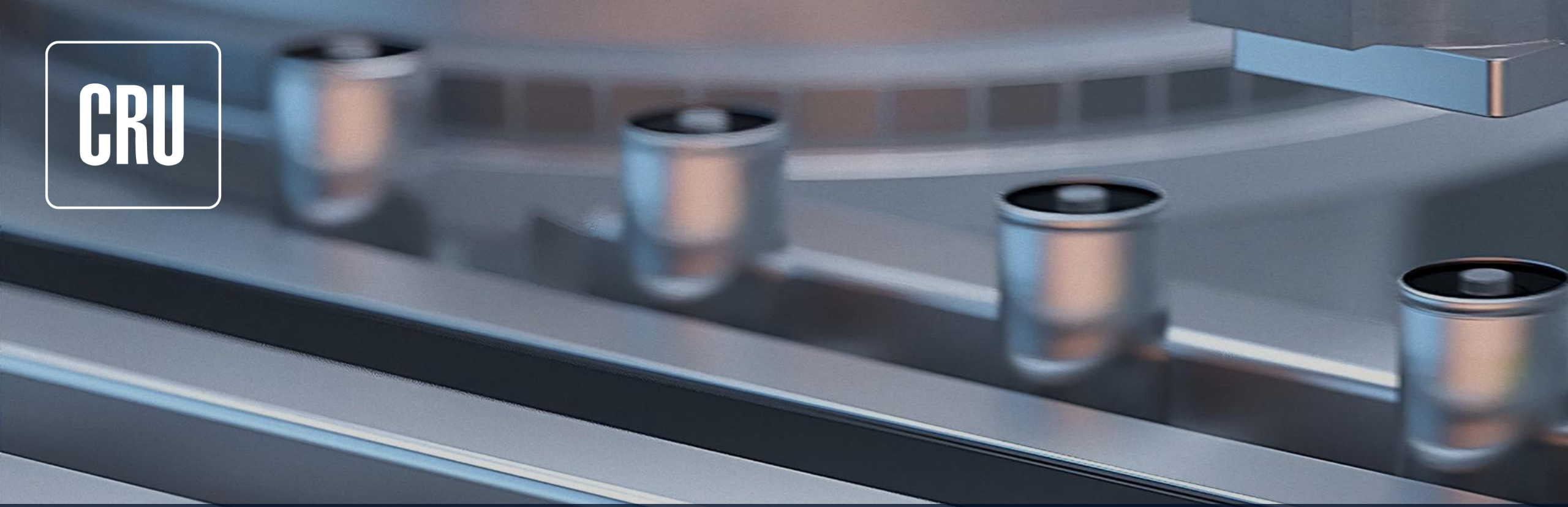


Outlook for energy storage battery prices and key technology trends for European BESS procurers

Dr. Edward Rackley, Head of Energy Storage, CRU

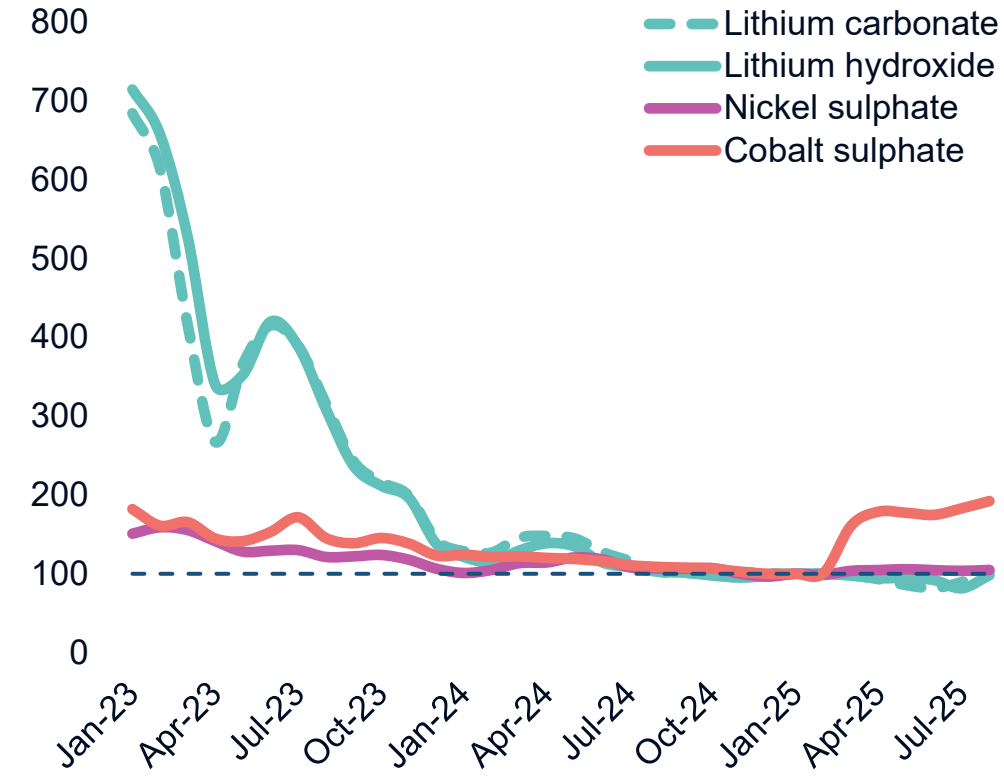
PV magazine Week EUROPE 2025 | What to consider when purchasing BESS for projects in Europe |

