



Aleees-KY(5227) **Company Profile**

Advanced Lithium Electrochemistry (Cayman) Co., Ltd.

2024.03



Disclaimer

The presentation provided during this briefing includes forecasts and assessments of future conditions. These statements regarding future conditions are based on the information currently available to the company, involve risks and uncertainties, and may result in significant differences between actual results and expected conditions. We remind you not to overly rely on this information. Additionally, unless required by law, the company will not be responsible for updating or announcing the results of these forecasts.



Part A

■ Company Profile

Advanced Lithium Electrochemistry (Cayman) Co., Ltd.



A Well-established LFP Company

- Aleees (TWSC: 5227), founded in 2005 with main office and factory located in Taiwan, is a lithium iron phosphate (LFP) cathode active material (CAM) manufacturer with longest history as well as an IP licensor in the world
- Aleees is also one of the few companies outside Mainland China with complete LFP battery material manufacturing technology. Our processes include in-house iron phosphate precursor synthesis making Aleees independent from Chinese supply chain. The production line is in modular design, which could also use iron phosphate from 3rd party as feedstock.
- We own 150 exclusive patents worldwide, with clienteles including world-renowned energy storage battery and EV battery clientele across Europe, US, and Asia
- Aleees co-develops various types of LFP, LMFP products with more than hundred of global clienteles, and produce high quality, cost-effective, and long cycle-life LFP cathode materials.
- In the past 19 years, Aleees LFP CAM with yield rate of 97% has been shipped from our production plant in Taiwan to Asia, America, Europe and other markets, and verified by Kyocera, GS Yuasa, 24M, Freyr Battery, FIB, etc.
- Our non-toxic production process is environmentally friendly. We have obtained major international certifications including ISO9001, ISO14001, ISO14064, IATF 16949 and corporate social responsibility AA1000 and so on.
- All Aleees products are bespoke product and will be produced in US, Europe, Australia and India. That would make global supply chain management easier. Licensees could build local supply chain and apply for local government subsidies.
- We are cooperating with global clientele and partners to form the Aleees Club, aiming to establish a localized, integrated supply network of LFP lithium-ion battery materials, to strengthen the competitiveness of the local LFP battery supply chain in the world, and to build the value and eco-friendly future together.



Management Team



Edward Chang

- Founder-
- 19 years of service
- Double carbon coating patent co-inventor



Nae-Lih Wu

- Distinguished Professor of NTU
- Electrochemical energy storage material & nanomaterial R&D
- Host of German-Taiwan SSB Material Development



Frank Tsai

- 16 years of service
- High Voltage material & multiple CAM patents inventor
- In charge of M12/M121 series & High Voltage product
- Clients: Kyocera、LGES、FIB、FREYR



Mike Huang

- 12 years of service
- Precursor patent & multiple CAM patents inventor
- In charge of A14/A19
- Lead the company to complete the GSY qualification
- Clients: GSY、Japan top car company



Allen Hsieh

- 17 years of service
- Precursor patent & multiple CAM patents inventor
- Double carbon coating patent co-inventor
- In charge of NCM R&D



Y.K Lin

- 16 years of service
- Multiple CAM patents inventor
- Double carbon coating patent co-inventor
- In charge of M23/E22(LMFP)
- Clients: SAFT、LMFP customer



Rango Kuo

- 10 years of professional background
- 6 years of service
- Extensive experience in mass production & production control
- Lead the plant to complete multiple clientele's qualification



Bing Joe Hwang

- Chair Professor of Dept. of CE & Dean of Sustainable Energy Development Center of NTUST
- Innovative nano-structure energy materials R&D
- Host of German-Taiwan SSB Material Development
- Humboldt Research Award winner (2021)
- Lifetime national chair professorship, MoE



Michel Armand

- LFP carbon coating original patent inventor
- LFP CAM commercialization contributor
- Solid polymer electrolyte R&D
- CIC energiGUNE scientific advisor
- Directeur de Recherche at Centre National de la Recherche Scientifique (CNRS)



Chunsheng Wang

- Professor of University of Maryland
- Development of advanced LIB materials
- Director of Center for Research in Extreme Batteries (CREB)
- Associate Editor: ACS Applied Energy Materials (2017~present)

R&D Team 31 people

- Highest seniority in RD: 16 years
- Average seniority: 5 years
- 150 in-house patents

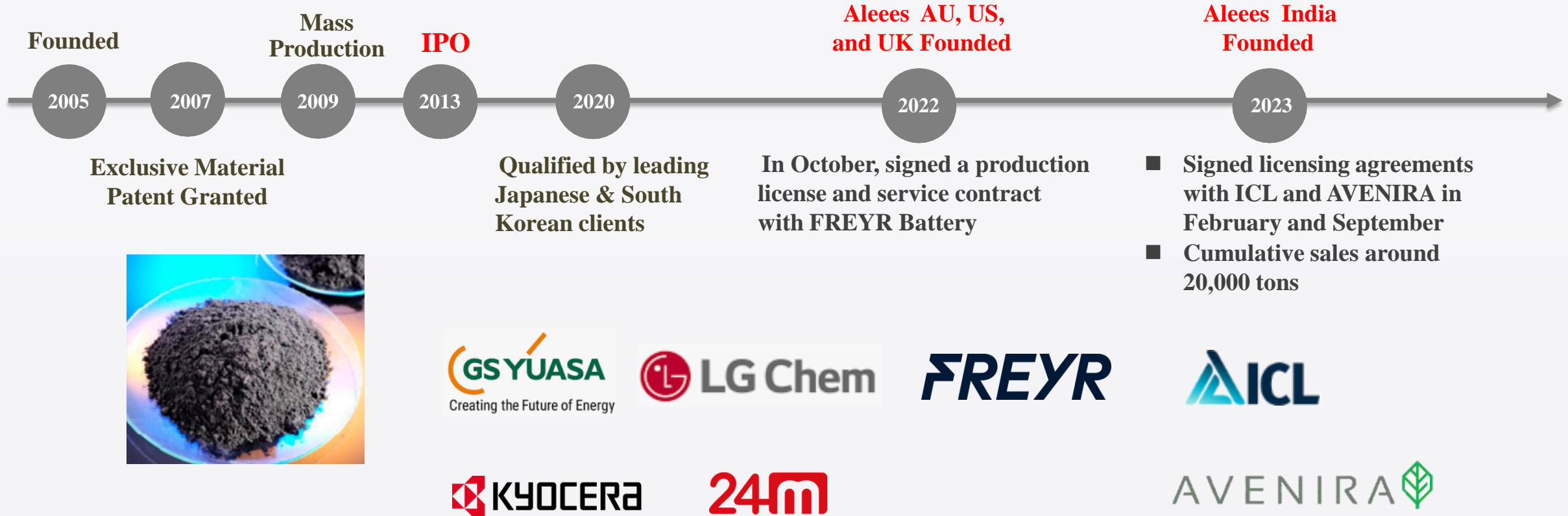
Tech & QA Team 89 people

- Highest seniority: 16 years
- Average seniority: 5 years
- Only global supplier certified by GSY for clean process



