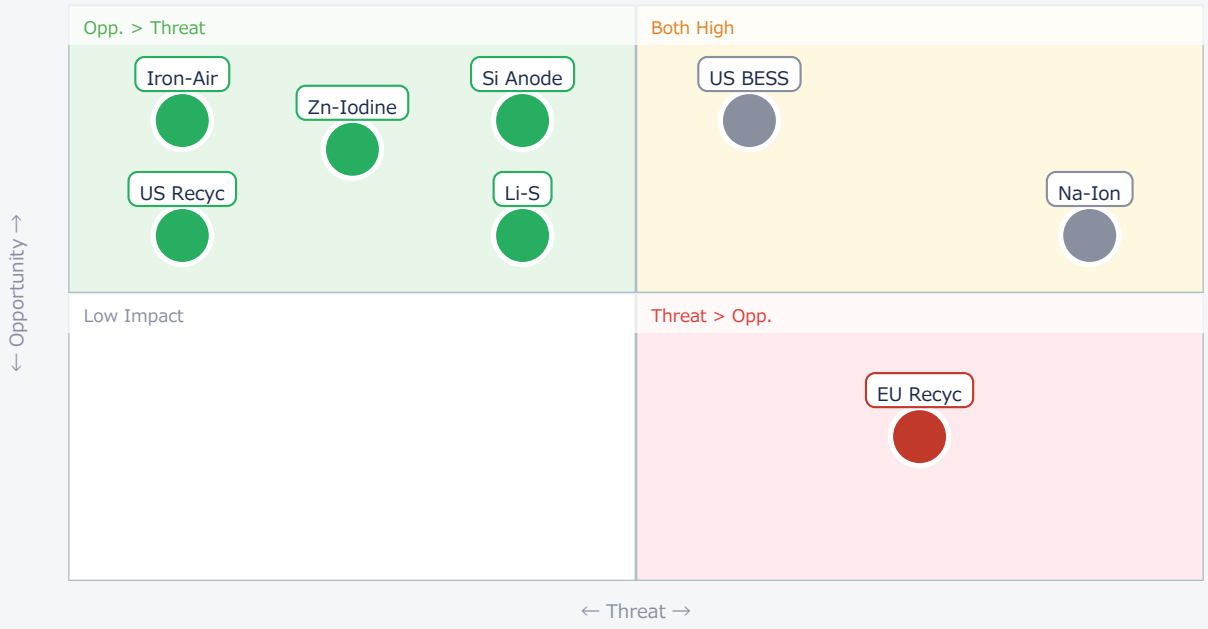
CATL projects sodium-ion batteries will reach cost parity with LFP by end of 2026, with mass-produced cells at $50-56/kWh (#09, #21). This could fundamentally alter cost-sensitive EV and stationary storage markets. Are you evaluating Na-ion's impact on your LFP product roadmap and competitive positioning?

❸ Are you investing in next-gen LDES or risking grid instability?

Breakthroughs in 100-hour iron-air (#04), 60,000-cycle zinc-iodine (#06), and low-cost manganese flow batteries (#24) signal a shift in Long-Duration Energy Storage (LDES). With the UK launching a £28M challenge (#10) and Europe accelerating BESS deployment (#25), is your LDES strategy robust enough to meet future grid demands?

Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
● US BESS	Critical	Domestic market growth	Supply chain disruption
● Na-Ion	Critical	Low-cost alternative	LFP market erosion
● Iron-Air	Opp.	Long-duration storage	Incumbent displacement
● Si Anode	Opp.	High-density EVs	R&D; investment race
● US Recyc	Opp.	Secure raw materials	High capital cost
● Li-S	Opp.	High-density defense	Cycle life barriers

● EU Recyc	Threat	Policy incentives	Economic unviability
● Zn-Iodine	Opp.	Safe, fast, long-life	Early stage scale-up

Deep Dive ① — US Bans Chinese BESS: Supply Chain Overhaul

#12 | 2026/08/27 | ESS News | Tech Novelty●○○○○ Proximity●●●●● Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●●

The U.S. government has enacted a ban on Chinese-made Battery Energy Storage Systems (BESS) due to national security concerns, aiming to reduce reliance on foreign technology in critical infrastructure. This directive will significantly impact the U.S. energy storage market, accelerating domestic manufacturing and supply chain diversification.

The ban targets potential vulnerabilities in software and hardware of Chinese BESS, which could lead to cyberattacks or operational shutdowns. This policy extends the 'decoupling' strategy into the energy sector, pushing U.S. suppliers to source non-Chinese components and pivot towards domestic production.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: This ban is a game-changer, not an optimistic forecast. Published numbers are policy-driven, hence realistic. The technical barrier is less about new tech and more about rapid re-shoring/re-tooling. [Opportunity] for US/EU materials & component suppliers, and OEMs to capture market share. [Threat] for US/EU procurement managers reliant on existing Chinese BESS supply chains. Immediate actions: [Procurement] audit BESS supply chains, identify Chinese components; [Strategy] evaluate domestic manufacturing expansion or partnerships with allied suppliers; [Business Dev] engage with US BESS developers seeking new partners.

Deep Dive ② — CATL's Na-ion Commercialization & Cost Parity

#21 | 2026/08/25 | SodiumBatteryHub (Ref. #09) | Tech Novelty●●●●○ Proximity●●●●● Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●○

Sodium-ion batteries (NIBs) are entering full commercialization in 2026, with CATL launching mass-produced 'Naxtra' cells at 175Wh/kg, comparable to high-performance LFP. CATL predicts NIBs will achieve cost parity with LFP by end of 2026, priced at $50-56/kWh, signaling a major market shift.

This development positions NIBs as a highly cost-competitive, safe, and low-temperature performing alternative for stationary BESS and cost-sensitive EVs. The use of abundant sodium resources promises supply chain stabilization and significant cost reductions, fundamentally impacting the battery industry.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: CATL's projection of cost parity and mass production is highly realistic given their track record. The technical barrier for US/EU is rapidly catching up in manufacturing scale and cost optimization. [Opportunity] for US/EU materials suppliers to develop sodium-based chemistries and for OEMs to diversify battery sourcing. [Threat] for US/EU LFP manufacturers and EV/ESS companies that haven't integrated Na-ion into their future roadmaps. Next actions: [R&D;] accelerate Na-ion R&D;, focusing on energy density and cycle life; [Procurement] begin pilot evaluations of Na-ion cells from diverse suppliers; [Strategy] reassess LFP market share and competitive landscape by Q4 2026.

Deep Dive ③ — Formula X's Game-Changing 100-Hour Iron-Air Battery

#04 | 2026/08/27 | Facilities Dive | Tech Novelty●●●●○ Proximity●●●○○ Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●●

Emerging company Formula X has developed a low-cost, 100-hour sustainable iron-air battery for the stationary energy storage market. This technology offers a practical solution for long-duration energy storage (LDES), complementing intermittent renewables and stabilizing power grids.

Iron-air batteries use abundant materials (iron, water, air), are non-flammable, and promise significantly lower cost per kilowatt-hour for long durations. Proprietary material enhancements improve cycle life and efficiency, exceeding typical lithium-ion capacities and enabling day-to-week power management.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: The 100-hour claim is ambitious but plausible for iron-air chemistry, though 'proprietary enhancements' need validation. Technical barriers include long-term cycle stability and scaling manufacturing. [Opportunity] for US/EU utilities and grid operators to integrate truly long-duration, safe, and low-cost storage, and for materials suppliers to develop iron-based components. [Threat] to existing LDES technologies (e.g., pumped hydro, some flow batteries) and short-duration Li-ion in LDES applications. Next actions: [R&D;] investigate Formula X's technology and other iron-air advancements; [Strategy] model the impact of 100-hour LDES on grid economics; [Business Dev] explore pilot projects or partnerships for LDES solutions by Q1 2027.

Other Notable Articles

24M Semi-Solid Na-Ion Breakthrough (Facebook (24M Technologies言及))
Tech Novelty●●●●○ Proximity●●●○○ Market Impact●●●●○

US company 24M's semi-solid Na-ion breakthrough, backed by DOE/DARPA, promises extended EV range and fast charging.

Scientists Develop Next-Gen Zinc-Iodine Batteries (TechRadar)
Tech Novelty●●●●● Proximity●○○○○ Market Impact●●●●●

Groundbreaking zinc-iodine battery offers 60,000 cycles, 3-minute charge, and non-flammability – a major R&D; milestone.

Pure Lithium Announces Unprecedented Cycling Results (BusinessWire)
Tech Novelty●●●●○ Proximity●●○○○ Market Impact●●●●○

Pure Lithium's advanced anode lithium metal battery achieves unprecedented cycling, overcoming dendrite issues for next-gen EVs.

Invinity Energy Systems Secures EPC Contract (Energy-Storage.news)
Tech Novelty●●○○○ Proximity●●●●○ Market Impact●●●●○

UK's Invinity secures EPC for a landmark 2.1GWh flow battery in Switzerland, demonstrating RFB commercial maturity.

UK's Certain Energy Raises £10M (Imperial College London)
Tech Novelty●●●●○ Proximity●●○○○ Market Impact●●●●○

Certain Energy raises £10M for manganese flow batteries, aiming for 1/10th vanadium cost in long-duration storage.

Recommended Actions This Week

Action recommendations based on article evaluation matrix and opportunity/threat analysis.

Immediate (this week)

- [Procurement] Conduct an urgent audit of all BESS supply chains for exposure to Chinese-made components, identifying alternative suppliers. (Ref: #12)
- [Strategy] Initiate a competitive analysis of CATL's Na-ion battery offerings and their potential impact on current LFP product roadmaps. (Ref: #09, #21)
- [R&D;] Task a rapid assessment team to evaluate the technical feasibility and market readiness of emerging long-duration energy storage (LDES) technologies like iron-air and manganese flow batteries. (Ref: #04, #24)

Short-term (1 month)

- [Business Dev] Engage with US-based battery manufacturers (e.g., DeltaX, LGES) to explore new BESS supply partnerships and domestic content opportunities. (Ref: #07, #22)
- [R&D;] Prioritize internal R&D; efforts or external partnerships to develop competitive sodium-ion battery technologies, focusing on cost and performance. (Ref: #09, #21, #27)
- [Procurement] Develop a strategy to address the economic unviability of battery recycling in Europe, exploring innovative recycling technologies and policy advocacy. (Ref: #08)

Medium-long term (quarter+)

- [Strategy] Develop a comprehensive LDES investment strategy, considering diverse chemistries (e.g., iron-air, manganese flow, zinc-iodine) and potential grid integration challenges. (Ref: #04, #06, #10, #24)
- [Legal/IP] Monitor global IP developments in next-generation battery chemistries (e.g., Li-S, Li-metal, silicon anodes) to identify licensing opportunities or competitive threats. (Ref: #03, #13, #14, #18, #20)
- [Executive] Establish a cross-functional task force to leverage US government funding (e.g., DOE $500M, DoD $1.4B) for domestic battery supply chain development and recycling infrastructure. (Ref: #15, #19, #20)

NextGenEnergyStorage — Selected Articles

Date: 2026-08-30

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#01 MDPI Review Details Electrolyte Optimization Strategies for Enhanced Low-Temperature Performance in Sodium-Ion Batteries

Published August 26, 2026 MDPI Germany

OVERVIEW

A comprehensive research review published by MDPI outlines key strategies to significantly improve the low-temperature performance of sodium-ion batteries (SIBs). The study addresses critical challenges such as reduced conductivity, increased viscosity, and poor interfacial stability, which typically lead to capacity loss and shortened cycle life in cold environments. This advancement is crucial for enabling practical SIB applications in harsh conditions, particularly for electric vehicles and grid-scale storage systems.

IN DEPTH

Key Findings

A recent research review published by MDPI details novel electrolyte optimization strategies that promise to significantly enhance the low-temperature performance of sodium-ion batteries (SIBs). This breakthrough is critical for expanding SIB utility in diverse applications, especially electric vehicles (EVs) and stationary energy storage systems operating in frigid climates. Historically, SIBs have suffered from substantial performance degradation at low temperatures, but this review maps out specific, advanced approaches to overcome these limitations.

Technical / Clinical Details

The review identifies the primary culprits behind SIB performance decline at low temperatures as reduced electrolyte conductivity, increased viscosity, and compromised interfacial stability between the electrodes and electrolyte. These issues culminate in diminished charge capacity, prolonged charging times, and reduced cycle life. Proposed optimization strategies include tuning solvent dielectric constants and viscosities, incorporating low-melting point additives to depress the electrolyte's freezing point, and developing functional additives that improve solid-electrolyte interphase (SEI) formation. Techniques such as utilizing fluorinated solvents, ionic liquids, and high-concentration electrolytes show promise in maintaining stable SIB performance even below -20°C. This closes a significant performance gap with lithium-ion batteries in cold weather operation, improving both energy density and power characteristics.

