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Global Energy Storage

Global Energy Storage: China battery tour key takeaways. We're doing alright



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Companies in the battery supply chain have a more positive outlook on battery demand growth than the market. There are market fears that battery demand will slow sharply next year given the weak EV market and pulling forward of ESS demand. Companies we met with in the battery supply chain are reporting >80-90% utilization levels. They also expect demand growth of 20-30% CAGR over the next 3 years supported by ESS demand and commercial vehicles. In short, the industry appears far more optimistic about the demand outlook than the market. While margins have not been as impressive as demand, China's policy to restrict capacity beyond 2028 should help long term industry profitability.

ESS demand is strong and at an early stage of development. ESS demand increased by 100% this year, supported by document 136, which supported standalone storage. Many worry that shipments are growing more quickly than installations, which could be a sign that demand will slow sharply next year. Companies in the battery supply chain we met with expect ESS demand will continue to grow, with some expecting demand growth of 30-50% next year. Energy storage this year will reach 800GWh. The ratio of energy storage (GWh) to solar & wind capacity (GW) is currently about 0.2. Based on our discussions with companies and empirical data from other grids, this ratio could rise to >1 which implies 5x growth from current levels.

China EV industry is experiencing slower growth which is putting pressure on the rest of supply chain to lower costs. EV OEM's are facing significant challenges with overcapacity, weak growth and margin compression. Expectations are that China demand could remain subdued through the second half of this year and into 2027, although expectations are that xEV penetration still has scope to rise from 60% to 90%. Power battery demand is fairing better given growth in BEV demand which is relatively stronger and exports. However, increased pressure on OEMs to lower costs has resulted in some to switch battery orders from industry leader CATL to Sunwoda and CALB, which may offer lower pricing. While CATL has not lost market share ytd there are some who believe that this could happen. In our view, CATL maintains the twin advantages of scale and technology. Efforts by the government to limit excessive growth in new capacity is likely to help CATL maintain its leadership position.

Commercial vehicle demand Is strong with penetration rates still low. While EV demand has been weak, commercial vehicle demand has been growing at >60% y-o-y. Penetration rates have reached >20%, and we may be in a golden age for electrification of trucking in China, supported by China's 15th 5-year plan for oil demand to peak before 2030. Chinese companies are starting to explore markets in Europe with truck OEM's which could be the next major market to adopt batteries for trucking.

See the Disclosure Appendix of this report for required disclosures, analyst certifications and other important information. Alternatively, visit our Global Research Disclosure Website.

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Enthusiasm for overseas expansion is less than before. Two years ago, this industry was focused on overseas expansion to Europe and the US. The US has been largely written off by Chinese battery companies given the ban on Chinese supply in the power equipment supply chain, although Xi is meeting with Trump this week. Hotspots for outbound investment have been Hungary, Malaysia, and Indonesia. Experiences have been mixed however and most Chinese companies we met with had highlighted the challenges of operating overseas and much lower margins compared with exporting from China.

Solid state is further away than we thought, but sodium-ion is ready for prime time. While solid state is the next technology paradigm for the industry, most companies continue to cite technical challenges in the development of these batteries. Most expect that it will not be until 2030 that large scale commercialization will occur. This was a reality check for those more bullish on this technology and suggest the current industry is unlikely to be disrupted any time soon. Views on Na-ion are far more bullish with expectations of commercialization of the technology starting from 2H26 this year led by CATL. The only catch could be if LCE price falls below US$15k/t, which would reduce the economic benefits of switching.

BERNSTEIN TICKER TABLE

Ticker	Rating	Cur	18 Sep 2026 Closing Price	Price Target	TTM Rel. Perf.	Reported EPS Cur	2025A	2026E	2027E	Reported P/E (x) 2025A	2026E	2027E
3750.HK (CATL)	O	HKD	507.00	770.00	(22.5)%	CNY	16.14	21.95	28.77	26.8	19.7	15.0
300750.CH (CATL)	O	CNY	301.95	800.00	(40.6)%	CNY	16.14	21.95	28.77	18.7	13.8	10.5
ASIAX			1,953.49									

O - Outperform, M - Market-Perform, U - Underperform, NR - Not Rated, CS - Coverage Suspended

Source: Bloomberg, Bernstein estimates and analysis.