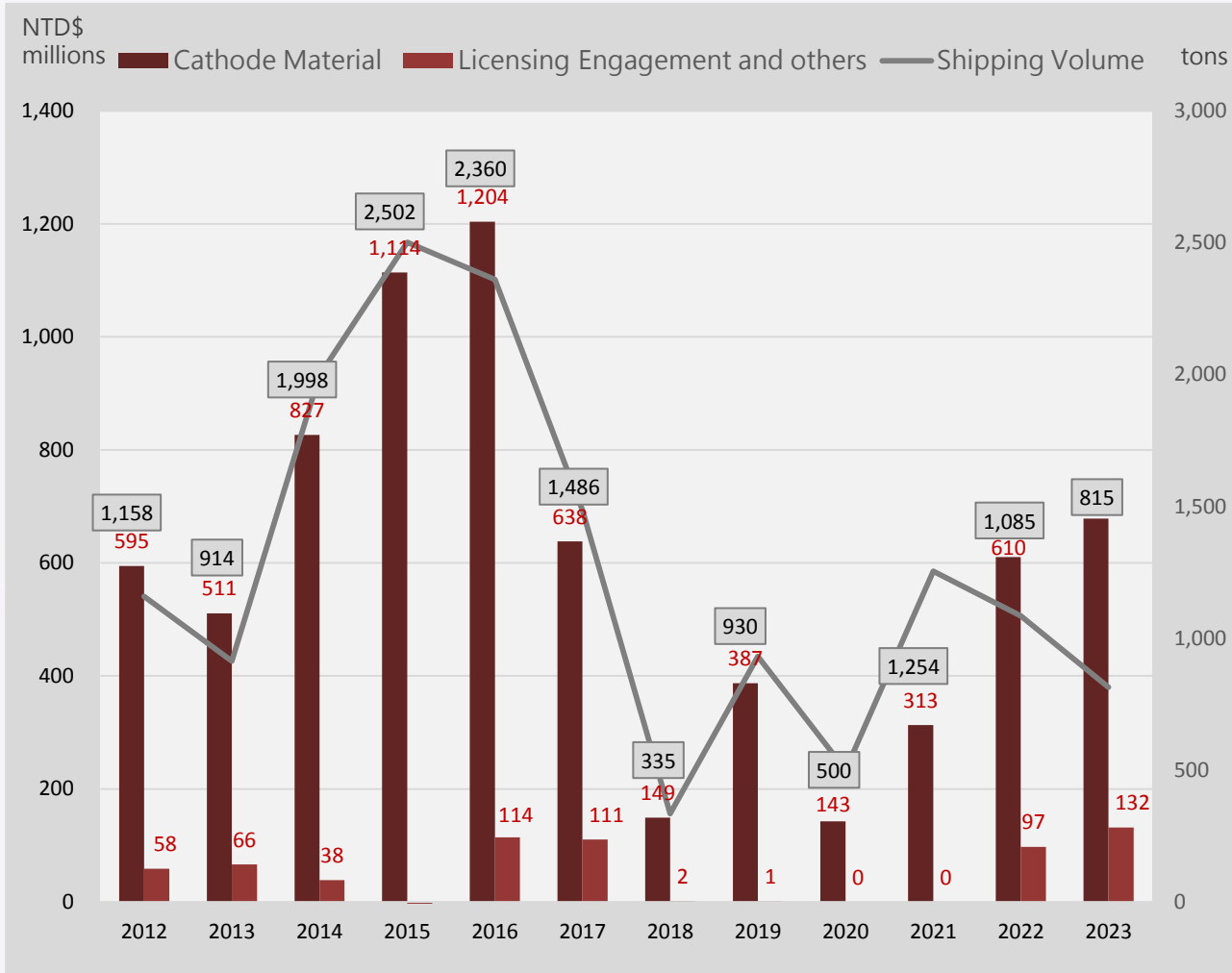
Milestones

■ Over the past 19 years, Aleees has become a state-of-the-art lithium iron phosphate (LFP) industry leader, with proprietary expertise and intellectual property





Summary of Sales Revenue



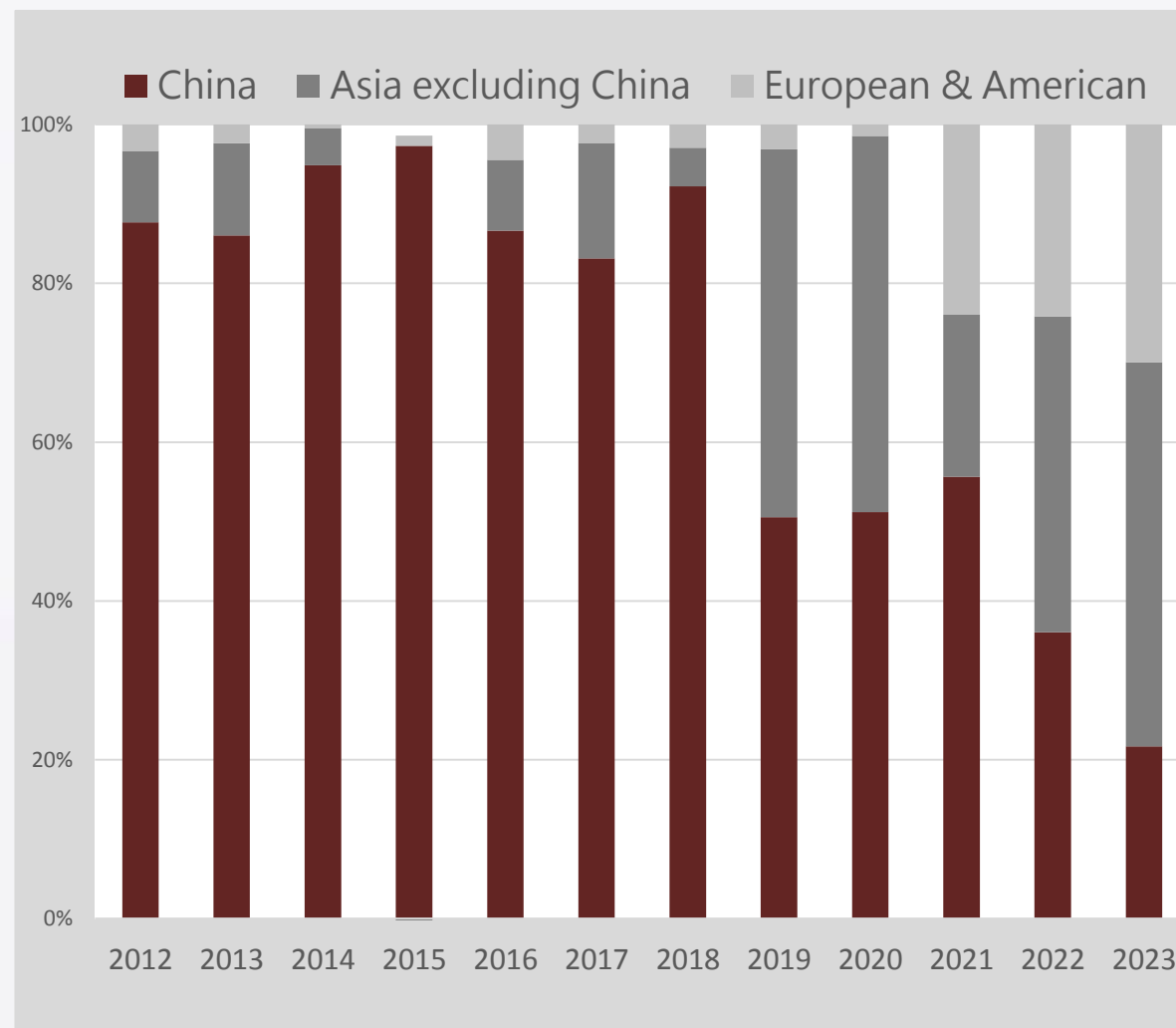
Note: Other income includes revenue from battery cells, batteries, electric buses, and demonstration operation services, etc. In 2022 and 2023, it primarily consists of licensing income.

- Before 2017, the company experienced steady revenue and shipment growth, thanks to China's new energy policies. However, in the latter half of 2016, changes in Chinese subsidy policies led to a decline in sales volume. Starting in 2018, the company actively began transitioning its focus to markets outside of China.
- Facing difficulties in fundraising and expanding its production facilities, Aleees has shifted its focus towards asset-light licensing business. In 2022, the company successfully licensed its technology to Freyr, and in 2023, it entered into a licensing agreement with ICL and AVENIRA, respectively.
- In order to reduce losses and lower the share of shipments to China from 2021 to 2023, shipment volume have been reduced. However, the company's revenue still increased due to the significant rise in lithium and CAM prices.
- While actively developing its licensing business, Aleees has seen a growing number of verification clientele. To meet the demands of these verification clientele, the company has allocated more production capacity to produce their specified products. As a result, we reduced the shipment of battery materials since 2023.



Summary of Sales Area

- Before 2018, China accounted for over 80% of the company's revenue.
- China started to reduce its subsidy to electric vehicles from 2017, after massive frauds were found in 2016.
- In 2018, the company initiated a transformation to expand into markets outside of China. In 2019, efforts were made to increase share of sales in markets like Japan and South Korea, causing China's revenue share to drop to below 55%.
- In 2021, the company successfully expanded into the European and American markets.
- In 2022, Aleees adjusted its operational model and actively expanded the licensing business, which led to a further decline in revenue in the China market, dropping below 40%. In 2023, our revenue in China declined even further to 22%. The Asia region, excluding China, accounted for approximately 48% of our total revenue, primarily driven by the increased contribution of revenue from Japan.





Summary of Income Statements

- In 2021, due to the provisioning of bad debt for the FDG, there was an increase in non-operating losses. However, in 2022, non-operating losses significantly decreased.
- We successfully licensed Freyr in 2022, and we licensed ICL in 2023. This increased the proportion of licensing fees in our revenue mix, leading to a positive gross profit margin in our business operations.
- In the first three quarters of 2023, our revenue grew by 101% compared to the same period last year. This growth can be primarily attributed to the increase in selling prices due to rising raw material costs and the recognition of ICL licensing revenue of 91 million NTD. However, in the third quarter, our operating margin was negatively impacted by a decline in market prices and high-cost raw material inventory, resulting in an operating gross loss.

Item	Year 2021		2022		2023 Q1-Q3	
	Amount	%	Amount	%	Amount	%
Total operating revenue	312,868	100%	707,524	100%	691,742	100%
Total operating costs	385,258	123%	689,375	97%	759,969	110%
Gross profit (loss) from operations	(72,390)	-23%	18,149	3%	(68,227)	-10%
Operating expenses	199,994	64%	397,865	56%	263,315	38%
Net operating income (loss)	(272,384)	-87%	(379,716)	-54%	(331,542)	-48%
Non-operating income and expenses	(286,302)	-92%	(18,383)	-3%	(19,016)	-3%
Profit (loss)	(558,686)	-179%	(398,099)	-56%	(402,413) (註)	-58%
Total basic earnings per share	(9.31)		(6.00)		(5.65)	



Part B

- **LFP Market in Europe & America**
- **Stronger-than-expected Demand**
- **Opportunities and Challenges**

Advanced Lithium Electrochemistry (Cayman) Co., Ltd.