Background & Context

Sodium-ion batteries are garnering significant attention as a cost-effective alternative to lithium-ion batteries due to the abundant and inexpensive nature of sodium resources. However, their poor low-temperature performance has been a long-standing hurdle, hindering widespread adoption in critical applications like EVs and renewable energy grid storage, which demand reliable operation across a broad temperature spectrum. This review underscores the pivotal role of electrolyte technology in advancing SIB low-temperature capabilities, thereby providing a clear roadmap for future research and development. It represents a vital milestone in enhancing the global competitiveness of SIBs in the burgeoning energy storage market.

Strategic Significance & Outlook

The optimization strategies highlighted in this review have the potential to accelerate the commercialization of SIBs. Improved low-temperature performance will notably extend EV driving ranges and reliability in cold regions, such as Northern Europe and Canada, and facilitate the deployment of stationary storage systems for stabilizing power grids from renewable sources. Future efforts will focus on validating these electrolyte technologies in full-scale cells and establishing cost-effective manufacturing processes for mass production. Such advancements are expected to enable SIBs to make substantial contributions to achieving a sustainable energy future.

Source: https://www.mdpi.com/1996-1944/19/17/3634

#02 24M Technologies Achieves Breakthrough in Semi-Solid Sodium-Ion Batteries for EVs, Promising Extended Range and Fast Charging

Published Published August 26, 2026 Facebook (24M Technologies言及) USA

OVERVIEW

24M Technologies, backed by a significant DOE award, is spearheading advancements in semi-solid state sodium-ion battery technology for electric vehicles (EVs). This innovative approach promises to deliver substantially extended driving ranges, dramatically faster charging, and enhanced safety compared to current lithium-ion solutions. With additional investment from DARPA, this breakthrough is set to redefine EV performance, reliability, and the future of sustainable transportation.

IN DEPTH

Background

The rapidly expanding electric vehicle (EV) market is facing escalating demands for improved battery performance, enhanced cost efficiency, and superior safety. While lithium-ion batteries are currently ubiquitous, concerns persist regarding the geographical concentration of lithium resources, price volatility, and inherent thermal runaway risks. In response, sodium-ion batteries, leveraging abundant and inexpensive sodium, have emerged as a highly promising alternative, offering significantly reduced supply chain vulnerabilities and enhanced cost competitiveness. Semi-solid and all-solid-state battery technologies are widely recognized as the next frontier for EV power sources, with advancements from companies like 24M Technologies highlighting U.S.-led innovation in this critical sector.

Key Findings

A pivotal breakthrough in electric vehicle (EV) battery technology has been realized with semi-solid state sodium-ion batteries, spearheaded by 24M Technologies and bolstered by a substantial grant from the U.S. Department of Energy (DOE). This innovative battery chemistry is poised to deliver substantially extended driving ranges, dramatically faster charging capabilities, and superior safety profiles when compared to conventional lithium-ion batteries. The Defense Advanced Research Projects Agency (DARPA)'s concurrent investment in related programs further underscores the profound strategic potential of this technology for both the future of the EV market and national defense energy storage.

Technical Details

Semi-solid state sodium-ion batteries ingeniously combine the high energy density characteristic of solid-state systems with the enhanced ion conductivity typically found in liquid electrolytes, achieved by solidifying a portion of the electrolyte. This 'semi-solid' methodology effectively mitigates safety risks linked to highly flammable liquid electrolytes, while simultaneously enabling simpler battery pack designs, reducing manufacturing costs, and minimizing thermal runaway hazards. 24M Technologies' distinct approach emphasizes a reduction in solvent usage during manufacturing, leading to more environmentally sustainable production processes, all while achieving impressive energy density and rapid charging capabilities. This significant technological leap presents a compelling advantage over current lithium-ion solutions, particularly for long-range EVs, by considerably enhancing user convenience and overall safety.

Strategic Significance & Outlook

The groundbreaking advancements in semi-solid sodium-ion batteries, spearheaded by companies like 24M Technologies, are poised to revolutionize the electric vehicle industry. The emergence of safer, higher-performing, and more sustainable battery solutions will undoubtedly accelerate consumer adoption of EVs and robustly facilitate the global transition towards sustainable transportation. Continued crucial support from governmental bodies such as the DOE and DARPA provides essential momentum for the swift market introduction of this transformative technology. This is expected to further boost EV penetration rates and significantly contribute to the global evolution of advanced energy storage solutions.

Source: https://www.facebook.com/61578840501298/posts/a-major-breakthrough-in-ev-battery-technology-is-making-waves-a-new-solid-state-/122174782712961350/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#03 Li-S Energy Delivers Groundbreaking Lithium-Sulfur Battery Cells to U.S. Army for Defense Applications

Published August 25, 2026 TipRanks Australia

OVERVIEW

Australian firm Li-S Energy (ASX: LIS) has commenced supplying its inaugural batch of advanced lithium-sulfur (Li-S) battery cells to the U.S. Army. This delivery marks a significant breakthrough in energy storage for the defense sector, highlighting the potential for high-performance batteries capable of meeting stringent military requirements. The high energy density and lightweight characteristics of Li-S batteries are expected to substantially extend operational times for military drones and soldier-borne equipment.

IN DEPTH

Key Findings

Li-S Energy (ASX: LIS), an Australian battery technology company, has delivered its first batch of groundbreaking lithium-sulfur (Li-S) battery cells to the U.S. Army. This delivery represents a pivotal advancement in energy storage technology for the defense sector, paving the way for next-generation battery solutions tailored for military applications. Li-S batteries are characterized by their significantly higher energy density and lighter weight compared to conventional batteries, promising a substantial improvement in battlefield operational capabilities.

Technical / Clinical Details

The Li-S battery technology, which employs lithium metal for the anode and sulfur for the cathode, theoretically offers nearly double the energy density of lithium-ion batteries. Li-S Energy's cells reportedly achieve high cycle life and stability through their proprietary 'BOHMER™' nano-sulfur material technology and 'LI-S TECHNOLOGY™' which mitigates the polysulfide shuttle effect. This supply to the U.S. Army suggests that Li-S batteries are suitable for military applications where rigorous reliability and performance under harsh conditions are paramount. Specifically, these batteries hold the potential to dramatically extend the operational duration of drones requiring long flight or reconnaissance missions, as well as soldier-borne equipment such as communication devices and sensors. This will directly contribute to reducing soldier burden and enhancing mission effectiveness.

Background & Context

The defense industry has a critical need for power sources that are smaller, lighter, longer-lasting, and highly reliable. With the evolution of drones, unmanned ground vehicles (UGVs), and soldier-portable electronic devices, high-performance batteries are indispensable for sustaining the extended operation of these platforms. While lithium-ion batteries are widely adopted, their performance limits have spurred interest in Li-S batteries as a next-generation solution offering superior gravimetric energy density. Li-S Energy's supply to the U.S. Army signifies a crucial milestone, indicating the technology's transition from research to practical implementation.

Strategic Significance & Outlook

Should Li-S Energy's technology perform well in U.S. Army testing, it could bolster the credibility of Li-S battery technology overall, potentially leading to widespread adoption within the defense industry. Furthermore, success in military applications often serves as a catalyst for accelerated deployment in civilian sectors, including electric aircraft, long-range EVs, and portable electronics like smartphones and wearables. Such technological progress is also vital for enhancing the international competitiveness of Australian companies in the energy storage domain.

Source: https://www.tipranks.com/news/company-announcements/li-s-energy-sends-first-lithium-sulfur-cells-to-us-army-in-defence-breakthrough

Collected: August 28, 2026 | Automated Research System (Gemini API)

#04 Formula X Introduces Game-Changing 100-Hour Iron-Air Battery for Stationary Storage Market

Published August 27, 2026 Facilities Dive USA

OVERVIEW

Emerging company Formula X is gaining significant attention for developing a low-cost, 100-hour sustainable iron-air battery for the stationary energy storage market. This technology has the potential to solve long-duration energy storage challenges, complementing intermittent renewable energy sources and stabilizing power grids. It promises substantial cost reductions and environmental benefits over traditional lithium-ion batteries, accelerating utility-scale adoption.

IN DEPTH

Key Findings

Formula X, a promising startup, has developed a low-cost iron-air battery capable of sustained operation for an impressive 100 hours, drawing significant attention within the stationary energy storage market. This innovative technology offers a practical and economical solution to the pressing issue of grid instability caused by the increasing integration of intermittent renewable energy sources. By delivering significantly lower operational costs and a reduced environmental footprint compared to existing battery technologies, it is poised to accelerate the deployment of large-scale energy storage systems.

Technical / Clinical Details

Iron-air batteries are a type of redox flow battery that generates and stores electricity by reacting iron with oxygen from the air. Formula X's system specifically optimizes energy storage capacity and discharge duration, achieving an extraordinary 100-hour sustained discharge. This far exceeds the typical few-hour capacity of conventional lithium-ion batteries, enabling it to manage day-to-day and week-to-week fluctuations in power demand. Key technical characteristics include the use of abundant and inexpensive materials (iron, water, air), inherent non-flammability for enhanced safety, and undisclosed proprietary material enhancements that improve cycle life and efficiency. This results in a significantly lower cost per kilowatt-hour, with cost advantages increasing proportionally with longer storage durations.

Background & Context

The global power market is rapidly accelerating its transition towards decarbonization and renewable energy, making grid stabilization and reliability paramount challenges. As the proportion of intermittent sources like solar and wind power grows, the need for 'Long-Duration Energy Storage (LDES)' technologies capable of storing power for several hours to multiple days has become critical. While lithium-ion batteries are suitable for short-to-medium duration storage, they are cost-prohibitive and resource-constrained for LDES applications. Iron-air batteries are emerging as a next-generation technology to meet these LDES market needs, with active research and development. Formula X's progress represents a crucial step towards commercializing this field.

Strategic Significance & Outlook

Formula X's 100-hour sustainable iron-air battery has the potential to fundamentally transform stationary energy storage systems. If widely adopted, this technology could enable utility companies to manage peak demand more flexibly and further accelerate the integration of renewable energy. It holds particular promise for remote communities, microgrids, and industrial facilities where stable and continuous power supply is essential. The next challenges will involve scaling up from demonstration phases to commercial operation and proving long-term reliability and durability. Success in these areas could establish a new de facto standard in the energy storage market, powerfully driving the global energy transition.

Source: https://www.facilitiesdive.com/news/facilities-betting-big-on-low-cost-100-hour-iron-air-batteries/828778/

#05 U.S. Company Repurposes End-of-Life EV Batteries for AI Data Center Storage in Nevada

Published August 25, 2026 Economic Times USA

OVERVIEW

A U.S. company has launched an innovative initiative in Nevada to repurpose end-of-life electric vehicle (EV) batteries as energy storage systems for AI data centers. This approach simultaneously addresses the escalating power demands of AI computing and the growing problem of spent EV battery waste. The repurposed batteries will contribute to stable power supply and peak shifting in data centers, offering significant economic and environmental benefits.

IN DEPTH

Key Findings

An innovative U.S. company in Nevada has pioneered a project to repurpose end-of-life electric vehicle (EV) batteries as energy storage systems for AI data centers. This initiative provides a dual solution to two critical contemporary challenges: the immense power demands of AI's explosive growth and the environmental concerns surrounding discarded EV batteries. The reused batteries will ensure stable power supply for data centers, reduce operational costs, and promote sustainable resource circulation.

Technical / Clinical Details

The project involves collecting lithium-ion batteries that have reached the end of their useful life in EVs, subjecting them to expert diagnostics and sorting processes, and then redeploying them as backup power or peak-shifting storage systems for data centers. Many batteries, while no longer suitable for EVs due to reduced performance, retain sufficient capacity for stationary applications like data centers. The repurposed battery packs are integrated with advanced Battery Management Systems (BMS) to optimize charging and discharging based on the data center's power load. This strategy curtails expensive peak-time electricity purchases from the grid and provides instantaneous backup power during unexpected outages. AI data centers, with their high-density server clusters, demand exceptionally stable power supply and high energy efficiency; repurposed batteries offer an economically viable means to achieve this. The project meticulously evaluates residual capacity, cycle life, and safety to design optimal system configurations.

Background & Context

The proliferation of AI technology has spurred the adoption of high-load hardware, such as GPUs, leading to a dramatic increase in data center power consumption. Concurrently, the rapid growth of EVs is projected to create a 'mountain of batteries' in a few years, raising significant disposal concerns for spent units. Since these batteries often retain substantial energy storage capability, 'second-life' applications are being explored globally as an alternative to disposal. This Nevada project is a pioneering model that links these two pressing issues, simultaneously promoting a circular economy and enhancing energy efficiency.