Battery Energy Storage panel, Session 6 | 4th Dec 2025

Crashing raw material prices have contributed to falling battery costs

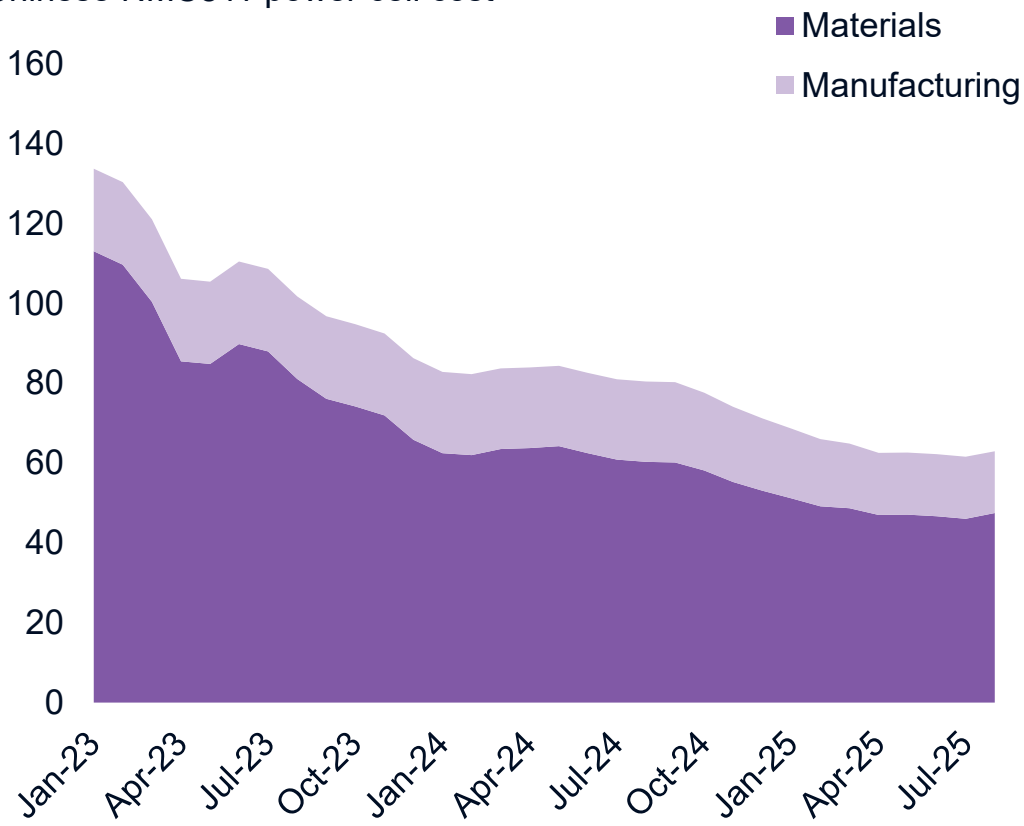
Raw materials prices have crashed since 2023…