LFP is Extensively Applied to ESS & Standard-Range EV



- The vast majority of ESS will be lithium iron phosphate (LFP) batteries. (2021/4)
- We are changing our standard range models to lithium iron phosphate (LFP) batteries. (2021/10)--Elon Musk



- LGES unveils new battery storage solutions using LFP(2022/5/18)
- Global annual battery demand will exceed 3,000 GWh by 2030 --Wood Mackenzie US (2022/03/22)

The U.S. subsidy for materials, batteries, EV, ESS

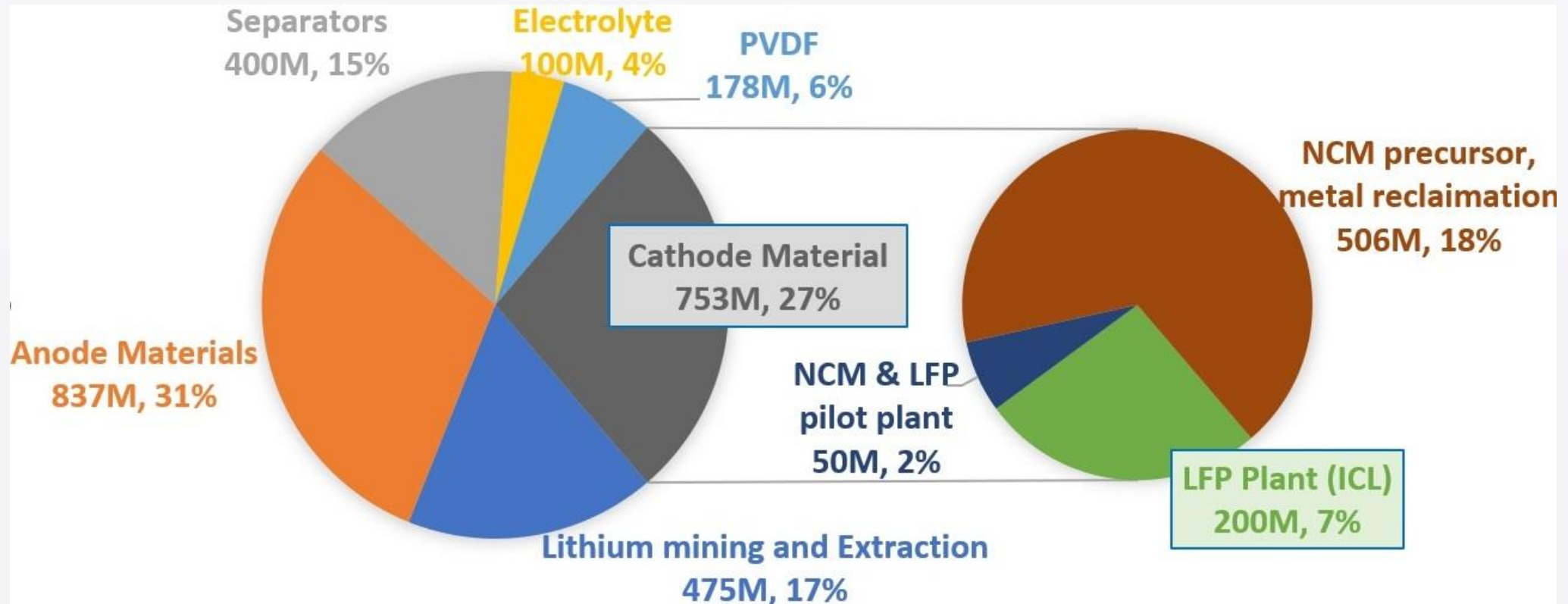


- In 2021, U.S. President Joe Biden signed an executive order to set a goal that by 2030, 50% of new cars sold should be electric vehicles or plug-in hybrid electric vehicles (PHEVs).
- The Bipartisan Infrastructure Law allocates nearly \$7 billion to strengthen the U.S. battery supply chain.
- The Inflation Reduction Act (IRA) provides \$369 billion in investment tax credits for national energy security and the fight against global warming, providing up to a 30% tax credit for products and projects produced in the United States.

Act	Scope of Application	Subsidy Content
Bipartisan Infrastructure Law	Battery materials	Investment subsidy for factory construction (less than or equal to 50% of the investment)
	Battery Manufacturing	Batteries manufactured and packed in North American gets US\$45/kWh in subsidy, plus 10% Tax Credit
IRA (Inflation Reduction Act)	EV	Maximum subsidy US\$7,500 per vehicle
	ESS	30% ITC · 10-year program till 2032

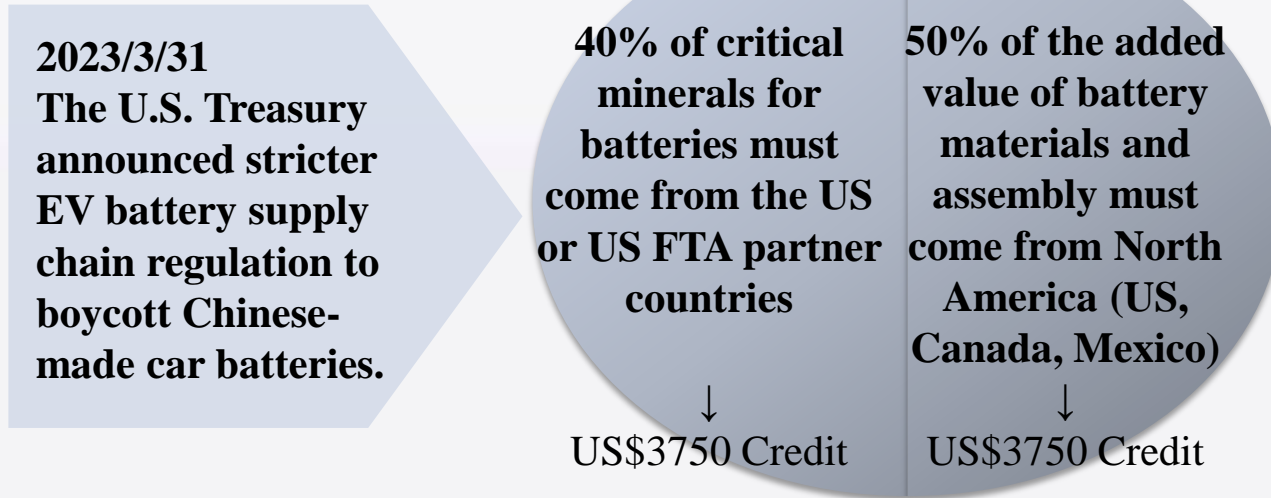
The Bipartisan Infrastructure Law Grants Subsidy to Build Battery Material Plants

- The total subsidy is US\$ 3 billion, including lithium battery materials such as lithium salts, cathode materials, anode materials, electrolytes, and separators.
- In October 2022, the first round of approval goes to 20 manufacturers, with a total of US\$2.74 billion.



The IRA Promotes Localization of EV Supply Chain

- **2023/03/21**, the NPRM published a list of eligible vehicles. This list will be continuously updated. Requirements were also established to the manufacturers—vehicles should undergo final assembly in North America, and the retail price must not exceed \$80,000 for vans or SUVs, or \$55,000 for other vehicles.
- The NPRM also explains how to meet the value-add requirements for critical minerals and battery materials. Vehicles must meet both the procurement requirements for critical minerals and battery materials to apply for a credit of US\$7,500, and vehicles that meet one of the two requirements are eligible for a credit of US\$3,750.



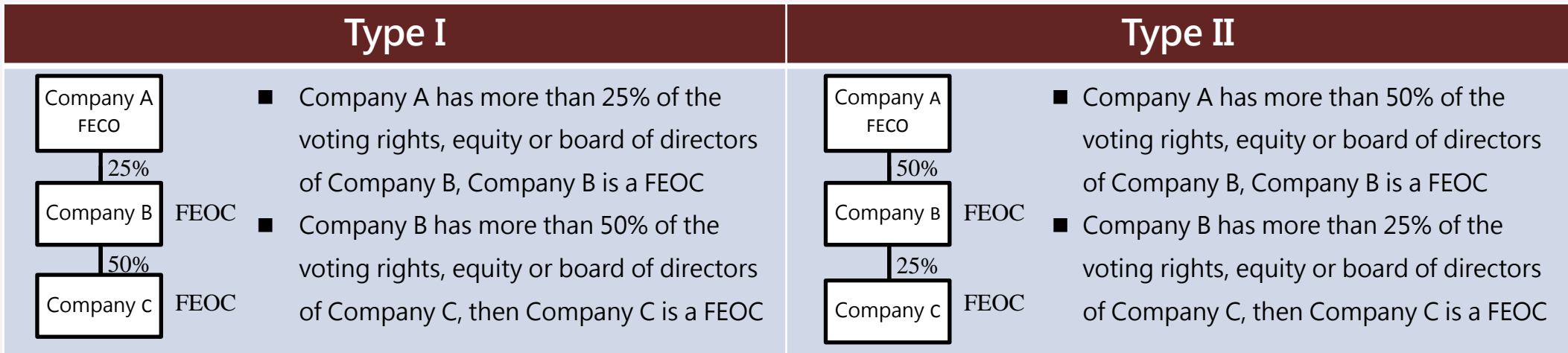
Year	Applicable percentage of the value of the critical minerals	Applicable percentage of the value of the battery components
2023	40%	50%
2024	50%	60%
2025	60%	60%
2026	70%	70%
2027	80%	80%
2028	-	90%
2029	-	100%