Strategic Significance & Outlook

This model of repurposing end-of-life EV batteries for AI data center storage holds significant potential for widespread adoption across other regions and industrial sectors. Successful implementation would maximize the value of EV batteries throughout their lifecycle and substantially reduce the consumption of scarce resources like lithium and cobalt. For data center operators, it presents a novel solution to balance reduced electricity costs with lower environmental footprints. This project serves as a crucial benchmark for sustainable data center operations and for establishing a next-generation battery resource circulation model. Future developments are expected to include the standardization of battery diagnostic and sorting technologies, along with the creation of even more efficient repurposing systems.

Source: https://m.economictimes.indiatimes.com/magazines/panache/this-us-company-is-repurposing-old-ev-batteries-in-nevada-to-power-ai-data-centres-this-could-solve-one-of-ais-biggest-problems/articleshow/133475316.cms

Collected: August 28, 2026 | Automated Research System (Gemini API)

#06 Scientists Develop Next-Gen Zinc-Iodine Batteries with 60,000 Cycles, 3-Minute Charge, and Inherent Non-Flammability

Published August 26, 2026 TechRadar USA

OVERVIEW

A team of scientists has successfully developed a groundbreaking next-generation zinc-iodine battery that achieves full charge in just 3 minutes, boasts an exceptional lifespan of over 60,000 cycles, and is inherently non-flammable. This technological leap addresses fundamental challenges in battery safety, charging speed, and durability, poised to revolutionize applications like electric vehicles requiring rapid charging and stationary storage demanding high safety and longevity.

IN DEPTH

Key Findings

A team of scientists has achieved a remarkable breakthrough with the development of a next-generation zinc-iodine battery capable of achieving a full charge in just 3 minutes, boasting an extraordinary cycle life exceeding 60,000 cycles, and featuring inherent non-flammability. This innovative battery technology holds the potential to fundamentally resolve longstanding issues concerning safety, charging speed, and durability across a wide range of applications, including electric vehicles (EVs) and large-scale grid energy storage systems. This discovery is attracting significant attention from researchers, engineers, and investors alike as it sets a new benchmark for battery technology.

Technical / Clinical Details

The newly developed zinc-iodine battery is a type of redox flow battery, utilizing zinc as the anode and iodine as the cathode, and employs an aqueous electrolyte, which intrinsically ensures high safety. Its most striking features are its rapid charging capability and extended lifespan. The research team demonstrated over 90% charge completion within 3 minutes through optimized electrolyte composition and electrode structures. Furthermore, it achieved an astonishing 60,000 charge-discharge cycles, several to tens of times greater than typical lithium-ion batteries, attributed to the high stability of its materials and the excellent reversibility of electrode reactions. Critically, because it uses an aqueous electrolyte, the risk of fire—a major concern with lithium-ion batteries—is virtually eliminated, significantly enhancing safety. This superior safety profile is a paramount factor for large-scale deployments in residential and public infrastructure.

Background & Context

Today's energy storage market is dominated by lithium-ion batteries, but they are consistently challenged by high costs, resource constraints, and the risk of thermal runaway. The rapid adoption of EVs, in particular, has intensified demand for faster charging and enhanced safety. Zinc-based batteries have been researched for many years as a lithium alternative due to their use of inexpensive and abundant resources, though past challenges included cycle life and energy density. This breakthrough in zinc-iodine batteries simultaneously addresses these historical issues, positioning it as a potential game-changer for long-duration stationary storage and the EV sector, where rapid charging infrastructure is essential.

Strategic Significance & Outlook

The development of this next-generation zinc-iodine battery is expected to have an immeasurable impact on the energy storage sector. Its 3-minute charging capability could bring the EV user experience closer to that of gasoline-powered vehicles, accelerating consumer EV adoption. The 60,000-cycle lifespan will dramatically reduce battery replacement frequency, lowering the total cost of ownership (TCO). Its non-flammable nature will facilitate the easier deployment of large-scale energy storage systems in urban areas and residential zones, significantly contributing to renewable energy integration and grid stabilization. Future challenges will involve optimizing manufacturing costs at a practical scale and validating long-term performance under various environmental conditions. Should commercialization succeed, this technology is poised to become a critical pillar in realizing a sustainable energy future.

Source: https://www.techradar.com/home/energy-saving/scientists-develop-next-gen-zinc-iodine-batteries-with-60-000-cycles-that-charge-in-3-minutes-and-they-wont-catch-fire-either

Collected: August 28, 2026 | Automated Research System (Gemini API)

#07 DeltaX Plans $141 Million Battery Manufacturing Hub in Georgia to Boost US Energy Storage Production

Published August 27, 2026 Environment + Energy Leader USA

OVERVIEW

Battery manufacturer DeltaX has announced plans for a $141 million (approx. ¥20 billion) large-scale battery energy storage system manufacturing hub in Georgia. This new facility aims to meet the escalating demand for energy storage in the U.S., strengthening supply chains and stimulating regional economic growth. The company intends to integrate cutting-edge manufacturing technologies to significantly expand its production capacity for next-generation batteries.

IN DEPTH

Key Findings

DeltaX, an innovator in battery manufacturing, has unveiled a significant plan to invest $141 million (approximately ¥20 billion) in establishing a state-of-the-art battery energy storage system (BESS) manufacturing hub in Georgia, USA. This strategic investment is designed to address the surging demand for energy storage solutions within the United States while simultaneously contributing to the strengthening of domestic supply chains and the revitalization of the regional economy. The new facility is set to integrate the latest in automation technologies and sustainable manufacturing processes to dramatically expand production capacity for next-generation batteries.

Technical / Clinical Details

The planned DeltaX manufacturing facility in Georgia will specialize in grid-scale energy storage systems, focusing on expanding the production of specific (undisclosed, but hinted at next-generation chemistry) battery technologies. This facility will feature rigorous efficiency and quality control throughout the manufacturing process, likely incorporating AI-powered production optimization systems and robotic assembly lines. The objective is to supply the market with high-energy-density, long-life battery products while reducing production costs. This will enable more reliable storage solutions that accelerate the integration of renewable energy and enhance grid stability.

Background & Context

In the United States, investment in energy storage technologies is surging as the nation strives to meet renewable energy targets and modernize its power grid. Reinforcing domestic manufacturing capabilities is a strategic national priority to stabilize supply chains and reduce reliance on foreign nations, notably China. Georgia has established an attractive ecosystem for the battery industry, hosting major automotive manufacturers and battery-related companies. DeltaX's investment aligns perfectly with U.S. government policies promoting domestic manufacturing and will further advance the region's 'Battery Valley' initiative.

Strategic Significance & Outlook

The establishment of DeltaX's new manufacturing hub in Georgia is poised to play a crucial role in strengthening U.S. energy independence and facilitating the transition to a clean energy economy. This large-scale production facility is expected to create hundreds of jobs and drive regional economic growth. By bolstering its production of next-generation battery technologies, DeltaX will enhance the competitiveness of the U.S. energy storage market, making more affordable and higher-performing battery solutions available. Key challenges ahead include adhering to construction schedules and demonstrating efficiency and quality during initial production phases. Successful execution will establish DeltaX as a major player in the energy storage sector.

Source: https://environmentenergyleader.com/stories/deltax-plans-141m-georgia-battery-storage-manufacturing-hub,137442

#08 Battery Recycling Remains Uneconomic in Europe, Posing Challenge to Circular Economy Goals

Published Published August 28, 2026　ESS News　ヨーロッパ

OVERVIEW

Battery recycling operations in the European Union are struggling with economic unviability, primarily due to high processing costs, volatile market prices for recovered materials, and inadequate collection and sorting infrastructure. This situation presents a significant obstacle to the EU's ambitious circular economy objectives, necessitating urgent policy support and technological innovation to establish a sustainable battery supply chain.

IN DEPTH

Background

The European Union (EU) has established some of the world's most stringent battery regulations, designed to enhance sustainability across the entire battery lifecycle. These progressive measures include setting ambitious recycling efficiency targets and mandating specific recycled content percentages in new batteries. While these regulations aim to bolster resource self-sufficiency and mitigate environmental impact, their successful implementation hinges on the economic viability of recycling processes. However, despite these robust policy frameworks, battery recycling operations within the EU consistently face significant economic challenges, as reported by ESS News, posing a substantial hurdle to the bloc's ambitious circular economy objectives and threatening the overall sustainability of the battery supply chain.

Key Findings

A primary finding is that the costs associated with current battery recycling processes frequently outweigh the market value of the recovered secondary materials, making it difficult for recycling businesses to sustain operations. This economic unviability is driven by several complex technical and market factors. Technically, the inherent diversity of battery chemistries, such as lithium-ion and nickel-metal hydride, necessitates varied and often distinct recycling processes, which significantly increases the complexity and cost across collection, sorting, and material processing stages. Furthermore, large and intricate battery packs, particularly those from electric vehicles (EVs), demand sophisticated techniques and specialized equipment for safe dismantling and handling. The subsequent purification processes, essential for achieving the high purity levels required for valuable recovered materials like lithium, cobalt, and nickel, are also inherently costly.

Economically, the fluctuating market prices of virgin materials (newly mined raw materials) represent a major barrier. This volatility often means that recycled materials struggle to consistently maintain a competitive price advantage, directly undermining their economic feasibility. Exacerbating these issues, Europe's current recycling infrastructure is struggling to adequately address the scale and complexity of these challenges. In contrast, many Asian nations, notably China, have more established recycling ecosystems that benefit from economies of scale, leading to more active and potentially cost-effective recycling operations. This disparity suggests that Europe may be lagging in terms of international competitiveness in this crucial sector.

Addressing these economic challenges is an urgent concern for EU policymakers, industry stakeholders, and research institutions. A multifaceted approach is imperative: firstly, technological innovation is crucial to reduce costs and enhance the efficiency of recycling processes, particularly through the development of versatile methods compatible with a broader array of battery chemistries. Secondly, robust policy support is needed to boost the market value of recycled materials, potentially through incentives for their utilization or integration with existing emissions trading schemes. Thirdly, optimizing and streamlining the collection, sorting, and logistics networks for end-of-life batteries is essential. Through these integrated efforts, Europe aims to construct a truly sustainable and economically viable battery circular economy, thereby aspiring to assert global leadership in this vital domain.

Source: https://www.ess-news.com/2026/08/28/battery-recycling-remains-uneconomic-in-europe/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#09 CATL Predicts Sodium-Ion Battery Cost Parity with LFP by End of 2026, Signaling Major Market Shift

Published August 26, 2026 Renewables Now China

OVERVIEW

CATL, the world's largest EV battery manufacturer, announced expectations that sodium-ion batteries will achieve cost parity with lithium iron phosphate (LFP) batteries by the end of 2026. This projection signals that sodium-ion batteries are poised to become a highly cost-competitive energy storage technology, directly challenging LFP batteries in both electric vehicle (EV) and stationary storage markets. Utilizing abundant sodium resources, this development promises supply chain stabilization and significant cost reductions, poised to profoundly impact the battery industry.

IN DEPTH

Key Findings

Contemporary Amperex Technology Co. Limited (CATL), the world's largest EV battery manufacturer based in China, has announced its expectation that the manufacturing cost of sodium-ion batteries will reach parity with lithium iron phosphate (LFP) batteries by the end of 2026. This forecast indicates that sodium-ion batteries (NIBs) are set to become a formidable competitor to LFPs in mainstream battery markets, particularly for electric vehicles (EVs) and large-scale stationary energy storage systems. Leveraging abundant and inexpensive sodium resources, this achievement promises to stabilize battery supply chains and enable sustained cost reductions, thereby creating a groundbreaking impact across the entire battery industry.

Technical / Clinical Details

LFP batteries are widely adopted in entry-level EVs, commercial vehicles, and stationary storage systems due to their excellent safety, long cycle life, and relatively low cost. CATL's objective is for NIBs to not only match these key advantages of LFP batteries but also achieve cost equivalence. While NIBs typically offer lower energy density than lithium-ion batteries, they present advantages in superior low-temperature performance and faster charging speeds. The attainment of cost parity is anticipated through optimization of electrode materials, streamlining of manufacturing processes, and the realization of economies of scale. CATL is actively developing proprietary high-capacity cathode materials, high-performance anode materials, and optimized electrolyte technologies to narrow the performance gap with LFP batteries while establishing a decisive cost advantage.

Background & Context

The battery industry is currently grappling with rising lithium prices and geopolitical supply risks, driving increased interest in lithium-free alternative technologies. Sodium-ion batteries have been extensively researched for years as a promising alternative to lithium, but their practical application and commercialization have been hindered by challenges in balancing cost and performance. CATL, with its immense production capacity and R&D capabilities, is actively overcoming these hurdles to position NIBs as a core product in the market. Achieving cost parity with LFP batteries means NIBs will no longer be a niche option but a viable solution in the mainstream market, contributing to the diversification and stabilization of battery raw material markets.