Indexed battery raw material spot prices, DAP China



…resulting in low cell costs

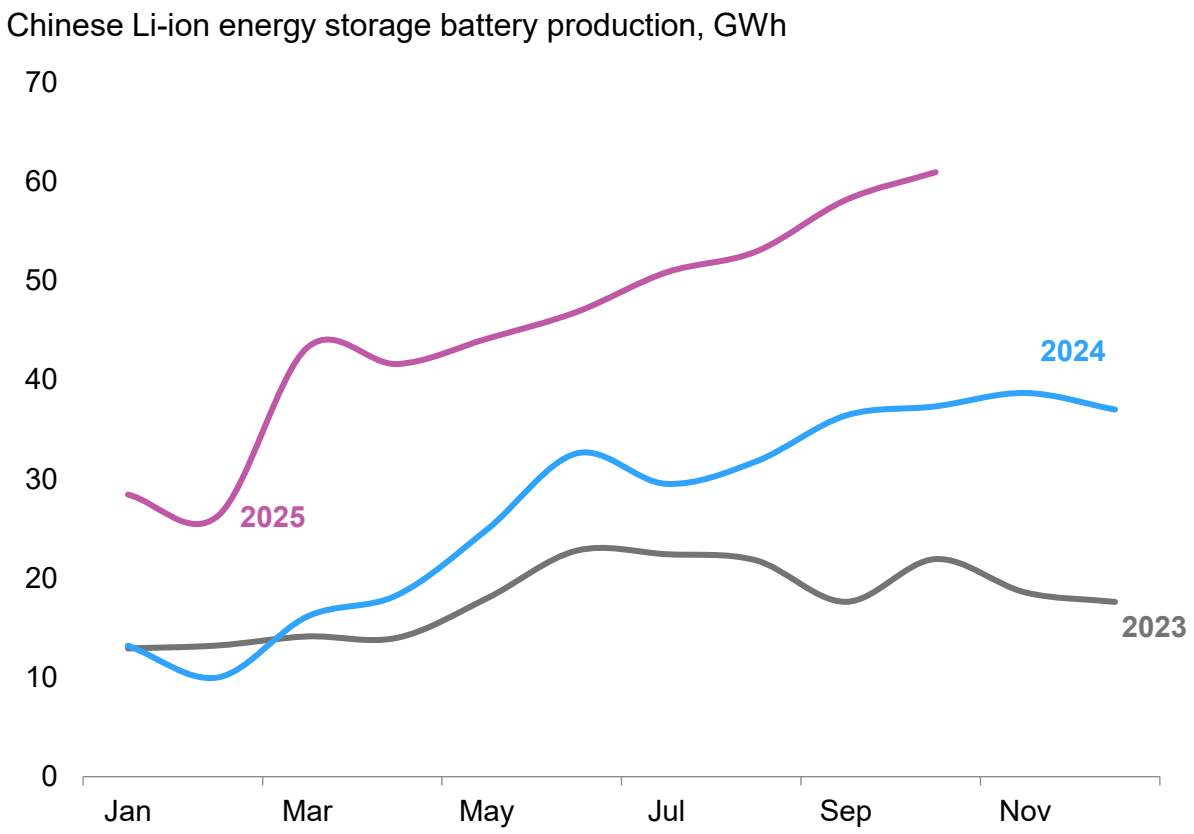
Chinese NMC811 power cell cost



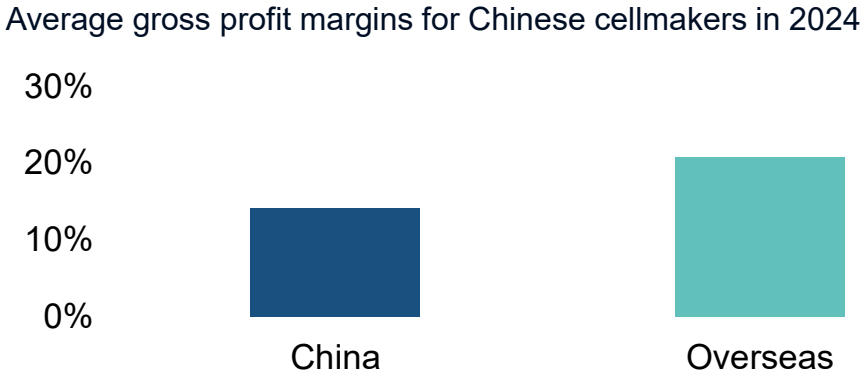
SOURCE: CRU Battery Technology and Cost Service. Power cells denote batteries used in mobility applications