Reference: <https://home.treasury.gov/news/press-releases/jy1379>



The IRA Promotes Localization of EV Supply Chain

- The U.S. Department of the Treasury and the Internal Revenue Service announced the following regulations on 2023/12/01:
 - Vehicles entering service starting in 2024 may not be equipped with batteries containing battery components manufactured or assembled by FEOC
 - Vehicles entering service starting in 2025 must not be equipped with batteries containing applicable critical minerals extracted, processed or recycled by FEOC
- FEOC (Foreign Entity of Concern) definition: A foreign entity that is **owned, controlled, or subject to the jurisdiction or direction of a country of concern**
 - The covered nations: China, Russia, North Korea and the Islamic Republic of Iran
 - Subject to the jurisdiction: 1. Incorporated or domiciled or principal place of business in the above-mentioned countries. 2. Those who extract, process or recycle critical minerals and battery materials in the aforementioned countries=> **The battery contains battery components manufactured or assembled in China will be considered products from FEOC and are not eligible for tax reductions**
 - Control: 25% (**Including government shareholdings, current or former high-level politicians directly or indirectly holding board seats, voting rights or equity**)



Source: <https://home.treasury.gov/news/press-releases/jy1939>
<https://www.federalregister.gov/documents/2023/12/04/2023-26513/section-30d-excluded-entities>



U.S. updates tax credit rules and models for EV in 2024

EV Make, Model, Year	Tax credit amount	MSRP limit
Chevrolet, Bolt EUV (2022-2023)	\$7,500	\$55,000
Chevrolet, Bolt EV (2022-2023)	\$7,500	\$55,000
Ford, F-150 Lightning: Extended Range Battery (2022-2024)	\$7,500	\$80,000
Ford, F-150 Lightning: Standard Range Battery (2022-2024)	\$7,500	\$80,000
Rivian, R1S Dual Large (2023-2024)	\$3,750	\$80,000
Rivian, R1S Quad Large (2023-2024)	\$3,750	\$80,000
Rivian, R1T Dual Large (2023-2024)	\$3,750	\$80,000
Rivian, R1T Dual Max (2023-2024)	\$3,750	\$80,000
Rivian, R1T Quad Large (2023-2024)	\$3,750	\$80,000
Tesla, Model 3 Performance (2023-2024)	\$7,500	\$55,000
Tesla, Model X Long Range (2023-2024)	\$7,500	\$80,000
Tesla, Model Y All-Wheel Drive (2023-2024)	\$7,500	\$80,000
Tesla, Model Y Performance (2023-2024)	\$7,500	\$80,000
Tesla, Model Y Rear-Wheel Drive (2024)	\$7,500	\$80,000
Volkswagen, ID.4 AWD Pro, Pro S, Pro S Plus (2023-2024)	\$7,500	\$80,000
Volkswagen, ID.4 Pro, Pro S, Pro S Plus (2023-2024)	\$7,500	\$80,000
Volkswagen, ID.4 S, Standard(2023-2024)	\$7,500	\$80,000

- The U.S. IRS has updated the EV tax credit rules starting in 2024, making it easier to save money immediately when buying an electric vehicle, which is expected to drive the growth of the electric vehicle market
- Due to the IRS's new procurement and manufacturing requirements (50% critical mineral value/60% battery added value), the list of eligible models has been reduced from more than 40 models in 2023 to 17 models in 2024.
- Tesla originally expected that Model 3 RWD and Long Range could obtain a tax credit of 3,750 yuan, but the IRS announced in January 2024 that the first two models did not meet the electric vehicle tax credit rules.

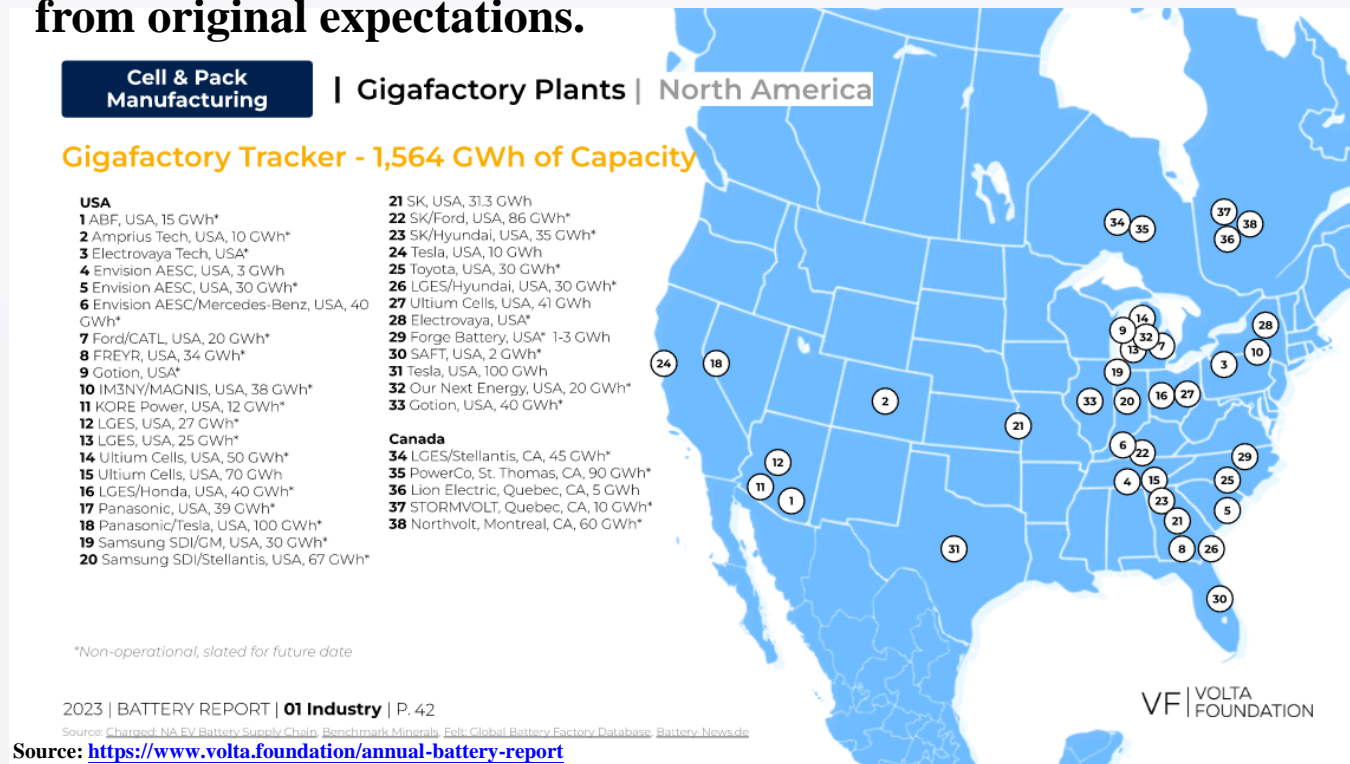
Subsidies for Battery and ESS manufacturers

- **The IRA provides subsidies for battery manufacturers as follows (effective until 2032):**
 - **Battery cell manufacturing : US\$ 35/kWh**
 - **Battery module manufacturing : US\$ 10/kWh**
 - **Additionally, a 10% Investment Tax Credit (ITC) is provided to those complying with the requirements for critical minerals and the origin of cathode and anode electrode materials.**
- **Under the Inflation Reduction Act, subsidies for energy storage system investors are enhanced: The Investment Tax Credit (ITC) for commercial and residential energy storage systems is increased to 30%, with an extended expiration date of at least 2032. Lowered tax credit will be available from 2033 to 2035.**

ITC	ESS	2020	2021	2022	2023	2024	2025-2032	2033	2034	2035	2036
Before	Business	26%	26%	26%	22%	10%	10%	10%	10%	10%	N/A
	Home	26%	26%	22%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
After	Business	26%	26%	30%	30%	30%	30%	26%	22.5%	15%	N/A
	Home	26%	26%	30%	30%	30%	30%	26%	22%	N/A	N/A

IRA incentivizes investment

- \$28 billion has been pledged for new energy factories, with projected investments of \$1.7 Trillion over the next decade.
- The demand for electric vehicles in North America is expanding, and many are following suit.
- After the IRA was announced, it is estimated that battery production capacity would increase by approximately 813 GWh. According to the latest statistics from Volta, the production capacity of 38 North American battery manufacturer super factories exceeded 1,564 GWh, nearly doubling demand from original expectations.