Strategic Significance & Outlook

CATL's achievement of cost parity for sodium-ion batteries with LFP is poised to usher in a new era of competition in the battery industry. This development is expected to accelerate the proliferation of more affordable EVs and enhance the economic viability of large-scale storage projects crucial for renewable energy integration. Consumers will benefit from a wider array of choices and greater stability in battery prices. Furthermore, this shift could stimulate investment in non-lithium resources, potentially leading to a more resilient and sustainable battery supply chain. All eyes will be on how CATL achieves this ambitious goal and how the market responds to these transformative changes.

Source: https://renewablesnow.com/news/interview-catl-expects-sodium-ion-to-reach-cost-parity-with-lfp-by-end-2026-1299925/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#10 UK Government Launches £28 Million Challenge to Accelerate Ultra Long-Duration Energy Storage Development

Published August 26, 2026 Gov.uk UK

OVERVIEW

The UK government has unveiled a new £28 million (approximately $50 million) challenge program to accelerate the development of ultra-long-duration energy storage (ULD EES) technologies. This initiative aims to stabilize renewable energy supply and protect households from energy price volatility. It seeks to foster innovative technologies capable of storing electricity for days to weeks, crucial for the expanding deployment of solar and wind power.

IN DEPTH

Key Findings

The UK government has launched a £28 million (approximately $50 million) 'Ultra Long-Duration Energy Storage (ULD EES) Challenge' program to deepen renewable energy integration and shield consumers from future energy price fluctuations. This groundbreaking initiative aims to accelerate the development of innovative technologies capable of storing electricity for several days or even weeks. This is a critical step for stabilizing the power grid as intermittent renewable energy sources, such as solar and wind power, are increasingly integrated.

Technical / Clinical Details

This challenge seeks new forms of long-duration energy storage solutions that can bridge the 'gap' not addressed by conventional battery technologies. Eligible technologies include, for example, compressed air energy storage (CAES), liquid air energy storage (LAES), hydrogen storage, gravity-based storage, thermal energy storage, and new generations of flow batteries and solid-state batteries. The program supports technologies in the research, demonstration, and pre-commercialization stages, aiming to shorten their time to market. Specifically, while existing lithium-ion batteries cater to several hours of storage, this challenge focuses on systems with storage capacities exceeding 100 hours. This capability will enable the grid to cover electricity shortfalls during prolonged periods of low wind or cloud cover, known as 'dunkelflaute'.

Background & Context

The UK is actively pursuing the deployment of renewable energy to achieve its net-zero emissions target by 2050. However, as the proportion of renewable energy increases, the variability of power supply poses a significant challenge to grid stability. Traditional short-duration storage solutions cannot address power shortages that arise during multi-day periods of low wind or overcast skies. Therefore, long-duration storage technologies are essential for ensuring the UK's energy security and reducing its reliance on imported fossil fuels. This challenge is also a strategic investment to establish the UK as a global leader in long-duration storage technology, fostering new industries and creating jobs.

Strategic Significance & Outlook

This £28 million investment by the UK government will accelerate the commercialization of long-duration energy storage technologies and significantly bolster the transition to clean energy. Successful technologies will dramatically enhance the stability of the UK's power grid, contributing to more affordable and reliable electricity supply for consumers. Furthermore, technologies developed through this program are expected to be internationally competitive, potentially boosting UK technology exports. Global attention will be focused on the innovative storage solutions that emerge from this challenge in the coming years. This initiative is expected to solidify the UK's position as a leading renewable energy nation.

Source: https://www.gov.uk/government/news/new-challenge-launched-to-store-clean-energy-for-longer-and-protect-households-from-price-spikes

Collected: August 28, 2026 | Automated Research System (Gemini API)

#11 Capital Dynamics Acquires 170MW/4-Hour Battery Energy Storage Project to Accelerate Renewable Energy Integration

Published August 27, 2026 Capital Dynamics USA

OVERVIEW

Global alternative asset manager Capital Dynamics announced the acquisition of a 170MW/4-hour battery energy storage system (BESS) project as part of its renewable energy portfolio. This acquisition is a strategic move to expand the company's clean energy assets, aiming to stabilize power grids and accelerate renewable energy integration. The BESS deployment is expected to enhance grid flexibility and maximize the utilization of intermittent renewable energy sources.

IN DEPTH

Key Findings

Capital Dynamics, a global alternative asset manager, has announced its acquisition of a 170MW battery energy storage system (BESS) project, capable of 4 hours of continuous discharge. This strategic acquisition further expands the firm's renewable energy asset portfolio and reinforces its commitment to enhancing grid stability and accelerating renewable energy integration. This BESS project is poised to play a crucial role in facilitating the efficient integration of intermittent solar and wind power, thereby improving the reliability of electricity supply.

Technical / Clinical Details

The acquired BESS project is founded on state-of-the-art lithium-ion battery technology, designed to deliver 170MW of output with a 4-hour continuous discharge capacity, equating to a total energy storage capacity of 680MWh. Connected to the power grid, this system primarily offers several key functions. Firstly, through its peak-shaving capabilities, it will discharge stored electricity during periods of high demand, helping to stabilize power prices and alleviate grid congestion. Secondly, it enhances the 'flexibility' of renewable energy, absorbing fluctuations from solar and wind power generation to provide a stable power supply. Thirdly, it offers critical grid services such as frequency regulation and voltage stabilization, improving the overall reliability and resilience of the power network. The project will be monitored and controlled by an advanced Energy Management System (EMS), optimizing charge and discharge cycles based on real-time electricity market data.

Background & Context

The global energy market is undergoing a significant transformation, driven by accelerated decarbonization and the transition to renewable energy. The success of this transition hinges on reliable and scalable energy storage solutions. In the United States, the BESS market is experiencing rapid growth, fueled by federal and state policy support, technological advancements, and the rapid expansion of renewable energy projects. Major investment firms like Capital Dynamics actively investing in BESS projects signifies the sector's maturation and its establishment as an attractive investment class generating stable returns.

Strategic Significance & Outlook

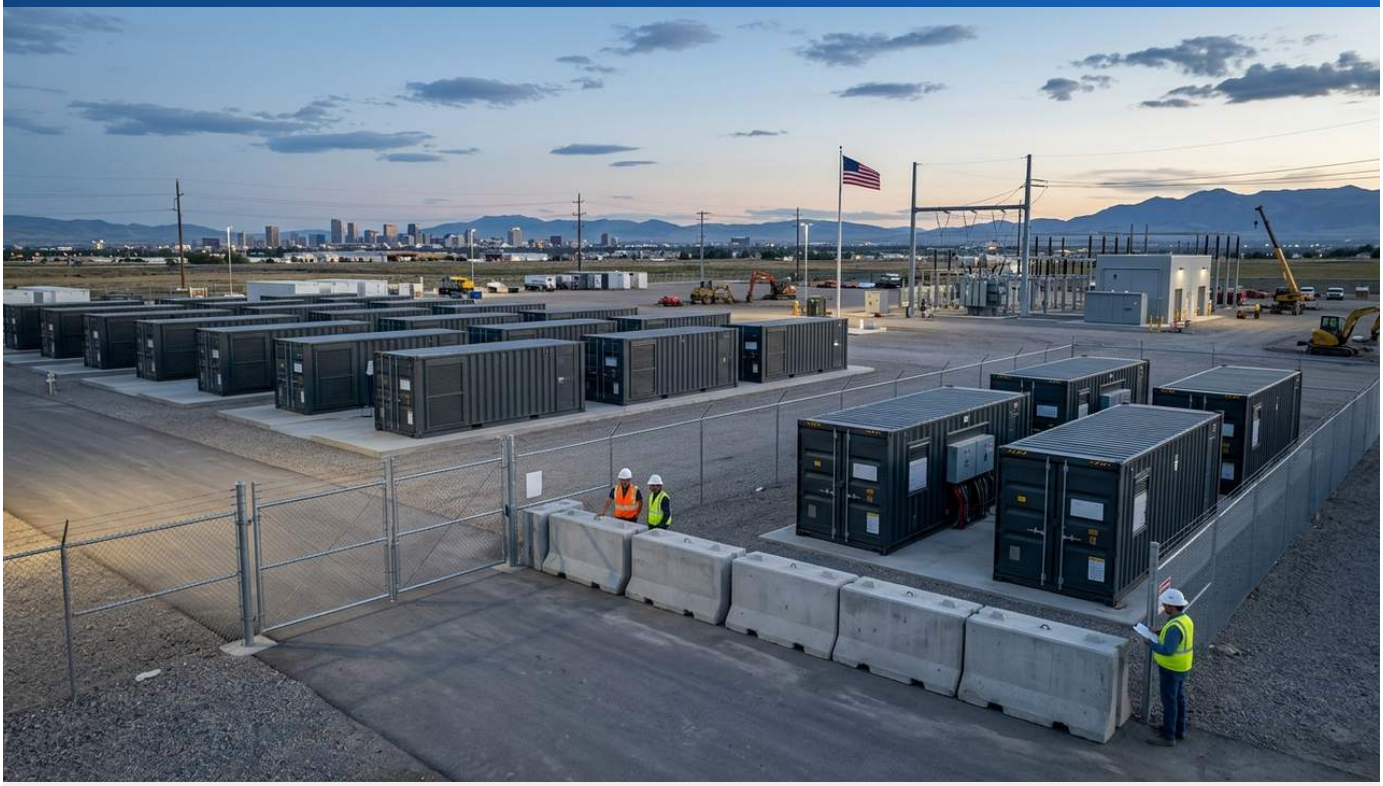
This acquisition of a large-scale BESS project by Capital Dynamics clearly demonstrates that the combined deployment of renewable energy and energy storage is becoming an indispensable component of modern power systems. Such projects not only contribute to reducing carbon emissions but also enhance power supply stability, improve grid efficiency, and stabilize electricity costs for consumers. Going forward, Capital Dynamics will leverage the insights gained from operating this project to inform further BESS investments and portfolio expansion. This is expected to establish new standards for renewable energy integration and strengthen the pathway toward a more sustainable energy future.

Source: https://www.capdyn.com/news/capital-dynamics-acquires-170mw-4-hour-battery-energy-storage-project-in-the-re/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#12 U.S. Government Bans Chinese-Made Battery Energy Storage Systems via New Trump Directive Over National Security Concerns

Published August 27, 2026 ESS News USA



OVERVIEW

The U.S. government, through a new presidential directive, has enacted a ban on the domestic deployment of Chinese-made battery energy storage systems (BESS). This measure is driven by national security concerns and aims to reduce reliance on foreign technology in critical infrastructure. The decision is expected to significantly impact the energy storage market, accelerating the growth of domestic manufacturing and diversifying supply chains.

IN DEPTH

Key Findings

The U.S. government, via a new presidential directive, has announced a sweeping ban on the domestic deployment of Chinese-made Battery Energy Storage Systems (BESS). This landmark measure is aimed at addressing national security concerns and reducing the strategic dependence on foreign technology within critical U.S. energy infrastructure. The decision is poised to have extensive ramifications across the rapidly expanding U.S. energy storage market, dramatically accelerating the cultivation of domestic BESS manufacturing capabilities and the diversification of supply chains.

Technical / Clinical Details

The presidential directive focuses on specific technical aspects, identifying potential risks associated with Chinese-made BESS. Specifically, it suggests that the software and hardware embedded within these systems could harbor vulnerabilities leading to data breaches, cyberattacks, or remote operational shutdowns, thereby threatening the stability and security of the U.S. power grid. The ban is likely to apply not only to large-scale grid BESS but also to commercial and industrial distributed BESS. This decision is part of a broader effort to ensure the 'digital integrity' and 'cybersecurity' of the U.S. power grid, pushing U.S. BESS suppliers to source non-Chinese components and pivot towards domestic manufacturing.

Background & Context

In recent years, the U.S. has accelerated the modernization of its power grid and its transition to clean energy, with BESS acting as a linchpin for renewable energy integration and grid stabilization. However, many BESS components, especially the battery cells themselves, are manufactured in China, which has been perceived by U.S. policymakers as a strategic vulnerability. Moves to reduce technological dependence on China, which began during the Trump administration, are now intensifying within the context of national security. This latest ban can be interpreted as an expansion of the 'decoupling' strategy, previously seen in telecommunications equipment, into the energy sector, and is likely to further escalate technological competition and economic tensions between the U.S. and China.