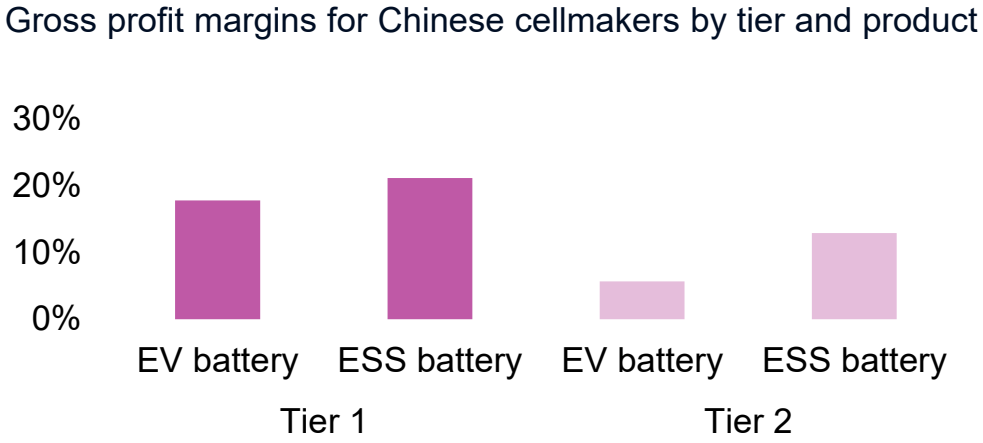
ESS battery exports offer a key profitability route for cellmakers

Chinese ESS cell output exceeds current global demand



Overseas ESS battery sales are critical for producers' margins as demand continues to grow





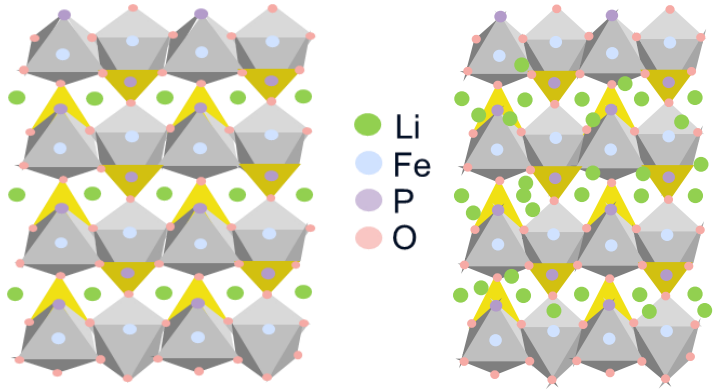
SOURCE: CRU Battery Value Chain Service, ESS production data as of October 2025

How does LFP continue to stay ahead in BESS?

Chemistry

Longer life

New dopant additions for longer cycle life



Representation of sacrificial lithium for LFP provided by dopants

Device

Higher cell capacity

Evolution of industry-standard BESS cell capacities from 2025 to 2029

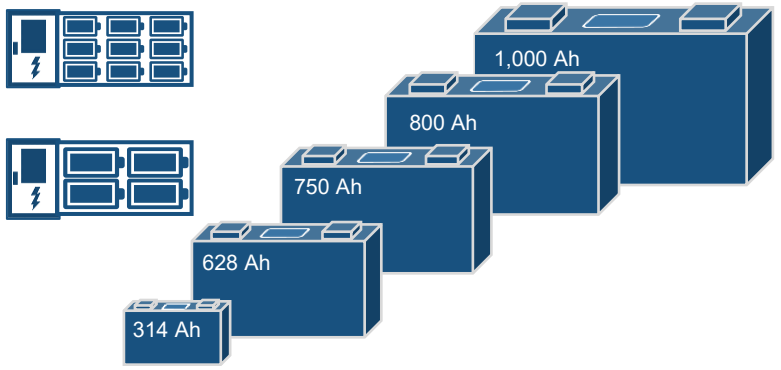
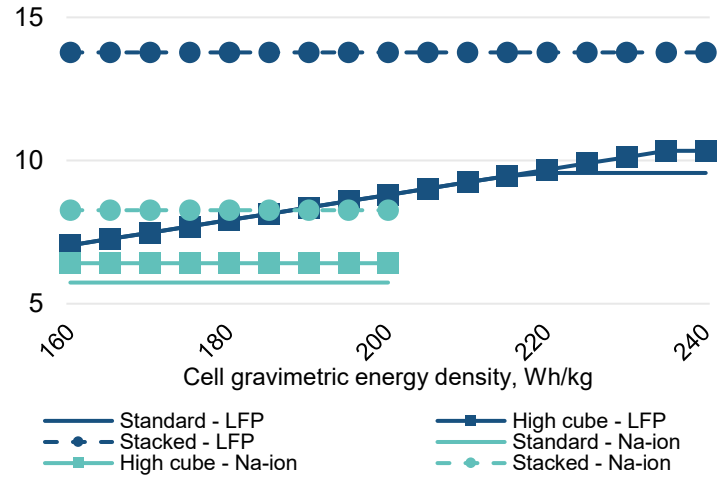