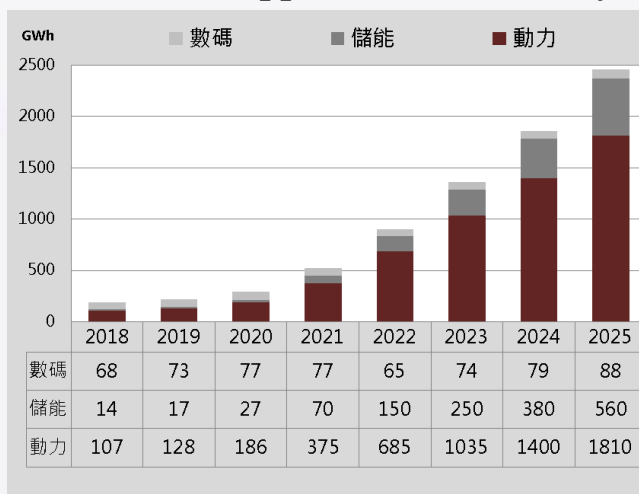
Aleees in America

- Aleees → ICL
The factory in **St. Louis**
- Aleees → Freyr & Koch
The factory in **Georgia**
- Aleees → Avenir
The factory in **Australia**

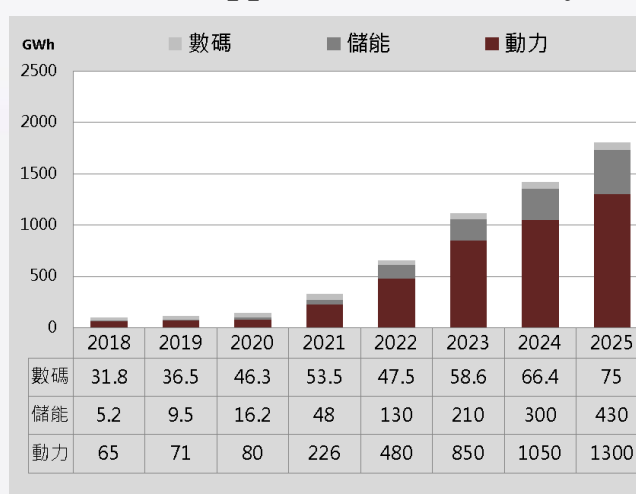
The world shipment of Lithium Battery

- In 2022, the global lithium battery shipment volume for the whole year reached 920 GWh, marking a 70% increase compared to 2021. Of this, China accounted for 658 GWh in shipments.
- The growth of the global lithium battery industry can be attributed primarily to two factors: (1) the expansion of the electric vehicle market and (2) the increased demand for energy storage batteries driven by wind and solar energy projects.
- It is anticipated that by 2025, global lithium battery shipments will reach 2,497 GWh, with the primary source of growth being the demand for power (EV and ESS) batteries.
- Lithium salt prices remain high, and lithium iron phosphate batteries (LFP) continue to offer a competitive advantage over ternary lithium batteries. In 2022, LFP held a 42% global market share in the power battery segment, and it is expected to increase to 45% globally in 2023."

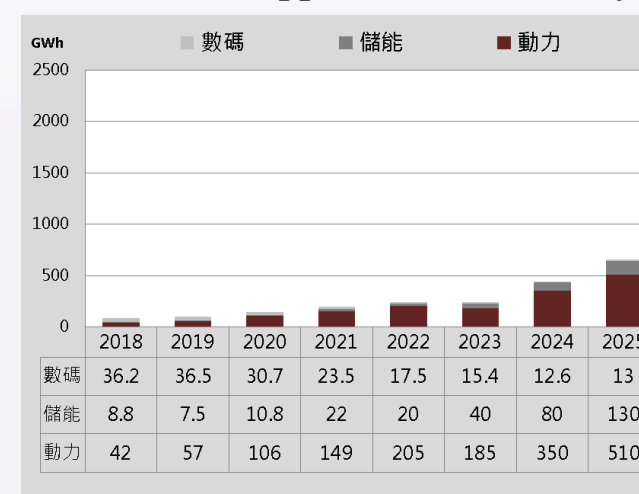
The world shipped of Li-ion Battery



China shipped of Li-ion Battery



Non-China shipped of Li-ion Battery



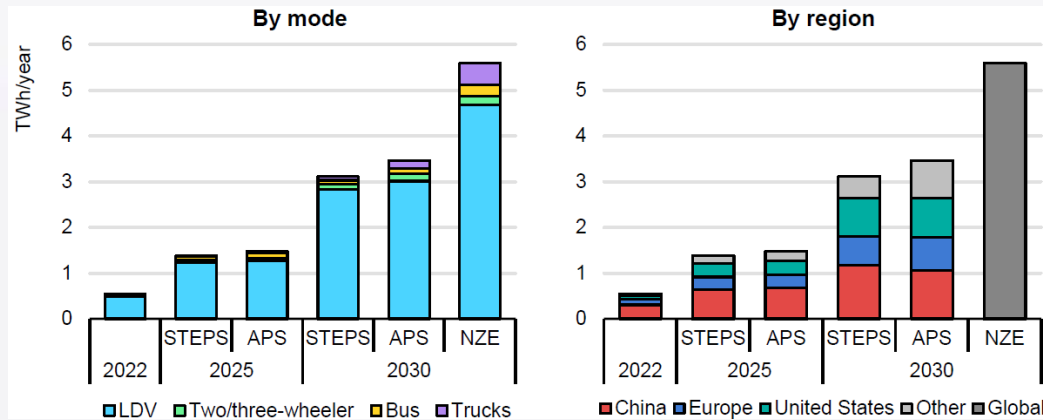
Source : GGII / Aleees · 2023.03

Note : The above figures do not include small-scale power batteries, such as those used in electric bicycles and power tools.

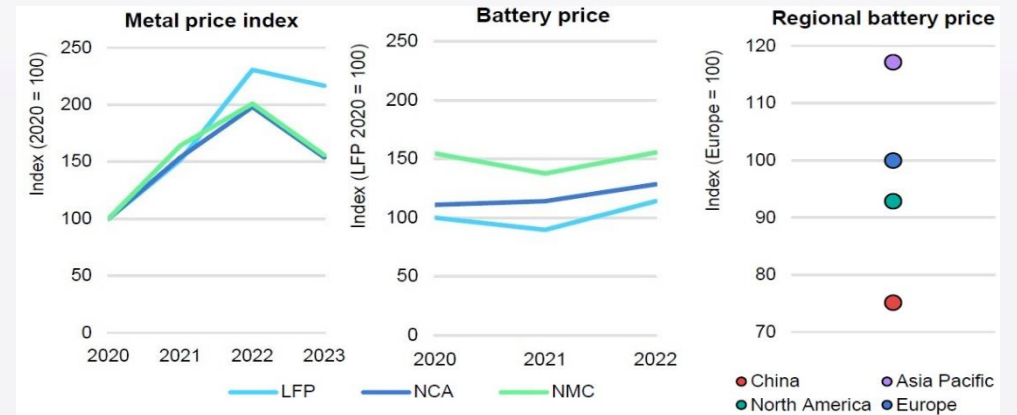
Global Auto Lithium Battery Demand & Price

- China's electric vehicle (EV) battery demand was primarily driven by government policies, resulting in a higher EV penetration rate in China. In 2022, China accounted for approximately 55% of global market demand.
- In contrast, regions outside of China, such as Europe and the United States, currently have lower EV penetration rates. However, with policy support, it is projected that the EV penetration rate in Europe will increase from 20% to 60% between 2022 and 2030, and in the United States, it will increase from 10% to 50%. The growth in penetration rates in Europe and the United States is expected to drive an increase in battery demand. Furthermore, various countries' policies favor the establishment of local battery factories, and it is anticipated that from 2025 to 2030, China's market share in the global electric vehicle battery market will decrease from 55% to 35%.
- Key materials such as lithium, cobalt, and nickel have experienced significant price increases, leading to higher battery prices. Among these materials, LFP (lithium iron phosphate) has seen relatively larger price increases, but LFP remains comparatively affordable. Battery prices are lowest in the Chinese market, while prices in Japan and Korea are relatively higher.

2022-2030 Global EV Battery Demand



2020-2023 Battery Price



資料來源：IEA · Global EV Outlook 2023

註：STEPS = Stated Policies Scenario; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario; LDV = light-duty vehicle



Three Application Scenarios of LFP

Estimated Global Lithium-Ion Battery Shipments and their LFP Content:

- Estimated global LFP usage for 2022 is around 910,000 metric tons ($685 \text{ GWh} \times 42\% + 130 \text{ GWh} \times 98.4\%$) $\times 2,200$ tons.
- Projected global LFP usage for 2025 is approximately 3 million metric tons ($1,810 \text{ GWh} \times 45\% + 560 \text{ GWh} \times 98.4\%$) $\times 2,200$ tons

Source:GGII / Aleees · 2023.03



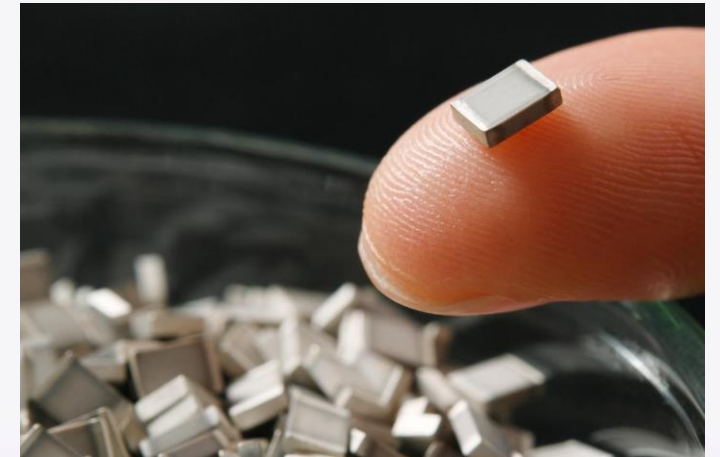
EV

- Major automakers plan to use LFP for "standard range" vehicle models with a range of up to 500 kilometers.



ESS

- LFP has taken over 95% of the energy storage market.