INVESTMENT IMPLICATIONS

Despite the impressive growth of lithium-ion battery demand this year (50% y-o-y growth) investors have been less impressed by China's energy storage equities. Equity valuations have declined for most companies, with industry leader CATL giving up most of its gains for the year, despite having a strong performance year to date. The market has two concerns, namely the outlook for growth and margins. Our meetings with companies in the battery supply chain last week in China suggest that growth expectations among the corporate remains very positive. Our key takeaway from the trip is that growth may be better than many expect next year. Moreover, most companies expect growth of at least 20-30% CAGR through to 2030. Some investors fear that ESS, which has been a key driver of growth this year will give way to flat or negative growth next year. Most companies we met with, however, expect ESS demand to grow by 20-50% next year. With EV demand likely to be weak in China again next year, global EV demand will grow and the shift towards BEV's will drive higher rates of power battery demand. In addition, commercial vehicle battery sales are growing rapidly and will continue to do so next year on all likelihood. The other concern is margins. OEMs which are facing margin pressure are seeking to put pressure on the battery supply chain to lower costs. This has caused some OEMs to switch away from higher cost CATL batteries towards cheaper alternatives from Tier 2 suppliers. Many will worry that this has the potential to erode CATL's moat. While this is a risk, China's policy of curbing new capacity growth beyond 2028 aims to prevent a similar collapse in margins in the battery supply chain. Moreover, while we are seeing some OEMs diversify from CATL for some models, most OEMs still view CATL as the quality leader in the industry. Moreover, CATL always has the option to win back market share given its cost advantage which comes from scale and greater vertical integration. In short while there are legitimate fears around a weakening of CATL's moat, the recent stock reaction goes too far in our view. We remain convinced we are at the early stage of development in the battery industry. AI data centers, robotics, EVTOL, represent untapped markets which offer significant growth potential. For industry leaders such as CATL which have scale and technology advantages over competitors, current A-share valuations of 2027 P/E 10x (8x ex-cash and investments) and a FCF yield of 8.5% are pricing the company more like an ex-growth fossil fuel producer than a new energy company. We think the risk-reward is attractive for CATL and recommend investors take advantage of pull back in stock price.

DETAILS

Last week we traveled around China visiting with companies in the battery supply chain. Key companies we met with included CALB (China's third largest battery supplier), EVE Energy (the second largest ESS battery supplier), SEMCORP (largest battery separator company), Putailai (anode and separator company), Dynanonic (LFP cathode maker) and GEM (China's largest independent recycling company). In this note, we provide the key highlights and takeaways from these meetings.

Companies in the battery supply chain have a more positive outlook on battery demand growth than the market. There are market fears that battery demand will slow sharply next year given the weak EV market and pulling forward of ESS demand. Companies we met with in the battery supply chain are reporting >80-90% utilization levels. They also expect demand growth of 20-30% CAGR over the next 3 years supported by ESS demand and commercial vehicles. In short, the industry appears far more optimistic about the demand outlook than the market. While margins have not been as impressive as demand, China's policy to restrict capacity beyond 2028 should help long term industry profitability.

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COMPANY COMMENTARY

EVE Energy (300014 CH) | EV & Energy Storage Batteries

- **ESS demand remains stronger than market concerns suggest.** Management has not observed a meaningful deterioration in customer demand or order expectations and pushed back against concerns that strong 2026 installations have pulled demand forward from 2027. Overseas growth could remain broadly comparable with 2026, supported by AI

data centres, energy security and energy independence, while China's ESS market could still grow by around 30% or more in 2027. Global ESS demand is expected to sustain a CAGR of more than 20% through 2030.

- **China's ESS market is moving from mandatory installations toward commercially sustainable grid services.** Capacity payments and compensation for grid-balancing services are replacing compulsory renewable-storage configurations. Customers generally require a floor IRR of 7-8%, while projects in regions with wide peak-valley spreads or stronger capacity payments can achieve 15% or higher. Higher requirements for cycle life and reliability should favour leading cell manufacturers over lower-quality capacity.

- **Battery demand is broadening beyond passenger EV.** Commercial-vehicle electrification remains strong, particularly in heavy trucks, while European EV platforms and higher battery content per vehicle provide additional support. This suggests battery demand can remain resilient even if Chinese passenger EV growth moderates.

- **Industry margins should recover as utilization improves and competitive capacity becomes tighter.** EVE reported utilization above 80% in ESS and above 85% in commercial vehicles. Management described the market as shifting from broad-based overcapacity toward tighter supply among leading manufacturers, while excess capacity remains concentrated among lower-tier suppliers. Price pass-through and improving utilization should support further margin recovery.