Diagram of cell capacity forecast. NB cells are not to scale

Application

Stacking to **raise** energy density

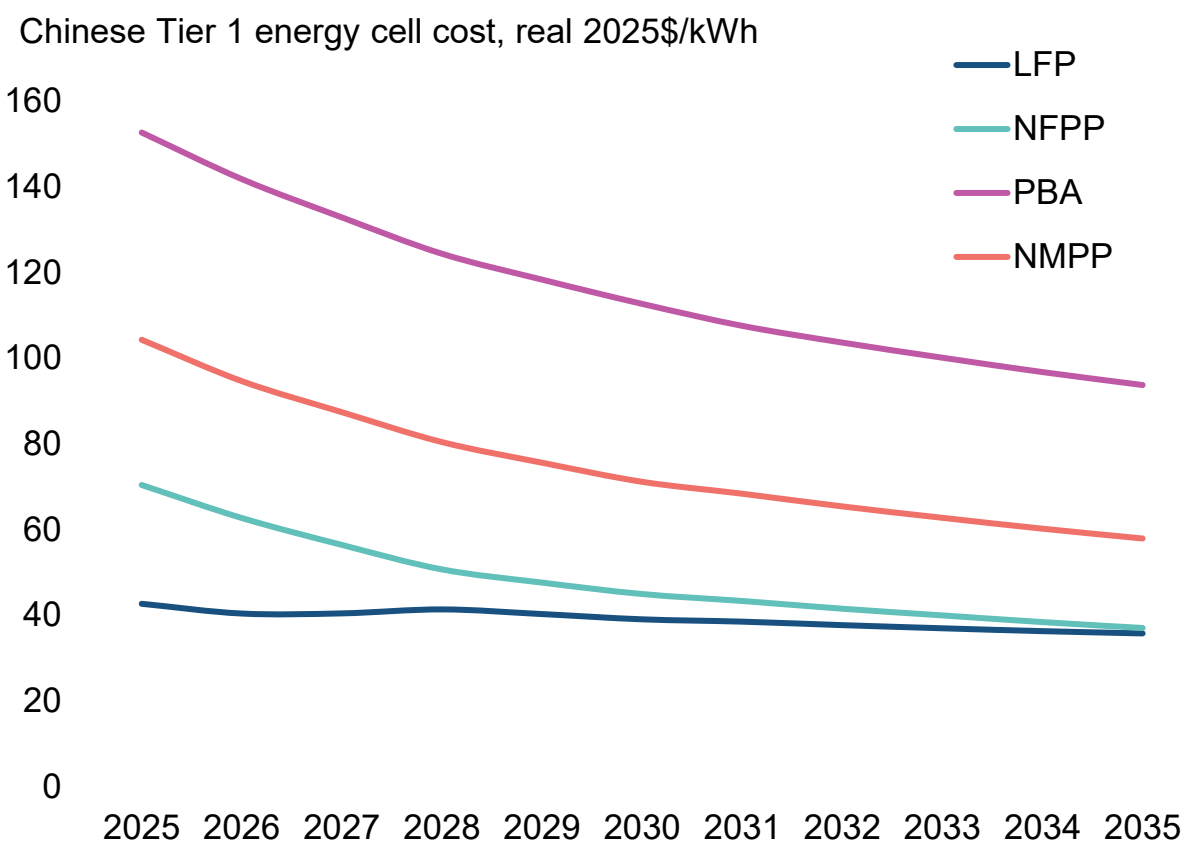
20ft system capacity limited by 49 tonne gross vehicle weight limit in China and 5 tonne vehicle weight, MWh