Strategic Significance & Outlook

The prohibition on Chinese-made BESS imports may cause short-term disruptions in the U.S. energy storage market, but it is expected to foster domestic industry growth and enhance supply chain resilience in the medium to long term. U.S. BESS developers and allied international companies are likely to capitalize on this opportunity to accelerate investments in U.S.-based manufacturing facilities. Government subsidies and incentives are expected to further bolster domestic production. This shift could also stimulate competition among diverse suppliers, potentially leading to technological innovation and cost reductions in the long run. This policy pivot will significantly impact the restructuring of the global energy storage market supply chain, once again highlighting the profound influence of geopolitical factors on the development of clean energy technologies.

Source: https://www.ess-news.com/2026/08/27/us-bans-chinese-made-battery-energy-storage-in-new-trump-directive/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#13 Gelion's Lithium-Sulfur Batteries Pass Independent Drone Tests at QinetiQ, Accelerating Market Entry

Published August 25, 2026 Pluang Australia

OVERVIEW

Australian battery company Gelion announced that its lithium-sulfur (Li-S) battery cells successfully passed drone tests conducted by the independent defense science and technology firm QinetiQ. This validation signifies Gelion's Li-S batteries have demonstrated high energy density and lightweight properties in real-world conditions, marking a crucial milestone for commercial deployment in drone and aviation sectors. The confirmed performance in demanding aerospace applications is expected to accelerate market adoption.

IN DEPTH

Key Findings

Gelion, an Australian advanced battery technology company, has announced that its developed lithium-sulfur (Li-S) battery cells have successfully passed rigorous drone flight tests conducted by QinetiQ, an independent defense science and technology evaluation organization. This achievement signifies that Gelion's Li-S batteries have proven their theoretical advantages of high energy density and lightweight properties under actual operational conditions. This crucial validation will provide a powerful impetus for deploying the company's Li-S batteries into the drone and other aviation application markets.

Technical / Clinical Details

Gelion's Li-S batteries theoretically offer nearly double the energy density of conventional lithium-ion batteries, enabling significantly extended flight times and enhanced payload capacity for drones. QinetiQ's testing verified that these cells function stably under the stringent vibration, temperature fluctuations, and power delivery requirements essential for aviation applications. Specifically, their ability to meet military and aerospace standards for safety and reliability was assessed, demonstrating the high performance of Li-S batteries even in harsh environments. Gelion's technology utilizes a unique gel electrolyte and optimized sulfur cathode materials, which are reported to overcome the cycle life challenges (e.g., sulfur dissolution and shuttle effect) commonly associated with conventional Li-S batteries, achieving high durability.

Background & Context

The drone and unmanned aerial vehicle (UAV) market is expanding rapidly, driving demand for high-performance batteries that enable longer flight durations, greater payloads, and enhanced safety. Existing lithium-ion batteries are approaching their performance limits, leading to significant expectations for next-generation battery technologies, particularly Li-S batteries. Li-S batteries also hold the potential to reduce reliance on scarce resources like lithium and cobalt, which are critical for lithium-ion batteries, by utilizing abundant sulfur resources. Gelion's success in passing tests by a reputable independent body like QinetiQ is a significant indicator of the maturity of Li-S technology and bolsters confidence in Li-S batteries across the industry.

Strategic Significance & Outlook

The successful drone testing of Gelion's Li-S batteries represents a major advancement in energy storage technology for the aerospace and defense sectors. This validation will allow the company to accelerate partnerships with commercial customers and expand its supply to high-performance drones, long-range UAVs, and even next-generation aviation platforms such as electric vertical take-off and landing (eVTOL) aircraft. Going forward, Gelion is expected to focus on establishing mass production capabilities and further technological development for cost reduction. The widespread adoption of this technology has the potential to drive the electrification of the aviation industry and significantly contribute to the realization of sustainable and efficient air transport systems.

Source: https://pluang.com/en/news-feed/sel-sel-baterai-gelion-lolos-uji-drone-independen-di-qinetiq

Collected: August 28, 2026 | Automated Research System (Gemini API)

#14 Pure Lithium Announces Unprecedented Cycling Results from Its Advanced Anode Lithium Metal Battery Technology

Published August 26, 2026 BusinessWire USA

OVERVIEW

Pure Lithium has announced that its advanced anode lithium metal battery technology has achieved unprecedented and superior cycling performance. This breakthrough indicates significant improvements in the cycle life and safety of lithium metal batteries, which have historically been major challenges. The company's technology establishes a crucial milestone for the commercialization of next-generation batteries, potentially impacting electric vehicles (EVs) and portable electronics.

IN DEPTH

Key Findings

Pure Lithium, a pioneer in battery technology, has announced that its advanced anode lithium metal battery technology has achieved an unprecedented level of superior cycling performance. This groundbreaking accomplishment signifies a major overcoming of key challenges that have long plagued lithium metal batteries, specifically limitations in safety and cycle life caused by dendrite formation. This advancement holds the potential to not only improve the driving range and charging speed of electric vehicles (EVs) but also dramatically extend the battery life of portable electronic devices like smartphones and laptops, marking a critical step towards the commercialization of next-generation batteries.

Technical / Clinical Details

Pure Lithium's technology has successfully suppressed lithium metal dendrite growth through a proprietary anode design and electrolyte composition. Dendrites are tree-like metallic structures that form during the charge-discharge cycles of lithium metal batteries, acting as a primary cause of short circuits and capacity degradation, thus limiting both safety and cycle life. The company has reported demonstrating high capacity retention and stable operation over thousands of cycles. While specific numerical data were not disclosed, the term 'unprecedented' suggests a significant improvement over existing lithium metal battery performance. This dendrite suppression technology enables the realization of the high theoretical energy density of lithium metal batteries (approximately double that of lithium-ion batteries) at a practical level, enhancing both the energy and power density of the battery.

Background & Context

Lithium metal batteries have long been anticipated as the next-generation technology beyond lithium-ion, but the growth of lithium metal dendrites has presented significant barriers to commercialization, particularly concerning safety (thermal runaway risk) and short cycle life. Research institutions and companies worldwide have been dedicated to solving this problem, exploring various approaches to suppress dendrites. Pure Lithium's announcement represents one of the most significant breakthroughs in this field, indicating that years of research and development are beginning to bear fruit. This could have a profound impact not only on the EV market but also on any application demanding higher energy density and lighter weight, such as aerospace, defense, and consumer electronics.

Strategic Significance & Outlook

The unprecedented cycling performance achieved by Pure Lithium has the potential to significantly accelerate the timeline for commercially viable lithium metal batteries. Moving forward, the company will likely focus on establishing production capabilities at a demonstrable scale and seeking partnerships for integration into actual EVs and electronic devices. Continuous validation of safety and the establishment of cost-effective mass production techniques will be the next critical challenges. Should this technology be successfully introduced to the market, it has the potential to break through current battery technology limitations, further accelerate EV adoption, enable the advent of higher-performing electronic devices, and fundamentally transform the landscape of energy storage.

Source: https://www.businesswire.com/news/home/20260826201214/en/Pure-Lithium-Announces-Unprecedented-Cycling-Results-From-Its-Advanced-Anode-Lithium-Metal-Battery-Technology

Collected: August 28, 2026 | Automated Research System (Gemini API)

#15 Princeton NuEnergy Secures $50 Million DOE Grant for Building Closed-Loop Cathode-to-Cathode Recycling Facility

Published August 24, 2026 PR Newswire USA

OVERVIEW

Princeton NuEnergy announced it has secured a $50 million (approx. ¥7 billion) grant from the U.S. Department of Energy (DOE) to construct a closed-loop cathode recycling facility. This pioneering facility will employ groundbreaking technology to directly recover and regenerate cathode materials from spent lithium-ion batteries, contributing to new battery manufacturing supply chains. By enhancing domestic recycling capabilities, the project will promote battery resource circulation and support U.S. clean energy goals.

IN DEPTH

Key Findings

Princeton NuEnergy (PNE) has announced it has been awarded a $50 million grant from the U.S. Department of Energy (DOE) to construct the nation's first closed-loop cathode-to-cathode recycling facility. This transformative project aims to commercially scale technology that directly recovers cathode materials from spent lithium-ion batteries and reintroduces them directly into new battery manufacturing processes. This will dramatically improve battery resource circulation and play a critical role in enhancing the domestic self-sufficiency of raw materials within the U.S. battery supply chain.

Technical / Clinical Details

PNE's closed-loop cathode recycling technology distinguishes itself from conventional battery recycling methods, such as 'shredding' and 'hydrometallurgy,' by physically separating cathode materials from used batteries and aiming to regenerate them with minimal damage to their crystal structure and chemical composition. This approach is expected to reduce the need for expensive chemical processing and significantly lower energy consumption. The recovered cathode materials are restored to a quality comparable to newly manufactured materials and supplied directly to new battery production lines. This process is anticipated to maximize the recovery rates of critical metals like lithium, cobalt, and nickel while optimizing recycling costs. Having met the DOE's evaluation criteria, this technology is highly regarded for its sustainability and economic efficiency.

Background & Context

With the proliferation of electric vehicles (EVs) and renewable energy, the demand for lithium-ion batteries is surging, but concurrently, the disposal of spent batteries and the stable supply of raw materials present significant challenges. Key raw materials such as lithium and cobalt face unstable supply and volatile prices, with mining and refining concentrated in specific countries, leading to high supply chain risks. The U.S. government is pursuing a strategy to mitigate these risks and accelerate the establishment of a clean energy economy by bolstering domestic battery manufacturing and recycling capabilities. PNE's project fully aligns with this national strategy and will serve as a crucial pillar for realizing a circular economy.

Strategic Significance & Outlook

The construction of Princeton NuEnergy's closed-loop cathode recycling facility has the potential to bring about a significant transformation in the U.S. battery recycling industry. If successful, this facility will reduce the environmental footprint of domestically manufactured batteries and substantially improve the stability of raw material supply. The $50 million grant will provide essential support for PNE to rapidly scale up and commercialize this innovative technology. Going forward, the industry will closely watch the progress of facility construction and how the regenerated materials are actually utilized in battery manufacturing. Widespread adoption of this technology is expected to establish a sustainable 'cradle-to-cradle' cycle for batteries, contributing to a cleaner future.

Source: https://www.morningstar.com/news/pr-newswire/20260824ny32454/us-department-of-energy-selects-princeton-nuenergy-for-50-million-grant-to-build-closed-loop-cathode-to-cathode-facility

Collected: August 28, 2026 | Automated Research System (Gemini API)

#16 Itronics Advances Critical Minerals Processing with Breakthrough Battery 'Black Mass' Recovery Technology

Published August 25, 2026 Morningstar (Accesswire) USA

OVERVIEW

Itronics announced significant advancements in its technology for recovering critical minerals from battery 'black mass' derived from recycling. This technological development directly supports the U.S. government's goal of expanding domestic recoverable critical mineral supply, particularly strengthening the domestic supply chain for battery raw materials. Itronics' process aims to efficiently extract rare metals like lithium and cobalt while reducing environmental impact.

IN DEPTH

Key Findings

Itronics has announced significant progress in its technology for efficiently recovering critical minerals, such as lithium and cobalt, from 'black mass' generated during the recycling of spent lithium-ion batteries. This technological breakthrough perfectly aligns with the U.S. government's initiative to expand the domestic supply of recoverable critical minerals, making a substantial contribution to strengthening the domestic supply chain for battery raw materials. Itronics' new process aims to significantly reduce environmental impact while enhancing the efficiency of extracting valuable metals compared to traditional recovery methods.

Technical / Clinical Details

Black mass is a powdery mixture obtained by shredding spent batteries, containing various metals that constitute the battery, including lithium, cobalt, nickel, manganese, copper, and aluminum. Itronics' developed technology focuses on separating and purifying desired critical minerals from this complex mixture in a cleaner and more efficient manner. While specific process details are not publicly disclosed, it is suggested that a proprietary combination of chemical and physical treatments, likely an improved hydrometallurgical or pyrometallurgical method, is employed. The aim is to reduce energy consumption, water usage, and hazardous waste generation compared to conventional processes, targeting recovery rates for lithium and cobalt to achieve purity levels exceeding 90%. This efficient recovery directly translates to reduced battery material costs and a smaller environmental footprint.

Background & Context

The global transition to electric vehicles (EVs) and renewable energy has led to an exponential increase in demand for lithium-ion batteries. Concurrently, concerns about critical mineral shortages, price volatility for lithium, cobalt, and nickel, and geopolitical risks associated with the concentrated mining and refining of these resources have become prominent. The U.S. government has prioritized strengthening its domestic battery supply chain as a cornerstone of its national strategy, vigorously promoting the expansion of domestic mining, refining, and recycling capabilities. Itronics' advancements make a vital contribution to this national effort, particularly in securing resources through recycling.