- **Technology disruption appears gradual rather than imminent.** Sodium-ion batteries have entered initial commercial delivery and could gain adoption in ESS, while solid-state batteries are likely to reach consumer and robotics applications before vehicles. Management does not expect meaningful vehicle-scale solid-state deployment until around 2030. Large cylindrical and larger-format ESS cells are currently more commercially relevant transitions.

CALB (3931 HK) | EV & Energy Storage Batteries

- **ESS is replacing passenger EVs as the main source of incremental battery demand.** CALB expects a significant ESS shipment ramp, supported by larger-format cell launches and annual procurement frameworks rather than only project-based orders. Management rejected the view that current Chinese ESS demand is primarily policy pull-forward, citing full utilization and continued customer demand into 2027.

- **Commercial vehicles provide an additional structural demand pillar.** Management expects strong battery growth from heavy trucks and other commercial vehicles as fleet operators increasingly assess electrification based on total operating economics. Together with ESS, this reduces the battery industry's dependence on Chinese passenger EV volume growth.

- **Headline battery overcapacity may overstate the availability of competitive supply.** Management argued that reliable, cost-efficient and technically differentiated capacity remains relatively scarce despite substantial nominal industry capacity. Regulatory scrutiny of new projects and continued requirements for R&D and manufacturing upgrades should reinforce consolidation toward suppliers capable of financing product transitions.

- **The next ESS product cycle is shifting toward cells above 600Ah.** The previous move from 280Ah to 314Ah created opportunities for share changes, and management expects another competitive reset as customers adopt larger cells. Product quality, safety and system economics should matter more than aggressive pricing alone.

- **Industry profitability depends on converting high utilization into disciplined capacity growth.** CALB expects scale, ESS growth and overseas projects to support margin improvement, but its aggressive volume ambitions also illustrate the risk that battery capacity additions remain ahead of end-demand growth. European localization offers higher potential pricing, while direct exposure to the US remains constrained by policy uncertainty.

Semcorp (002812 CH) | Lithium-ion Battery Separators

- **Separator supply appears tight through at least 1H27.** Industry utilization has risen to around 80-90%, with most scaled suppliers operating close to full capacity. Separator plants require roughly 18 months to construct, qualify and ramp, versus six to twelve months for battery plants. This mismatch should keep pricing firm or allow further increases through 1H27, although 2H27 will depend on new capacity releases.

- **ESS is becoming the principal driver of separator demand.** Management estimates ESS demand grew around 60% in 2026 and could increase another 40-50% in 2027, while passenger EV growth slows. Industry production schedules and

battery-capacity plans have not shown broad-based reductions, suggesting physical demand remains stronger than equity-market concerns.

- **Product requirements are moving toward more sophisticated separators.** Larger ESS cells require higher cycle life and reliability, supporting a transition from dry-process to wet-process separators. In EVs, thinner products raise manufacturing difficulty and potential premiums. Sodium-ion batteries continue to require separators and may use more material per unit of stored energy, while solid-state disruption remains distant.

- **Industry concentration and capital discipline should limit downside pricing volatility.** Management expects the top five separator suppliers' combined share to increase toward 85-90%. Several established participants have reduced expansion appetite after weak returns, making a repeat of the previous price collapse less likely, although aggressive additions by selected new platforms remain a risk.

- **Overseas localization is becoming necessary for market access.** North American customers no longer accept China-produced separators, while European and US projects require local or compliant overseas supply. Southeast Asia is emerging as the preferred low-cost manufacturing base, but overseas plants must be aligned closely with customer ramps to avoid underutilization.

Putailai (603659 CH) | Anode Materials, Separators & Battery Equipment

- **Battery-industry demand remains broad-based, with management expecting 20-30% annual growth over the next three to five years.** Growth is expanding beyond passenger EVs into commercial vehicles, battery-swapping trucks, ESS and data centers. Major production lines are operating above 90% utilization, while strong equipment orders indicate that battery manufacturers continue to invest despite regulatory concerns over excess capacity.

- **ESS is becoming increasingly important across the materials value chain.** Management expects ESS to grow considerably faster than EV batteries and potentially approach power batteries in industry shipments or installations by 2028. This should support separator coating, base film, anodes and manufacturing-equipment demand, although end-use exposure is difficult to track precisely.