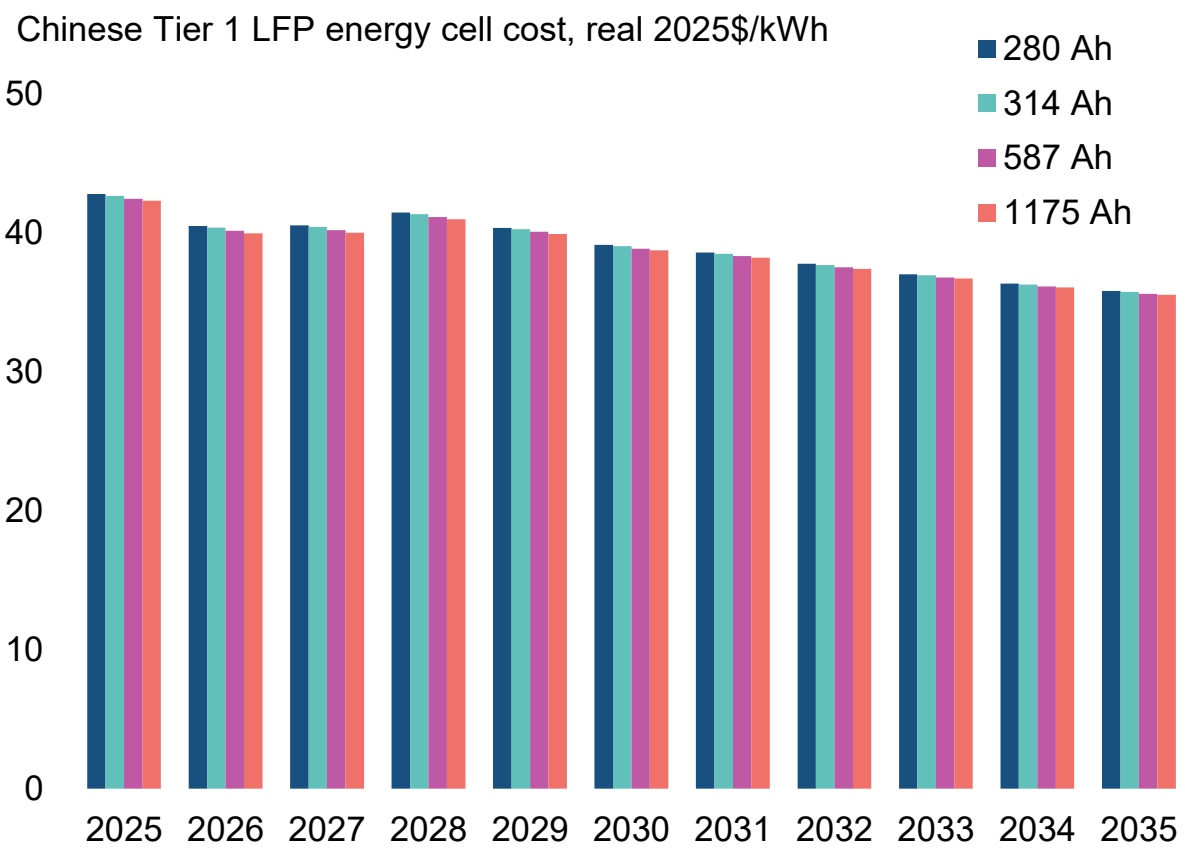
SOURCE: CRU Energy Storage Technology and Cost service

LFP will remain the lowest cost energy storage cell until 2035

Raw materials price increases will counter cost reduction from manufacturing improvements



Large cell formats benefits system-level energy densities and costs, with minimal cell cost impact