Strategic Significance & Outlook

Itronics' progress in critical mineral recovery from black mass is crucial for the growth of the U.S. battery recycling industry and the transition to sustainable resource management. If this technology is deployed on a commercial scale, recycled materials can be stably supplied for new battery manufacturing, reducing dependence on virgin materials. Going forward, the company is expected to focus on scaling up its technology demonstration and establishing manufacturing partnerships. Successful implementation would position Itronics as a key player in the domestic critical mineral supply network, significantly contributing to the overall sustainability and cost-efficiency of the battery industry. This represents a tangible step towards achieving a circular economy.

Source: https://www.morningstar.com/news/accesswire/1211634msn/itronics-advances-critical-minerals-processing-as-federal-action-targets-expansion-of-domestic-supply-of-recoverable-critical-minerals-including-battery-black-mass

Collected: August 28, 2026 | Automated Research System (Gemini API)

#17 Invinity Energy Systems Secures EPC Contract for Landmark 2.1GWh Flow Battery Project in Switzerland

Published August 28, 2026 Energy-Storage.news UK

OVERVIEW

UK-based Invinity Energy Systems has announced the confirmation of its Engineering, Procurement, and Construction (EPC) contract for a massive 2.1GWh redox flow battery (RFB) project in Switzerland. This project represents a landmark initiative for renewable energy integration and grid stabilization in Europe, demonstrating the commercial maturity and large-scale deployment potential of RFB technology. Characterized by long-term durability and safety, RFBs are anticipated as a next-generation grid-scale storage solution.

IN DEPTH

Key Findings

Invinity Energy Systems, headquartered in the UK, has officially confirmed its Engineering, Procurement, and Construction (EPC) contract for a monumental 2.1 gigawatt-hour (GWh) redox flow battery (RFB) project planned for Switzerland. This exceptionally large-scale project signifies a groundbreaking advancement for renewable energy integration and grid stabilization within Europe's power infrastructure. The contract confirmation unequivocally demonstrates that RFB technology is commercially mature and viable as a large-scale energy storage solution, establishing its position as a next-generation technology for grid-scale applications.

Technical / Clinical Details

Redox flow batteries operate by circulating ions between two electrolyte tanks to store and discharge electricity. The system provided by Invinity specifically utilizes vanadium-based RFB technology, renowned for its robustness, safety, and ability to maintain capacity over long durations. A capacity of 2.1GWh enables power supply for several days, making it highly effective for smoothing out output fluctuations from intermittent sources like solar and wind power. RFBs are particularly well-suited for long-duration storage applications because their energy capacity can be scaled independently of their power capacity by simply increasing the volume of electrolyte. Furthermore, they offer a significant safety advantage due to their use of non-flammable aqueous electrolytes, minimizing fire risk. This project will integrate the latest Power Conversion Systems (PCS) and Energy Management Systems (EMS) to optimize grid interaction and ensure highly efficient and reliable power delivery.

Background & Context

Europe is rapidly deploying renewable energy to meet its decarbonization targets. However, this acceleration has made grid stability and reliability paramount challenges. While lithium-ion batteries are widely used for short-duration storage, they face cost and lifespan limitations for storage periods exceeding several hours. Long-duration storage technologies like RFBs are gaining attention as solutions to bridge this gap, with particular expectations for utility-scale deployment. Invinity's contract clearly indicates that RFB technology has moved beyond mere research and development into large-scale commercial projects, becoming a practical and attractive option.

Strategic Significance & Outlook

The 2.1GWh Invinity RFB project in Switzerland will be a landmark in the long-duration energy storage market for redox flow battery technology. Its success will strongly advocate for RFBs as a viable large-scale solution for renewable energy integration and grid stabilization to grid operators across Europe and globally. The operational launch of this project is expected to drive further renewable energy adoption and play a crucial role in reducing reliance on fossil fuels. Moving forward, Invinity will leverage the insights gained from this project to further improve RFB technology and expand its presence in international markets.

Source: https://www.energy-storage.news/invinity-confirms-epc-contract-award-for-2-1gwh-landmark-flow-battery-in-switzerland/

#18 Chinese Researchers Develop Bendable, Cuttable Li-S Battery Prototype with PAA Coating for Enhanced Safety and Lifespan

Published Published August 24, 2026 中国電子科技大学 China

OVERVIEW

Researchers at the University of Electronic Science and Technology of China (UESTC) have developed a groundbreaking bendable and cuttable lithium-sulfur (Li-S) battery prototype, addressing critical safety and lifespan issues. This innovative battery incorporates a polyacrylic acid (PAA) coating on the cathode, effectively minimizing sulfur dissolution to enhance charge retention and extend cycle life. Leveraging abundant, inexpensive materials, this Li-S battery combines high energy density with exceptional flexibility and improved safety, poised to transform wearable electronics and advanced IoT devices.

IN DEPTH

Background

The global demand for advanced energy storage solutions is escalating, driven by requirements for higher energy density, enhanced safety, reduced costs, and improved sustainability across diverse applications, from consumer electronics to electric vehicles. For rapidly evolving sectors like wearable technology and flexible electronics, mechanical flexibility presents an additional, critical design imperative. While lithium-sulfur (Li-S) batteries offer a compelling high theoretical energy density, their practical implementation has been hindered by challenges related to achieving sufficient cycle life and inherent safety concerns. This new research originating from China presents a significant advancement, addressing these persistent obstacles through a synergistic integration of cutting-edge material science and innovative structural design.

Key Findings

Scientists at the University of Electronic Science and Technology of China (UESTC) have successfully engineered a novel lithium-sulfur (Li-S) battery prototype distinguished by its exceptional flexibility and robust safety profile. This pioneering battery maintains full functionality even after undergoing physical deformation, such as bending or cutting, thereby substantially mitigating common safety concerns—including fire hazards—associated with conventional lithium-ion chemistries. A core innovation underpinning this breakthrough is the application of a polyacrylic acid (PAA) coating to the cathode. This coating critically minimizes sulfur dissolution, a primary mechanism of degradation in Li-S batteries, leading to notable improvements in charge retention and overall cycle life.

Technical Innovation

- The innovative Li-S battery architecture features a specialized polyacrylic acid (PAA)-based coating meticulously applied to the sulfur cathode. This PAA layer functions as an effective protective barrier, critically preventing the dissolution of polysulfides into the electrolyte—a notorious issue in Li-S chemistry known as the polysulfide shuttle effect. This strategic coating significantly bolsters the structural stability of the electrode and the overall integrity of the electrochemical cell, directly addressing a long-standing challenge in Li-S technology.

- Crucially, the suppression of sulfur dissolution by the PAA coating leads to a substantial extension of the battery's cycle life and a marked improvement in its charge-discharge efficiency, thereby accelerating the path of Li-S technology towards viable commercial applications.
- The unique "bendable and cuttable" attributes are realized through an intrinsically flexible battery design that preserves optimal electrochemical performance even when subjected to significant physical deformation. This mechanical resilience is indispensable for next-generation applications, including advanced wearable electronics, pliable displays, and robust Internet of Things (IoT) devices designed for deployment in challenging operational environments.
- Furthermore, Li-S batteries inherently leverage sulfur as the active cathode material, an element that is both highly abundant and economically advantageous. This provides a sustainable and cost-effective alternative to conventional lithium-ion batteries, which often depend on more expensive and geopolitically constrained materials such as cobalt and nickel. This fundamental material advantage is poised to contribute to reduced manufacturing costs and a significantly lower environmental footprint.

Implications and Outlook

This novel flexible and safe Li-S battery technology carries profound implications for reshaping the design paradigms and operational capabilities of future consumer electronics, sophisticated medical implants, and advanced IoT sensor networks. Its unparalleled capacity to maintain performance and safety under physical duress is expected to catalyze the emergence of entirely new product categories and substantially enhance user experience. Moreover, the reliance on abundant and readily available raw materials positions this technology advantageously for future large-scale manufacturing, offering a strategic pathway to reduce reliance on vulnerable critical raw material supply chains. Future research and development efforts will concentrate on scaling up manufacturing processes, continuously optimizing key performance metrics, and rigorously conducting extensive real-world validation tests to expedite commercial deployment, ultimately cementing Li-S batteries as a viable, safe, and mechanically adaptable energy storage solution.

Source: #

#19 U.S. DOE Invests $500M to Bolster Domestic Battery Supply Chain, Princeton NuEnergy Secures $50M for Cathode Recycling Facility

Published August 24, 2026 U.S. DOE USA

OVERVIEW

The U.S. Department of Energy (DOE) has committed $500 million to seven projects aimed at strengthening the domestic critical mineral and battery supply chain, significantly expanding U.S. recycling, material processing, and manufacturing capabilities. Princeton NuEnergy is set to receive up to $50 million for a $110 million cathode recycling facility in Georgia, designed to recover and regenerate cathode active materials from nickel-based lithium-ion battery scrap. Nth Cycle also secured up to $100 million for a commercial-scale facility to refine high-purity metals from spent lithium-ion batteries, reducing reliance on foreign supply and enhancing national technological sovereignty.

IN DEPTH

Key Findings

The U.S. Department of Energy (DOE) has announced a significant investment of $500 million across seven projects, strategically aimed at fortifying the domestic critical mineral and battery supply chain. This substantial funding injection is designed to expand the nation's capacity for battery recycling, advanced material processing, and manufacturing, thereby accelerating the commercialization of technologies crucial for sustainable energy storage. The initiative is a direct response to global supply chain vulnerabilities and a commitment to securing America's leadership in clean energy technologies.

Technical Details and Project Scope

Among the key beneficiaries, Princeton NuEnergy has been selected for negotiations to receive up to $50 million in federal grants for constructing a $110 million cathode recycling facility in Georgia. This state-of-the-art facility will implement a closed-loop process to directly recover and regenerate cathode active materials from nickel-based lithium-ion battery manufacturing scrap, minimizing waste and the need for virgin materials. Concurrently, Nth Cycle will receive up to $100 million to establish a commercial-scale facility dedicated to refining high-purity metals and battery-grade materials from end-of-life lithium-ion batteries. Their proprietary electro-extraction technology promises a low-environmental-impact method for recovering critical metals such as cobalt, nickel, and lithium, crucial for new battery production.

Background and Industry Context

This DOE investment underscores a broader federal strategy to mitigate reliance on foreign sources, particularly from China, for essential battery components and materials. By boosting domestic recycling and processing capabilities, the U.S. aims to enhance its energy security and economic competitiveness. The emphasis on recycling not only ensures a more resilient supply chain but also supports environmental sustainability by reducing the energy consumption and carbon footprint associated with mining and processing new materials. This move is consistent with the Defense Production Act, which identifies recoverable critical minerals as vital for national defense.

Future Outlook and Strategic Significance

These projects are poised to significantly impact the U.S. battery ecosystem over the coming years. Princeton NuEnergy's facility is expected to be fully operational by 2028, processing thousands of tons of cathode material annually. Nth Cycle's technology, by addressing diverse battery waste streams, will further diversify and strengthen the domestic recycling market. This strategic investment is expected to create thousands of jobs, establish the U.S. as a leader in clean energy technology, and build a robust domestic supply chain essential for the widespread adoption of electric vehicles (EVs) and stationary energy storage systems (ESS).

Source: https://www.energy.gov/articles/energy-department-announces-500-million-secure-americas-critical-mineral-and-battery

#21 Silicon Anode Battery Market to Hit $13.5B by 2034, Driven by EV & Fast Charging Demands: Sila Nanotechnologies Lands $1.4B DoD Loan

Published August 25, 2026 MLQ.ai USA

OVERVIEW

The global silicon anode battery market is projected to skyrocket at a 49.6% CAGR, from $538.74 million in 2026 to $13.51 billion by 2034, fueled by demand for high energy density and fast charging in EVs and high-performance electronics. Sila Nanotechnologies secured a $1.4 billion conditional loan from the U.S. Department of Defense to expand its silicon anode material production and build a lithium-ion cell manufacturing facility in Moses Lake, Washington, accelerating its Titan Silicon technology for specialized drone applications. Additionally, Coreshell Technologies received a $50 million DOE grant to construct the first U.S. gigafactory utilizing metallurgical silicon (MGS) anodes.

IN DEPTH

Key Findings

The global silicon anode battery market is on an accelerated growth trajectory, predicted to surge from an estimated $538.74 million in 2026 to an impressive $13.51 billion by 2034, exhibiting a remarkable Compound Annual Growth Rate (CAGR) of 49.6%. This exponential growth is primarily driven by the escalating demand for high energy density and ultra-fast charging capabilities in electric vehicles (EVs) and advanced portable electronic devices. A cornerstone of this expansion is Sila Nanotechnologies, which recently secured a substantial $1.4 billion conditional loan from the U.S. Department of Defense (DoD). This funding is earmarked for a significant expansion of its silicon anode material production facility in Moses Lake, Washington, alongside the construction of a new lithium-ion battery cell manufacturing plant.