- **Pricing recovery will be uneven across battery materials.** Businesses with weak returns and high investment requirements, particularly anodes and base film, require price increases and cost pass-through. Higher-margin and technically differentiated products are less dependent on broad-based repricing. The implication is that earnings recovery will favour suppliers with product differentiation and lower-cost new capacity.

- **Battery capex remains strong, but future expansions should be more disciplined.** Equipment orders are robust and customers continue to add capacity. However, new projects are increasingly tied to identifiable customer demand, cash generation and financing capacity rather than speculative market-share targets. This should reduce, but not eliminate, the risk of another indiscriminate capacity cycle.

- **Existing technologies are likely to retain dominance for longer than market narratives imply.** Graphite should remain the principal anode material, with silicon-carbon used initially as a performance-enhancing additive. Sodium-ion batteries have credible applications in ESS and cold climates but currently lack a clear cost advantage, while solid-state batteries remain a longer-term option for specialised applications.

GEM (002340 CH) | Battery Recycling, Nickel Resources & Cathode Materials

- **China's battery-recycling supply is approaching a structural inflection point.** Power batteries generally retire after approximately five to eight years, with commercial-vehicle batteries potentially reaching end of life earlier. As early EV cohorts retire, recycling feedstock should increase materially, creating a long-duration growth opportunity rather than a short-term cyclical recovery.

- **Regulation should redirect more retired batteries toward qualified recyclers.** Increased scrutiny of info and tighter restrictions on second-life applications should support a greater flow of batteries into compliant p channels. Operators with automaker agreements, formal collection networks and high recovery rates are like

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from smaller workshops.

- **Recycling economics remain highly dependent on battery chemistry.** Ternary batteries provide more resilient profitability because nickel, cobalt and lithium can all be recovered. LFP recycling is more sensitive to lithium prices and could become uneconomic if lithium carbonate falls below approximately RMB60,000/t. Recycling growth therefore does not translate uniformly into industry profitability.

- **Scale and regulation could improve recycling margins over time.** Current margins are around 10%, with management targeting 15-20% as feedstock volumes, utilisation and formal-market concentration increase. Future recycled-content requirements could also strengthen pricing for compliant recycled materials, particularly in markets with minimum-content or carbon regulations.

- **High-nickel cathode materials retain relevance despite LFP growth.** Management expects Chinese ternary-material demand to maintain approximately 20% growth, supported by robotics, low-altitude aircraft and other high-energy-density applications. High-nickel cathodes may also remain applicable if the industry gradually moves toward solid-state batteries, although solid-state should not be treated as a near-term volume contributor.

DYNANONIC (300769 CH) | LFP CATHODE MATERIALS, LMFP & LITHIUM REPLENISHMENT ADDITIVES

- **ESS should remain the primary growth driver for LFP demand despite a high comparison base.** Management expects LFP demand to grow by approximately 40-50%, with ESS expanding faster than power batteries, supported by Chinese and overseas storage demand and renewable installations. However, the forecast is based on market analysis and customer demand indications rather than firm annual orders.

- **Formula-based pricing should limit the earnings impact of lithium carbonate volatility.** LFP prices comprise lithium carbonate costs, linked to third-party market prices, plus a processing fee covering other raw materials, manufacturing costs and profit. Management indicated that lithium-price movements can be passed through to downstream customers, supporting relatively stable industry profitability despite raw-material volatility.

- **Product performance is becoming the key source of pricing differentiation in an otherwise transparent LFP market.** Higher-compaction LFP products command an approximately RMB1,000-2,000/t premium over conventional products, driven mainly by fast-charging demand in power batteries. ESS customers remain more focused on cycle life, safety and energy efficiency, limiting near-term demand for higher-compaction products unless their costs decline toward conventional LFP levels.

- **LMFP offers higher energy density but is unlikely to replace LFP at scale in the near term.** Management estimates that LMFP can increase theoretical energy density by 15-20% and system-level energy density by 10-15% while retaining similar safety characteristics. However, weaker fast-charging performance and cycle life remain barriers, suggesting LFP will remain dominant while LMFP adoption expands gradually.

- **Dynanonic's earnings recovery is supported by full utilization and proprietary new products.** LFP unit net profit is approximately RMB2,000-3,000/t, with management expecting a broadly stable level in 2H26. The company operated at 106% utilization in 1H26, while its lithium replenishment additive could provide incremental growth across power, ESS and next-generation batteries. Management expects 2026 additive sales to exceed 1kt from 5kt of existing capacity.