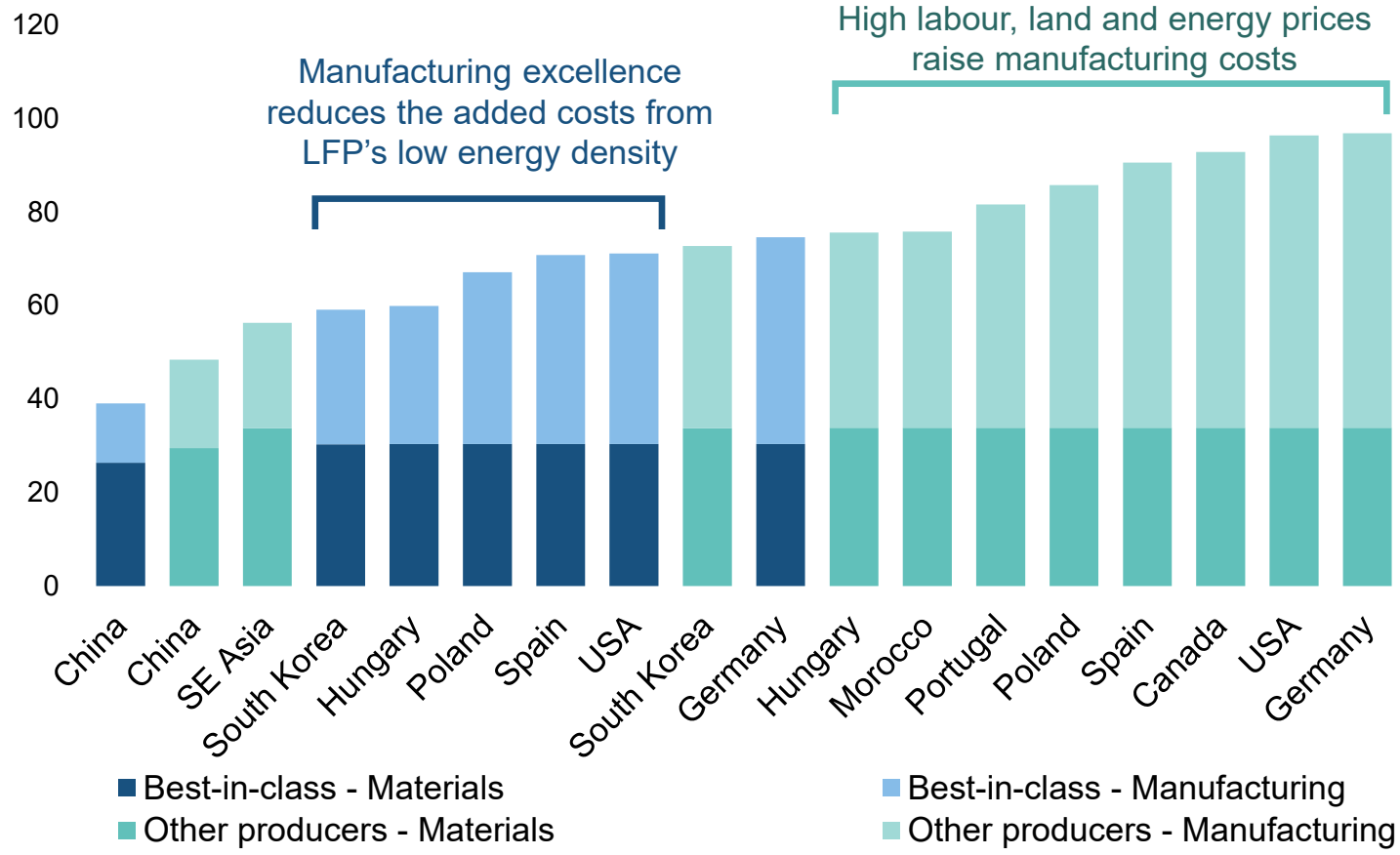


SOURCE: CRU Battery Technology and Cost Service

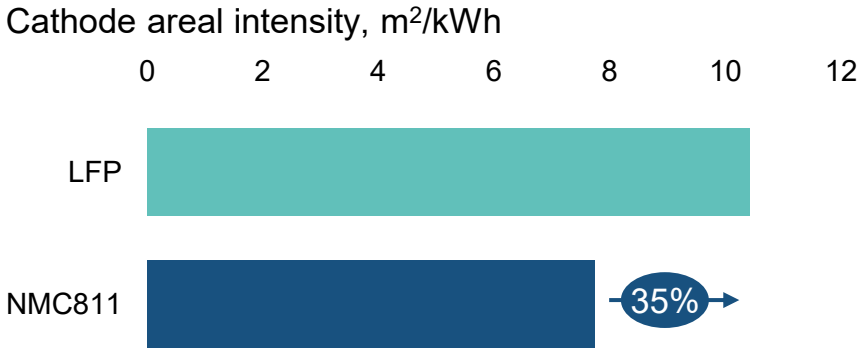
Optimising gigafactories is key to reducing LFP costs