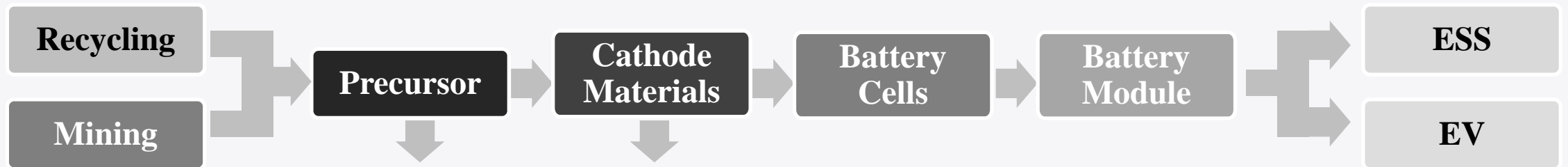
Solid-State and Semi-Solid-State Batteries

- High-energy-density semi-solid-state and all-solid-state batteries contribute to the market share of LFP/LMFP materials.



The scarcity of LFP battery material manufacturers outside of China

- Outside of China, there were 14 major lithium iron phosphate (LFP) producers with substantial production capabilities in 2010. Today, only two remain. Among the 12 companies that exited the market were significant players like BASF and Sony.
- An astounding 99% of global production capacity is now concentrated in China, fostering the growth of several thriving large-scale enterprises. Notably, companies like Dynanonic (SZ:300769) have flourished, enjoying high market value.
- Survivors beyond China's borders include Taiwan's Aleees (TWSE: 5227) and Japan's Sumitomo Metal Mining (Tokyo: 5713)



Type of Manufacturer	LFP/LMFP	NCM
Precursor Manufacturing	95% of China's LFP material manufacturers lack precursor manufacturing capabilities.	China-based manufacturers control 70% of the global production of NCM precursor and its upstream raw materials.
Cathode Material Manufacturer	Aleees & Sumitomo possess full-process manufacturing capabilities from precursors to cathode materials.	Sumitomo Metal Mining, Nichia, Toda Kogyo, AGC Seimi, Chemical, L&F, EcoPro, Umicore, BASF, etc.



Part C

Aleees enters a new era in its LFP strategy

Advanced Lithium Electrochemistry (Cayman) Co., Ltd.



Aleees's Core Competitiveness

Innovations

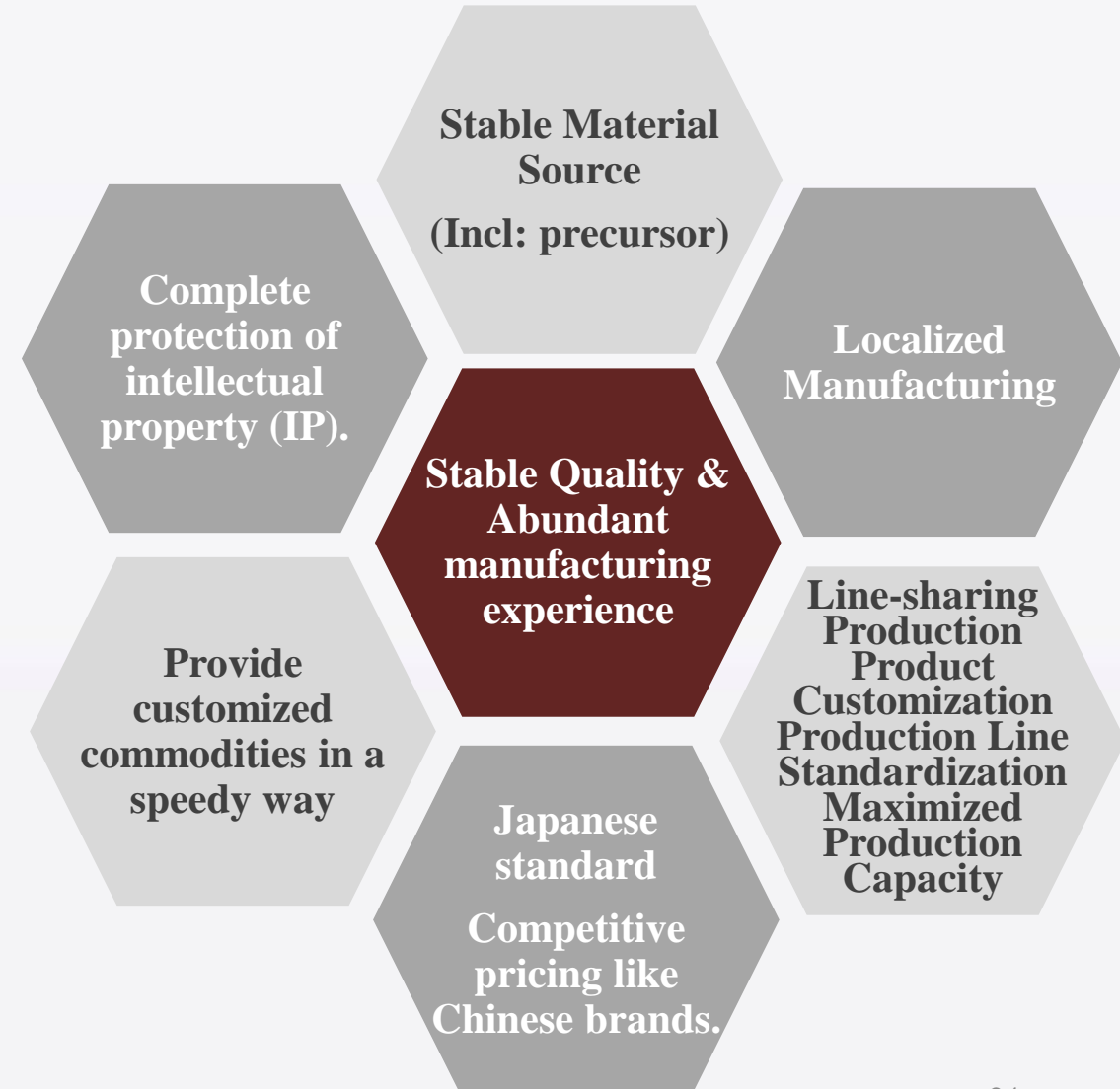
- Unique nano co-crystal structure
- Double carbon layers technic
- Nano wet-process precursor technology is currently employed by only three companies: Aleees, Dynanonic, and Sumitomo Metal.
- 3 major core technologies, safeguarded by over 150 global patents.

Performance

- High gravimetric capacity: > 160 mAh/g
- High-rate capability: Cold start at -40 °C
- High energy density: Electrode compacting density > 2.5 g/cm³
- Battery lifespan: > 10 years

Quality

- Metal magnetism impurities content < **24 ppb**
- IATF16949
- VDA6.3 system
- Certified for GS Yuasa automotive products
- Certified for 24M energy storage products





Product Table

Series		A & E series				M series			
Model		A14	A19	A20	E22 (LMFP)	M23	M121	M18	M12
Product Features	Surface area (m ² /g)	11~15	6.5~8.5	7~9	24±2	11~15	11~15	8~12	10~14
	Particle size D50 (μm)	4~7	9~13 (4~7)	9~13	11±2	2~6	2~6	1~4	2~6
	Carbon content (%)	1.2~1.7	0.9~1.1	1.1~1.6	2.1±0.1	1.3~1.7	1.1~1.6	1.1~1.5	1.0~1.5
	0.1C discharge capacity (mAh/g)	160±3		≥ 157	145±3	160±3	153±3	≥ 156	155±3
	Tapped density (g/cm ³)	0.8~1.2	1.4~1.6	1.7~1.9	-	-	-	-	-
	Pellet density (g/cm ³)	-	-	-	-	2.2~2.3	2.3~2.4	2.3~2.4	2.3~2.4
	Rate capability	++++	++	+	++++	+++	+	+	+
	Low Temp. Discharge	++++	++	+	++++	+++	+	+	+
Particle morphology		Spherical				Pulverized			
Suggested Electrode Slurry system		NMP based	NMP based or Water based		NMP based	NMP based	NMP based	NMP or Water based	
Suggested applications		<ul style="list-style-type: none"> • Premium 12V car starter battery • Idle-stop battery • Military & Space 	<ul style="list-style-type: none"> • Medium range xEVs • Standard 12V car starter battery • Energy storage • Low cost 		<ul style="list-style-type: none"> • Medium to Long range xEVs • Blending with Ni-rich NCX 	<ul style="list-style-type: none"> • Medium range xEVs • Stationary ESS • Industry vehicle • Military & Space 	<ul style="list-style-type: none"> • Medium range xEVs • Stationary ESS • Industry vehicle • Low cost 		



Clientele development status in 2023

- LFP batteries are not standard products, and each customer typically requires 3-5 years for customization. The product lifecycle can be extended up to 20 years.
- As of now, Aleees has a total of 78 effective customers, with 47 of them being major clientele, among which 8 have progressed to the stage nearing mass production (Phase 3 and Phase 4).
- The number of major clientele in the United States has increased by 8, including 2 major US automakers. Europe has added 3 clientele, including 1 major European automaker. South Korea has added 2 clientele, including 1 major South Korean automaker. The Southeast Asian region is actively expanding the Indian market and has added 4 major Indian clientele. The end applications of each clientele cover fields such as energy storage, electric vehicles, electric trucks, and solid-state batteries, and most of the clientele are internationally renowned companies. The end clientele and sales markets are spread all over the world.