Technical Details and Product Innovation

Sila Nanotechnologies' proprietary 'Titan Silicon' anode technology offers a compelling alternative to traditional graphite anodes, promising up to a 20% increase in lithium-ion battery energy density. This advancement is particularly impactful for applications where weight and volume are critical constraints, such as EVs, drones, and other high-power, fast-charging devices. The DoD funding will enable Sila to dramatically scale up its production capabilities, accelerating the development and manufacturing of high-performance silicon battery cells tailored for specialized applications, including industrial, agricultural, and military drones. In parallel, Coreshell Technologies has received a $50 million grant from the U.S. Department of Energy (DOE) to establish the first U.S. gigafactory utilizing metallurgical silicon (MGS) anodes for lithium-ion batteries. MGS anodes are gaining traction for their cost-effectiveness and high-performance potential, aiming to establish a domestic, low-cost material supply. Furthermore, South Korea's JR Energy Solution is collaborating with Australia's 1414 Degrees to jointly develop electrodes and battery cells incorporating 1414 Degrees' innovative SiNTL silicon anode material, fostering international cooperation in advanced battery technology.

Background and Industry Context

The proliferation of EVs and the demand for increasingly capable electronic gadgets necessitate continuous innovation in battery technology to achieve higher energy densities and faster charging times. Silicon anodes theoretically offer a lithium-ion storage capacity approximately ten times greater than graphite, enabling substantial energy density improvements. Historically, the significant volume expansion of silicon during charge-discharge cycles led to rapid degradation. However, companies like Sila Nanotechnologies and Coreshell Technologies are overcoming these challenges through breakthroughs in nanostructuring and protective coating technologies. The substantial investments from the U.S. government are part of a national strategy to pivot away from a battery supply chain heavily concentrated in China, establishing domestic production capabilities and technological leadership vital for economic security.

Future Outlook and Strategic Significance

The construction of large-scale production facilities by Sila Nanotechnologies and Coreshell Technologies is set to accelerate the commercialization of silicon anode technology, bringing transformative high-performance batteries to the EV and specialized electronics markets. Consumers can anticipate EVs with longer ranges and devices with extended battery life and faster charging. The expansion of domestic silicon anode material and battery cell production will also contribute to strengthening the U.S. supply chain and creating new jobs. Silicon anode technology is expected to remain a primary driver for performance enhancement in next-generation batteries, with ongoing active research, development, and commercialization efforts.

Source: https://mlq.ai/news/sila-lands-14-billion-pentagon-loan-to-expand-us-silicon-anode-production/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#22 Sodium-Ion Batteries Enter Full Commercialization in 2026: CATL Launches Mass-Produced 175Wh/kg Naxtra Cells, Priced at $50-56/kWh

Published August 25, 2026 SodiumBatteryHub Global

OVERVIEW

Sodium-ion battery technology is entering full commercialization in 2026, with manufacturers transitioning from pilot to mass production. Positioned as a low-cost, safe energy storage solution, it's gaining traction for stationary Battery Energy Storage Systems (BESS) and cost-sensitive applications like low-speed EVs. CATL announced the market launch of its mass-produced sodium-ion batteries in 2026, including the 'Naxtra' cell achieving an energy density of 175Wh/kg, comparable to high-performance LFP batteries. With an estimated cell price of $50-56/kWh, sodium-ion batteries offer significant cost competitiveness.

IN DEPTH

Key Findings

Sodium-ion battery (NIB) technology is achieving full commercialization in 2026, as leading manufacturers transition from pilot programs to full-scale mass production. This shift firmly establishes NIBs as a low-cost and inherently safe energy storage solution. They are garnering significant attention for applications where cost-effectiveness is paramount, particularly in stationary Battery Energy Storage Systems (BESS) and low-speed electric vehicles (EVs). China's battery giant CATL has announced the market introduction of its mass-produced sodium-ion batteries in 2026, with plans for widespread deployment across passenger vehicles, commercial vehicles, battery swap networks, and stationary energy storage applications.

Technical and Product Specifications

CATL's flagship 'Naxtra' cells boast a gravimetric energy density of 175Wh/kg, a performance level that rivals high-performance Lithium Iron Phosphate (LFP) batteries currently prevalent in the market. This achievement suggests NIBs can provide practical range for EV applications. Furthermore, many sodium-ion batteries offer extended cycle lives, exceeding 10,000 to 15,000 cycles, contributing to reduced long-term operational costs. Their superior performance in low-temperature environments broadens their applicability across diverse geographical regions. With an estimated cell price of $50-56 per kilowatt-hour (kWh) in 2026, NIBs present a substantial cost advantage over current lithium-ion alternatives.

Background and Industry Context

The lithium-ion battery industry faces challenges related to lithium's concentrated geopolitical supply and volatile pricing. Sodium, being one of the most abundant elements on Earth, offers a stable and low-cost supply chain, positioning NIBs as a crucial alternative for reducing lithium dependence. Moreover, NIBs can utilize aqueous electrolytes, making them inherently safer than lithium-ion batteries due to a significantly lower risk of thermal runaway. This characteristic makes NIBs an ideal technology for BESS applications where fire safety is a concern, and for cost-constrained EV segments, where they are emerging as a compelling substitute.

Future Outlook and Strategic Significance

The full commercial deployment of sodium-ion batteries in 2026 has the potential to fundamentally transform global energy storage and EV markets. Mass production and cost competitiveness, particularly from major players like CATL, are expected to accelerate NIB market penetration. The introduction of low-cost, high-performance, and safe NIBs will substantially lower the entry barrier for stationary energy storage systems, thereby facilitating greater adoption of renewable energy. Furthermore, the application of NIBs in affordable EVs and two-wheelers will further catalyze the global electrification of transport, making a significant contribution to worldwide decarbonization efforts.

Source: https://sodiumbatteryhub.com/2026/08/25/sodium-battery-technology-in-2026/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#23 LG Energy Solution Commences LFP and NMC Battery Cell Production at Michigan Plant, Securing Over 50GWh Capacity for North American ESS Market

Published August 24, 2026 Battery Technology USA

OVERVIEW

LG Energy Solution has initiated production of LFP (Lithium Iron Phosphate) battery cells for Energy Storage Systems (ESS) and NMC (Nickel-Manganese-Cobalt) battery cells for Electric Vehicles (EVs) at its manufacturing facility in Lansing, Michigan. The company strategically reconfigured its Lansing plant for versatile production, prioritizing the stable revenue patterns and structural demand growth of the ESS market over the long development cycles and market uncertainties of automotive programs. LGES aims to achieve over 60GWh of ESS battery production capacity globally by year-end, including more than 50GWh in North America.

IN DEPTH

Key Findings

LG Energy Solution has officially commenced the production of Lithium Iron Phosphate (LFP) battery cells for Energy Storage Systems (ESS) and Nickel-Manganese-Cobalt (NMC) battery cells for Electric Vehicles (EVs) at its manufacturing facility in Lansing, Michigan, USA. This strategic move reflects the company's proactive pivot to build a versatile production capability that addresses a broader spectrum of customer needs and market stability, rather than solely focusing on a single market segment. The robust revenue patterns and consistent structural demand growth observed in the ESS market were key drivers behind the decision to reconfigure the Lansing plant for multi-purpose output.

Technical and Manufacturing Details

The LFP battery cells produced at the Lansing facility are ideal for grid-scale and commercial & industrial ESS applications, owing to their superior safety, extended cycle life, and cost-effectiveness. Concurrently, the NMC battery cells are engineered to meet the demanding requirements of the EV market, providing high energy density and power output. By manufacturing both distinct battery chemistries within the same facility, LGES aims to achieve operational excellence, maximizing production efficiency and flexibility in responding to market fluctuations. The company has set an ambitious target of establishing over 60GWh of global ESS battery production capacity by year-end, with more than 50GWh specifically allocated to the North American market.

Background and Industry Context

The battery industry has been grappling with the dual challenges of volatility in the electric vehicle market and escalating raw material prices. The long development cycles and inherent market uncertainties associated with automotive programs have presented significant risks for manufacturers. In contrast, the demand for ESS, driven by the expansion of renewable energy sources and the need for grid stabilization, has shown consistent global growth. LG Energy Solution's strategy to build flexible production capabilities is a calculated effort to establish a more resilient business model less susceptible to short-term market dynamics. This pivot aligns with a broader industry trend among battery manufacturers to diversify revenue streams and avoid over-reliance on any single market segment.

Future Outlook and Strategic Significance

The initiation of LFP and NMC cell production at LG Energy Solution's Lansing plant is expected to significantly bolster the company's competitive position in the North American market. The strong emphasis on the ESS market will play a crucial role in supporting the accelerating adoption of renewable energy and the modernization of power grids. This versatile manufacturing capability provides LGES with the agility to adapt rapidly to future market shifts and technological advancements. Through this production expansion, LG Energy Solution is anticipated to further strengthen its leadership in the global battery market and contribute significantly to the proliferation of sustainable energy solutions.

Source: https://www.batterytechonline.com/battery-manufacturing/lg-energy-solution-north-america-president-on-battery-market-pivot

#24 L&T's Renewable Energy Division Secures Three 6GWh Battery Energy Storage Projects in the Middle East

Published Published August 26, 2026 EMobility+ 中東

OVERVIEW

Larsen & Toubro (L&T)'s Renewable Energy division has secured three significant Battery Energy Storage System (BESS) projects, totaling 6 GWh, from a major client in the Middle East. These contracts encompass comprehensive Engineering, Procurement, and Construction (EPC) for associated grid infrastructure, featuring 4-hour BESS configurations designed to enhance grid stability and accelerate the region's transition towards integrating diverse renewable energy sources.

IN DEPTH

Background

The Middle East is at the forefront of a rapid energy transition, driven by ambitious climate change imperatives and economic diversification goals. The region is heavily investing in renewable energy, moving away from fossil fuel dependence. Large-scale initiatives like Saudi Arabia's Neom project and the UAE's expansive solar power parks are fueling an unprecedented demand for advanced energy storage solutions. Battery Energy Storage Systems (BESS) are critical to this transition, designed to mitigate the inherent intermittency of renewable sources and bolster grid reliability and resilience. The substantial engagement of international EPC giants like India's Larsen & Toubro (L&T) highlights the Middle East's strategic importance as a global hub for energy storage growth.

Key Findings

Larsen & Toubro (L&T)'s Renewable Energy business, a division of the Indian multinational conglomerate, has announced securing three substantial Battery Energy Storage System (BESS) projects from a prominent client in the Middle East. These contracts represent a combined energy storage capacity of an impressive 6 gigawatt-hours (GWh), marking a significant stride in the region's power grid modernization and the efficient integration of renewable energy sources.

The scope of L&T's involvement extends beyond the supply and installation of BESS units to encompass the comprehensive Engineering, Procurement, and Construction (EPC) of all associated grid connection infrastructure. This includes critical elements such as pooled substations and extensive underground cable systems, ensuring robust grid integration. Each project features a 4-hour BESS configuration, a technical specification crucial for enhancing grid stability, balancing electricity demand and supply, and maximizing the utilization of variable renewable energy sources like solar and wind power. L&T's deep expertise in power transmission and distribution is pivotal to the successful execution of these complex infrastructure developments.

These 6 GWh BESS projects are expected to have a transformative impact on the Middle East's energy landscape. They are poised to significantly advance regional countries toward their renewable energy targets, contribute to reduced electricity costs, and enhance overall energy security. Serving as crucial proof points for the Middle East's clean energy transition, these projects are anticipated to attract further large-scale BESS investments and solidify L&T's position in the global renewable energy market, contributing to sustainable development worldwide.

Source: https://solarquarter.com/2026/08/26/lt-secures-major-order-for-6-gwh-battery-energy-storage-projects-in-middle-east/

Collected: August 28, 2026 | Automated Research System (Gemini API)

#25 UK's Certain Energy Raises £10M for Manganese Flow Batteries: Aims to Commercialize Long-Duration Storage at 1/10th Vanadium Cost

Published August 26, 2026 Imperial College London UK

OVERVIEW

UK energy storage startup Certain Energy (formerly RFC Power) has raised £10 million (approx. $13.6 million) in Series A funding. The capital will support the commercialization and large-scale deployment of its manganese flow battery technology to address energy demands and grid constraints in the UK and beyond. Certain Energy's flow battery, based on abundant manganese, claims to enable long-duration energy storage at roughly one-tenth the material cost of existing vanadium flow batteries. Funds will be directed towards developing an MWh-scale grid-connected system in India, expanding UK research facilities, and building a supply chain for mass production.