LFP cell costs are not always cheap

Prismatic LFP prismatic power cell production cost by region and manufacturer



LFP has a low energy density



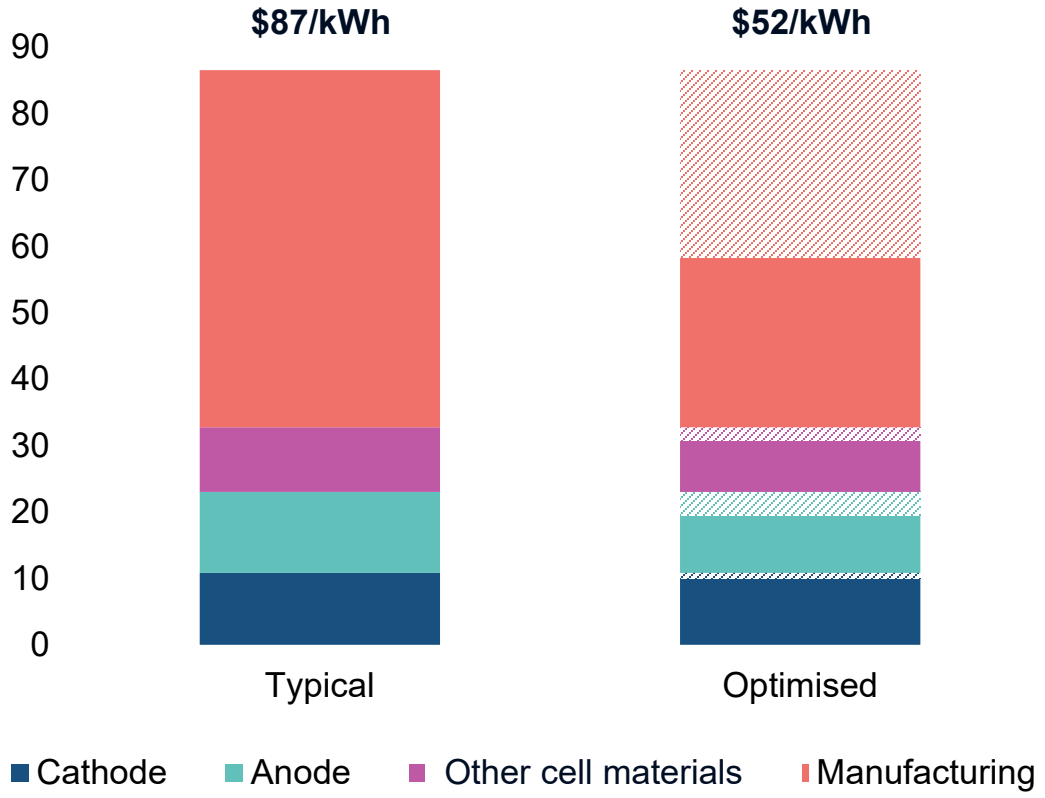
- LFP has a lower capacity, conductivity, voltage, and crystal density than NMC
- LFP cathodes are thinner and have a lower areal capacity than NMC
- Resulting in a slower kWh throughput through the same machinery, increasing labour and energy costs

SOURCE: CRU Battery Technology and Cost Service

European cells could be cost-competitive with Chinese LFP cells

Optimising cell production can achieve ultra-low cell costs, although challenging

European LFP energy cell production costs in 2025, $/kWh



	Typical	Optimised
Gigafactory capacity, GWh	40	120
Workers per GWh	200	50
CAPEX, $M per GWh	120	50
Yield	90%	98%
CAM capacity, mAh/g	150	160
CAM loading, mAh/cm^2	3	6
Cathode foil thickness, µm	15	8
AAM capacity, mAh/g	330	360
Anode foil thickness, µm	8	4.5
Cell format	Prismatic	Prismatic
Cell capacity, Ah	314	1,175

SOURCE: CRU Battery Technology and Cost Service

Key takeaways for European BESS procurers

LFP will remain the lowest-cost battery storage chemistry this decade as technology offsets rising near-term materials prices

Industry oversupply, especially in the midstream, will persist while demand scales into the medium-term, keeping ESS prices low

Europe needs scale, automation, improved yields and next-gen tech to cut cell costs and compete globally

Thank you,
Any questions?

Contact us

Dr Edward Rackley
Head of Energy Storage, CRU
Edward.Rackley@crugroup.com

Max Reid
Head of Battery Costs, CRU
Max.Reid@crugroup.com