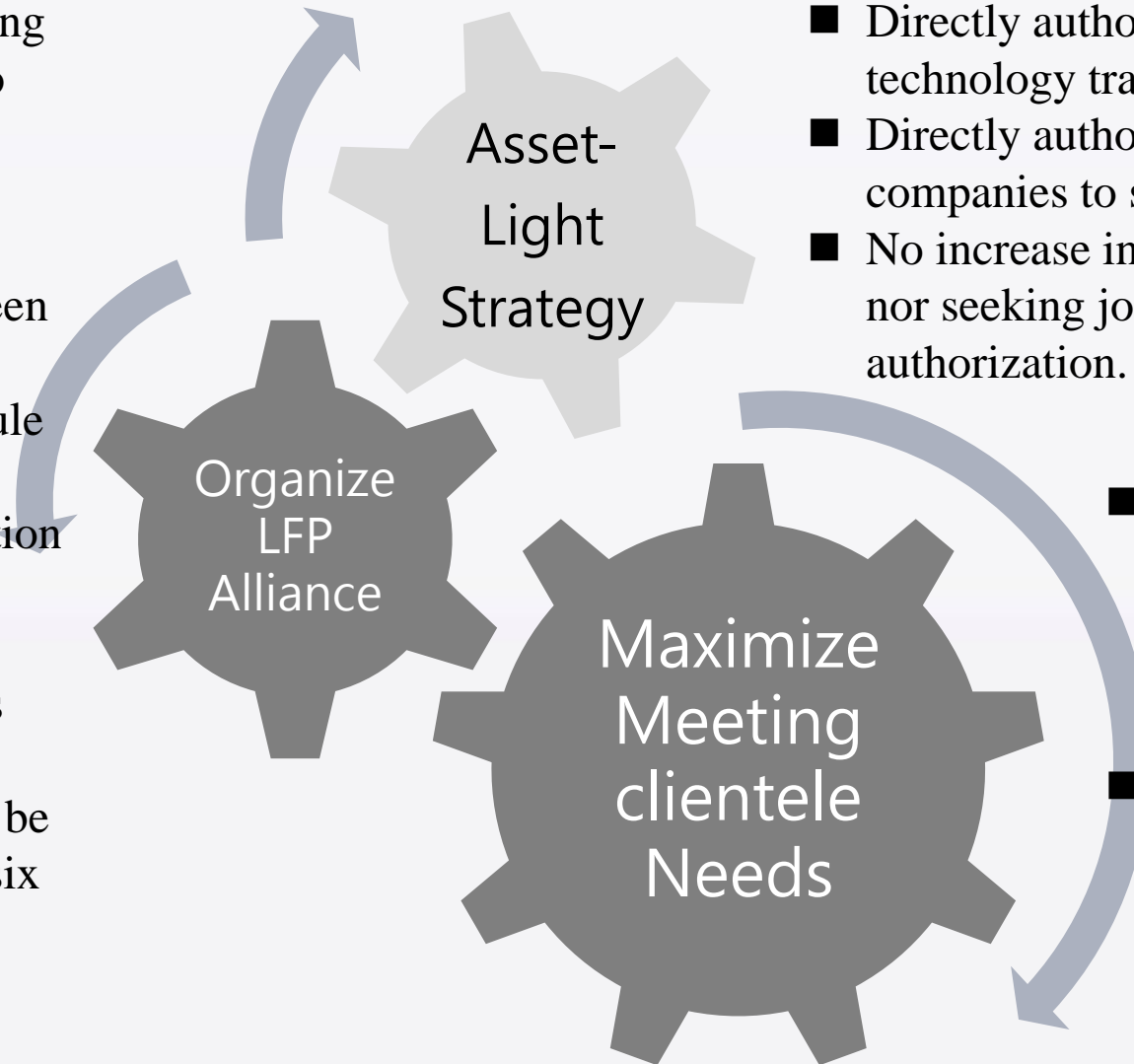
應用項目	2021	2022/05	2023/01	2023/09	2024/01
ESS & EV	3	13	21	19	18
ESS only	9	8	5	14	7
EV only	5	20	12	13	19
ESS & Industrial Mobility	-	-	1	2	1
Chemical Company					2
Total	17	41	39	48	47

Note: The company's clientele verification process is divided into four phases, which are explained as follows:
Phase 1 and Phase 2 clientele are in the small-scale sample testing and laboratory production stage.
Phase 3 :Produce samples greater than 1000kg of consecutive 3 times
Phase 4 :Formal mass production and supply



Comprehensive Transformation into an LFP Intellectual Property Provider

- Aleees in Taiwan are pioneering clienteles and are dedicated to R&D for global clienteles.
- Establishing products IP and expanding the IP capabilities.
- Production verification has been achieved in the 2,500-ton foundational production module plant.
- Models with clientele production certification are eligible for direct technology transfer, including product and process technology equipment.
- Battery client revaluation can be rapidly accomplished within six months.



- Directly authorize lithium battery clients for technology transfer.
- Directly authorize specialized chemical companies to supply lithium battery clients
- No increase in self-owned factory capacity, nor seeking joint ventures in exchange for authorization.
- Our goal is to nurture 7 ~ 8 manufacturers each with an annual production capacity of over 100,000 metric tons each in the future.
- This aims to mitigate the significant business risk of excessive reliance by European, American, and Asian clients on foreign LFP sources.



Patent and Technology License Fee

Program	License Fee
Main contents	USD 5M (signing down payment in cash) +Running royalty (Payment of measurement per kg or sales amount of LFP or LMFP global production until 2041) If Licensee requests each additional product type license of manufacturing and technology, Aleees will charge an additional USD 2M (payment in cash) for each product type.

Model A	
Annual production quantity	Running royalty (USD)
Less than 30,000 MT	USD 0.5/ per kg
30,001 MT to 50,000 MT	USD 0.4/ per kg
More than 50,001 MT	USD 0.3/ per kg

Model B	
Annual sales quantity	Running royalty (USD)
Less than 15,000 tons	2.0 % X Sales amount
15,001 tons to 30,000 tons	1.8% X Sales amount
30,001 tons to 90,000 tons	1.6% X Sales amount
More than 90,001 tons	1.4% X Sales amount

Our Licensees Progress

NO	Licensees	Progress
1	Freyr	1. 2023.02 : An environmental assessment report for the annual production of 20,000 to 60,000 tons of LFP cathode materials was submitted in Vaasa, Finland 2. 2024.01 : An environmental assessment report was submitted to the EU.
2	ICL	1. 2023.08 : Groundbreaking ceremony for the LFP cathode materials plant held in St. Louis 2. It is projected that the first phase of production, with an annual capacity of 15,000 tons of LFP cathode materials, will be completed by 2024. By 2025, the combined annual production capacity is expected to reach 30,000 tons of LFP cathode materials
3	Avenira	1. It is projected that the first phase of production, with an annual capacity of 10,000 tons of LFP cathode materials, will be completed by 2026. By 2028, the combined annual production capacity is expected to reach 30,000 tons of LFP cathode materials



24M revolutionary semi-solid-state battery technology

24M revolutionary semi-solid-state battery technology

- Without multi-layer stacked electrode , Coating thick electrodes to increase energy density
- Solid-state batteries with no binder offer "greater safety and longer cycle life."
- The production process requires only 5 steps (compared to the traditional 13 steps), significantly reducing production costs.
- The cost of battery cells is reduced by 25-40% compared to traditional batteries.
- The original 24M team comes from A123.
- 24M licenses technology to international companies for cell production
Kyocera 、 Freyr 、 Koch 、
GPSC 、 Lucas TVS
- Aleees' LFP material is the optimal choice for 24M
 - ✓ Selling materials : Kyocera 、 GPSC 、 Lucas TVS
 - ✓ Licensees : Freyr



Cell Pack 大型儲能及家用儲能



24M partners and investors

Industrial Investors



Volkswagen/German
(VW acquired a 25% stake)



KYOCERA/Japan



Fujifilm/Japan



Freyr/Norway



ITOCHU/Japan



GPSC/Thailand



Lucas TVS/India



KOCH/America

Financial Investors



CHARLES RIVER
VENTURES

Charles River Ventures/America

NORTH BRIDGE
venture partners

North Bridge Venture Partners/America



SPARX/Japan



Our Licensees : FREYR (NYSE: FREY)

Shareholders composition :

Name	%
Koch Industries Inc	8.23%
Tore Ivar Slettemoen	6.01%
Torstein Dale Sjøtveit	5.82%
Handelsbanken Fonder AB	4.16%
Encompass Capital Advisors LLC	3.89%
Daniel L. Barcelo	3.49%
Electron Capital Partners LLC	3.04%
Candlestick Capital Management LP	2.51%
Southpoint Capital Advisors LP	1.79%
BNP Paribas Asset Management UK Ltd.	1.56%

Market Focus:

- Primarily target the growing EV and ESS markets by utilizing low-cost hydro and wind energy, along with the licensed 24M semi-solid-state technology, to manufacture cost-effective and low-carbon footprint batteries.
- Plan to achieve 50 GWh production capacity by 2025, 100 GWh by 2028, and 200 GWh by 2030.