IN DEPTH

Key Findings

Certain Energy (formerly RFC Power), a UK-based energy storage technology startup, has successfully raised £10 million (approximately $13.6 million) in its Series A funding round. This crucial capital infusion is set to accelerate the commercialization and large-scale deployment of its proprietary manganese flow battery technology in the UK and international markets. Through this innovation, Certain Energy aims to deliver groundbreaking long-duration energy storage solutions that can effectively meet fluctuating energy demands and alleviate existing grid constraints.

Technical Details and Product Advantages

The core of Certain Energy's technology is a manganese flow battery that utilizes abundant manganese as the primary active material in its electrolyte. This approach is claimed to reduce material costs by approximately tenfold compared to existing vanadium redox flow batteries. While vanadium is a rare earth metal with limited supply and volatile pricing, manganese is far more widely distributed, similar to cobalt, nickel, and lithium, offering superior sustainability and cost stability. Manganese flow batteries retain the inherent characteristics of flow batteries, where energy capacity and power output can be independently scaled, making them particularly well-suited for long-duration energy storage applications lasting from several hours to multiple days. The secured funds will be strategically invested in developing an MWh-scale grid-connected demonstration system in India, expanding the company's research and development facilities in the UK, and establishing a robust supply chain to support mass production.

Background and Industry Context

The global expansion of intermittent renewable energy sources, such as solar and wind power, is driving an urgent need for long-duration energy storage (LDES) solutions to compensate for their variability. Traditional lithium-ion batteries, which are predominantly short-duration, face significant cost and efficiency challenges when scaled for multi-hour or multi-day storage. Flow batteries have emerged as a promising technology to bridge this LDES gap, but vanadium-based systems have historically struggled with high material costs. Certain Energy's manganese flow battery has the potential to dramatically lower this cost barrier, representing a significant breakthrough that could accelerate LDES market adoption. This provides an economically and environmentally sustainable option for supporting the energy transition and enhancing grid resilience.

Future Outlook and Strategic Significance

This recent funding and the accelerated technological development are critical for Certain Energy to establish itself as a key player in the nascent LDES market. The successful deployment of the MWh-scale system in India will serve as a vital milestone for broader global expansion. Low-cost, manganese-based flow batteries have the potential to significantly reduce the integration costs of renewable energy, enabling widespread large-scale deployment, including in developing nations. Certain Energy is expected to contribute substantially to a sustainable future by providing essential solutions for grid decarbonization and stabilization.

Source: https://www.imperial.ac.uk/news/articles/admin-services/enterprise/2026/imperial-energy-storage-spinout-certain-energy-raises-10m-from-investors/

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#26 European BESS Deployment Accelerates: Czech Republic Adds 318MWh in H1, Portugal Allocates Over 1GVA to Storage

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OVERVIEW

Battery Energy Storage System (BESS) deployment is rapidly accelerating across Europe. The Czech Republic connected 318MWh of new battery capacity in H1 2026, including the country's largest 57MW/120MWh Lipnice project. Portugal has allocated over 1GVA of grid capacity specifically for storage, while Ireland has established a dedicated market route to procure 500MW of storage with a minimum 4-hour duration. Additionally, Greece is seeing BESS projects with attractive revenue models advancing. These developments address the urgent need for enhanced grid flexibility amidst expanding renewable energy penetration, with countries adopting diverse policy approaches to foster their storage markets.

IN DEPTH

Key Findings

Battery Energy Storage System (BESS) deployment is undergoing a rapid acceleration across the entirety of Europe. Notably, the Czech Republic connected a substantial 318MWh of new battery capacity to its grid in the first half of 2026, featuring the operational 57MW/120MWh Lipnice project, now the largest BESS in the country. European nations are actively pursuing aggressive deployment policies, positioning BESS as a cornerstone solution to address the critical challenges of grid stabilization and enhanced flexibility brought about by the rapid expansion of renewable energy sources.

Country-Specific Initiatives and Policy Details

- **Czech Republic:** The addition of 318MWh in H1 2026 marks a significant milestone in the country's clean energy transition. Large-scale BESS projects like Lipnice are crucial for absorbing fluctuations from solar and wind power, playing an indispensable role in maintaining stable grid operations.
- **Portugal:** Has adopted a bold policy, allocating over 1 gigavolt-ampere (GVA) of grid capacity specifically for energy storage. This demonstrates a strong governmental commitment to accelerating renewable energy penetration and alleviating grid bottlenecks.
- **Ireland:** Established a dedicated market pathway for procuring 500MW of energy storage with a minimum 4-hour duration. This policy aims to incentivize investment in long-duration energy storage solutions and enhance the resilience of its wind-rich power grid.
- **Greece:** Is actively offering attractive revenue models for BESS projects, drawing significant interest from investors and developers. This strategy is linked to power market liberalization and revisions to Feed-in Tariff (FIT) schemes, serving as a prime example of market-based mechanisms promoting storage deployment.

Background and Industry Context

The European Union (EU) is committed to achieving carbon neutrality by 2050, necessitating accelerated renewable energy integration. However, the intermittent nature of solar and wind power poses challenges to grid stability and reliability. BESS dramatically improves grid flexibility by absorbing these fluctuations, storing electricity, and dispatching it when needed. Furthermore, BESS provides various ancillary services, such as frequency regulation and black start capabilities, enhancing overall grid efficiency and reliability. Governments across Europe are leveraging a diverse toolkit of policy instruments, including FIT schemes, auction mechanisms, and grid capacity allocations, to cultivate their respective BESS markets.

Future Outlook and Strategic Significance

The vibrant BESS market in Europe signals that the clean energy transition has entered a new phase. Aggressive national deployments and policy support are expected to drive further innovation and cost reductions in BESS technology, leading to larger, more economical solutions. BESS is unequivocally becoming indispensable infrastructure in Europe's energy landscape, serving as the 'final piece' for renewable energy integration. Its contribution to strengthening grid resilience and achieving decarbonization targets is highly anticipated.

Source: https://www.solarplaza.com/resource/13572/article-from-grid-access-to-bankability-four-signals-from-europe-2026/

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#27 Italy Plans 320MW Nationally Strategic BESS Project Adjacent to Terna Substation

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OVERVIEW

Italy is advancing a nationally strategic 320MW Battery Energy Storage System (BESS) project in Chiari, northern Italy, strategically co-located with a Terna substation. Designated by the Ministry of Environment and Energy Security, this initiative aims to significantly alleviate grid strain and enhance renewable energy integration, while local authorities negotiate sustainable development and climate mitigation measures. The project represents a critical advancement in Italy's energy storage deployment toward its ambitious renewable energy targets.

IN DEPTH

Strategic Imperative and Grid Challenges

Italy is actively pursuing the decarbonization of its energy mix, aligning with the European Union's ambitious climate change objectives. However, the escalating integration of intermittent renewable energy sources, such as solar and wind power, is placing new strains on the nation's existing transmission infrastructure. A particular challenge is the frequent emergence of transmission bottlenecks, often occurring between the energy-rich southern regions—where much of Italy's renewable generation is concentrated—and the high-demand consumption centers in the north. Battery Energy Storage Systems (BESS) are increasingly recognized as a cost-effective and crucial solution for mitigating these grid constraints and ensuring a reliable and stable power supply. The Italian government's designation of projects like this as 'nationally strategic' unequivocally emphasizes that energy storage transcends mere technological adoption; it is a foundational infrastructure element vital for both national energy security and sustained economic growth.

Project Overview and National Strategic Designation

A substantial 320MW Battery Energy Storage System (BESS) project is currently under development in Chiari, located in the Brescia province within northern Italy's Lombardy region. This facility is strategically positioned adjacent to a major substation operated by Terna, Italy's national transmission system operator. The Italian Ministry of Environment and Energy Security has officially classified this large-scale initiative as having 'national strategic importance.' The project's core objectives are twofold: to significantly alleviate stress on the regional power infrastructure and to facilitate the efficient integration of a greater share of renewable energy sources. This makes the BESS an indispensable component in Italy's concerted effort to achieve its 2030 renewable energy deployment targets.

Technical Scope and Local Engagement

The proposed 320MW BESS is engineered to substantially enhance the stability and operational flexibility of the Italian power grid. Its deployment will enable the effective absorption of power output fluctuations inherent to intermittent renewable energy sources, storing surplus electricity during periods of low demand or high generation and dispatching it rapidly during peak demand or low generation. The local municipality of Chiari is playing an active role in the project's approval process, currently engaged in negotiations with the developing company. These discussions focus on crucial aspects such as local road infrastructure improvements and comprehensive ecological and environmental compensation measures, all aimed at mitigating the project's climate impact. This collaborative approach underscores the critical importance of engaging with local communities and embedding robust environmental stewardship practices in the planning and execution of large-scale energy infrastructure developments.

Future Outlook and National Impact

The successful realization of the 320MW BESS project in Chiari is projected to dramatically expand Italy's overall energy storage capacity, effectively resolving significant bottlenecks hindering renewable energy integration. This flagship project is anticipated to serve as a vital model, catalyzing the promotion and development of similar BESS initiatives across other regions of the country, thereby accelerating Italy's broader energy transition. Furthermore, the collaborative implementation of environmentally conscious projects, forged through close cooperation with local authorities, has the potential to establish a new standard approach for future large-scale infrastructure development, promising a significant contribution to a more sustainable energy future for Italy.

Source: https://www.ess-news.com/2026/08/28/italy-plans-320-mw-bess-next-to-terna-substation/

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#28 ESS Inc. Pivots to Sodium-Ion BESS, Shifts Focus from Iron Flow Batteries to Overcome Commercialization Challenges

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OVERVIEW

ESS Inc.'s CEO announced a strategic pivot towards sodium-ion Battery Energy Storage Systems (BESS) after the company struggled to meet commercial promises for its iron flow battery technology. To navigate challenges faced since its 2021 public listing, ESS Inc. is now concentrating resources on sodium-ion technology to pursue higher reliability and market fit. This fundamental shift aims to address evolving energy storage market needs and deliver more viable commercial solutions, marking a critical decision for the company's future growth and market position.

IN DEPTH

Key Findings

The Chief Executive Officer of ESS Inc., an energy storage solutions provider, has articulated a fundamental strategic shift for the company. After grappling with the commercialization targets for its iron flow battery technology, ESS Inc. will now pivot its focus towards the development and deployment of Sodium-Ion Battery Energy Storage Systems (BESS). This strategic realignment is designed to overcome a series of challenges the company has faced since its public listing in 2021, aiming to deliver products with enhanced reliability, cost-effectiveness, and market suitability.

Technical Transition: From Iron Flow to Sodium-Ion

ESS Inc. had previously championed its proprietary iron flow battery technology, which uses an iron and salt-water based electrolyte. However, the company encountered greater-than-anticipated difficulties in manufacturing scalability, long-term performance retention, and achieving cost competitiveness against rival technologies. While iron flow batteries offer the theoretical advantage of utilizing inexpensive and abundant materials, several barriers became evident during actual commercial deployment. In contrast, sodium-ion batteries hold the promise of delivering energy density and cycle life comparable to lithium-ion batteries, but with cheaper and more universally abundant raw materials. Recognizing the rapid advancements in sodium-ion technology and strong market demand, ESS Inc. has determined that concentrating resources in this area is the path to long-term success. Notably, sodium-ion batteries are quickly gaining traction as a viable alternative to lithium-ion in the large-scale stationary energy storage market.

Background and Industry Context

The energy storage market is experiencing rapid expansion driven by the increased integration of renewable energy and grid modernization efforts. Concurrently, this market is characterized by intense technological innovation and cost competition. In such an environment, over-reliance on a single technology carries the risk of being unable to adapt to market shifts. ESS Inc.'s strategic pivot demonstrates a company's willingness to flexibly respond to market realities and technical challenges. Early-stage technologies, such as iron flow batteries, often face unforeseen difficulties during commercialization despite their promised advantages. Sodium-ion battery technology, on the other hand, has seen rapid maturation recently, with major players like CATL announcing mass production, which likely underpinned ESS Inc.'s decision.

Future Outlook and Strategic Significance

ESS Inc.'s shift in focus to sodium-ion BESS represents a crucial juncture that will define its future trajectory. If successful, this transition could enable the company to establish a new competitive advantage in the evolving energy storage market, leading to revenue recovery and sustainable growth. While venturing into a new technological domain necessitates significant R&D investment, supply chain restructuring, and the formation of new partnerships, the potential for success is substantial if solutions align with market needs. ESS Inc.'s future developments will serve as a compelling case study demonstrating the diversity of energy storage technologies and the dynamic nature of the market.

Source: https://www.energy-storage.news/ess-inc-ceo-on-shifting-focus-from-iron-flow-to-sodium-ion-bess-after-failing-to-deliver-on-its-promises/

Collected: August 28, 2026 | Automated Research System (Gemini API)