Simplified Balance Sheet :

US\$ Thousands	2023	2022	2021
Total Assets	\$ 732,185	\$ 827,698	\$ 627,033
Total Liabilities	\$ 97,469	\$ 107,571	\$ 81,548
Total Equity	\$ 634,716	\$ 720,127	\$ 545,485

For the Year Ended December 31,

US\$ Thousands	2023	2022	2021
Operating expenses:			
General and administrative	\$ 108,133	\$ 107,357	\$ 61,755
Research and development	28,457	13,574	13,816
Restructuring charge	6,016	—	—
Share of net loss of equity method investee	379	1,557	62
Total operating expenses	142,985	122,488	75,633
Loss from operations	(142,985)	(122,488)	(75,633)
Other income (expense):	70559	23369	(17,745)
(Loss) income before income taxes	(72,426)	(99,119)	(93,378)
Income tax expense	(670)	—	—
Net (loss) income	(73,096)	(99,119)	(93,378)
Net loss attributable to non-controlling interests	1,151	328	—
Net (loss) income attributable to stockholders	\$ (71,945)	\$ (98,791)	(93,378)



Our Licensees : FREYR (NYSE: FREY) (Cont'd)

- FREYR successfully redomiciled from Luxembourg to the U.S. effective December 31, 2023, FREYR to better respond to global tax developments and U.S. incentive programs for battery manufacturers
- Projects based on both 24M SemiSolid platform and potential conventional technology agreements totaling more than 100 GWh of production capacity in the U.S. and Europe.
- Possibility to produce both LFP and NMC cells
- End markets include ESS and passenger EV applications

Giga Arctic:

- Vaasa: Freyr and the Finnish Minerals Group have jointly invested in establishing a 20,000 to 60,000-ton LFP material plant. It applied for environmental assessment to the Finnish government in February 2023 and to the European Union in January 2024.
- In Norway, a 29 GWh battery plant has secured a financial commitment of 16 billion euros from the Norwegian government
- In July 2023, the company received a 100 million euro grant from the European Union's Innovation Fund to support FREYR's Giga Arctic project
- Producing functional sample cells for key customers using the full automation of the CQP in H1 2024 is priority

Giga America:

- Freyr has purchased 368 acres of land in the Bridgeport Industrial Park, Georgia for 38 GWh annual capacity.
- They are expecting to receive a total of \$410 million in financial subsidies from the Georgia state government and Coweta County
- The IRA provides tax credit up to \$1.4 billion per year for this project .
- The net present value (NPV) of this investment is estimated to be \$8 billion, with a substantial contribution of up to \$3 billion from the IRA.
- FREYR Battery Receives Invitation from U.S. Department of Energy to Submit Part II Application for Giga America Title 17 Loan
- FREYR successfully redomiciled from Luxembourg to the U.S. effective December 31, 2023



Our Licensees : FREYR (NYSE: FREY) (Cont'd)

Partner:



The news of U.S. Gigafactory:

- [Freyr purchases land in Georgia for battery plant](#) 11/14/22
- [FREYR Battery Announces Plans for U.S. Gigafactory in Georgia](#) 11/11/22
- [FREYR and Koch Strategic Platforms to build 50 GWh battery plant](#) 11/5/22
- [Koch Strategic Platforms in JV to develop 50GWh battery cell factory in US](#) 10/13/21
- [FREYR Battery Receives Invitation from U.S. Department of Energy to Submit Part II Application for Giga America Title 17 Loan](#) 12/18/23

Customers:

- [FREYR Battery Targets Strategic Coalition with Four Major Global Partners, includes Glencore Plc, Caterpillar Inc, Siemens AG, and Nidec Corporation](#)
- [FREYR Battery signs 10 GWh plus battery agreement with Impact Clean Power](#)
- [Battery startup Freyr signs \\$3 billion supply deal with Nidec](#)
- [FREYR secures 28.5GWh offtake deal with Powin Energy](#)
- [FREYR signs 19GWh offtake agreement with Honeywell for the period 2024-2030](#)
- [FREYR Battery expands gigafactory plan amid pledge of support from Norway's government](#)



Our Licensees : ICL (NYSE: ICL)

Shareholders composition :

Name	%
Israel Corporation Ltd	44.0%
Migdal Markefet Pension & Provident Funds Ltd	5.77%
Harel Provident Funds Ltd	5.07%
Altshuler Shaham Provident Funds & Pension Ltd	4.76%
The Vanguard Group, Inc	1.34%
Excellence Investments Ltd	0.96%

Simplified Balance Sheet :

For the Year Ended
December 31,

US\$ million	2023	2022	2021
Sales	7,536	10,015	6,955
Gross profit	2,671	5,032	2,611
Operating income	1,141	3,516	1,210
Income before taxes on income	974	3,404	1,092
Net income attributable to the shareholders of the Company	647	2,159	783
Statements of Financial Position Data:			
Total assets	11,627	11,750	11,080
Total liabilities	5,590	6,037	6,344
Total equity	6,237	5,713	4,736

Market Focus

- Industrial Products :
- Potash :
- Phosphate Solution
- Innovative Agricultural Solutions

Project Gigafactory America

- Partner: Aleees
- Focus on EV & ESS market
- ICL is investing \$400 million to establish the United States' first large-scale LFP materials factory, planned to locate in St. Louis, Missouri.
- This initiative will benefit from a subsidy of \$197 million through the U.S. Bipartisan Infrastructure Law.
- The first production line is projected to be completed by 2024, with an annual output of 15,000 metric tons.
- The second production line is anticipated to be finished by 2025, contributing to a total annual capacity of 30,000 metric tons.



Our Licensees : ICL (NYSE: ICL)

“Driving an electric vehicle is much better for the environment,” **U.S. Secretary of Energy Granholm** said. “We want to get the full supply chains here, and that includes responsible extraction of critical minerals in addition to finding alternatives to the critical minerals that are difficult to obtain in the United States.”

News :



[ICL to Lead Efforts in U.S. to Develop Sustainable Supply Chain for Energy Storage Solutions, with](#)

[\\$400 Million Investment in New Lithium Iron Phosphate Manufacturing Capabilities](#)

[Energy secretary touts plan to produce electric vehicle component in St. Louis](#)

[US energy secretary lauds \\$400M St. Louis battery factory in efforts against climate change](#)

[ICL Breaks Ground on \\$400 Million Battery Materials Manufacturing Plant in St. Louis](#)

Our Licensees : Avenira (ASX: AEV)

Company Profile :

- Avenira is a battery cathode and fertilizer focused project developer, aiming to supply premium quality products into the electric vehicle, agricultural and industrial chemical markets.
- The Wonarah Project is one of the largest high-grade Phosphate rock deposits in Australia. Feedstock from the Wonarah Phosphate Project will enable the production and sale of THREE highly valuable product streams:
 - ✓ Fertiliser markets
 - ✓ Thermal Grade Phosphoric Acid (TPA)
 - ✓ LFP Cathode Active Material (LFP)LFP
- The materials for LFP include lithium, phosphoric acid, and iron. Australia supplies approximately 50% of the world's Lithium ° Avenira has the capability to develop phosphate and possesses rights for phosphate mining. Additionally, it can source lithium locally, providing a significant cost advantage.
- It is projected that the first phase of production, with an annual capacity of 10,000 tons of LFP cathode materials, will be completed by 2026. By 2028, the combined annual production capacity is expected to reach 30,000 tons of LFP cathode materials

Northern Territory & MASDP :

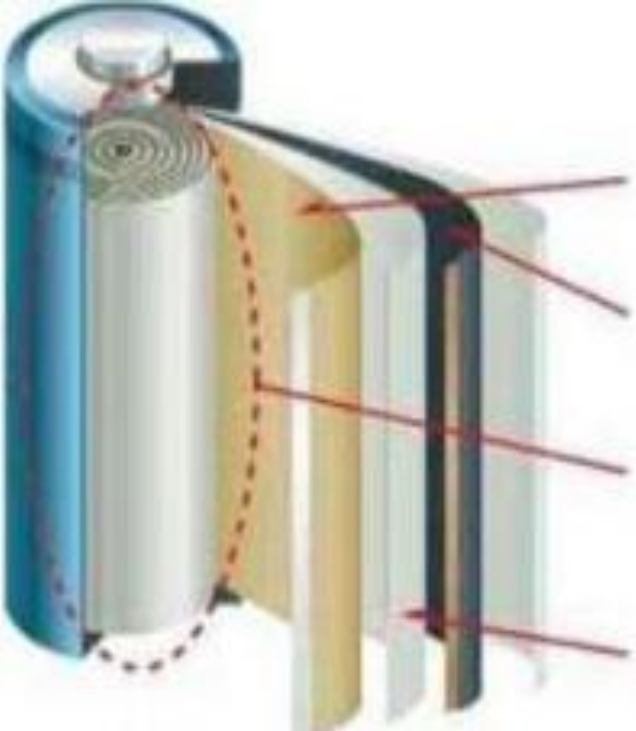
- The Northern Territory, also known as the Northern Territory of Australia or simply the NT, is an autonomous territory of Australia. Its capital city is Darwin, and it is one of the excellent harbors in the northern of Australia.
- The Northern Territory government has provided a 9-hectare land lease to ensure Avenira's requirements for building an LFP plant are met. This LFP plant will be constructed in the Middle Arm Sustainable Development Precinct (MASDP), which is approximately a 30-minute drive from the central business district of Darwin. MASDP is a government-developed industrial and commercial mixed-use area with convenient transportation and logistics infrastructure.





The Long-Term Strategy

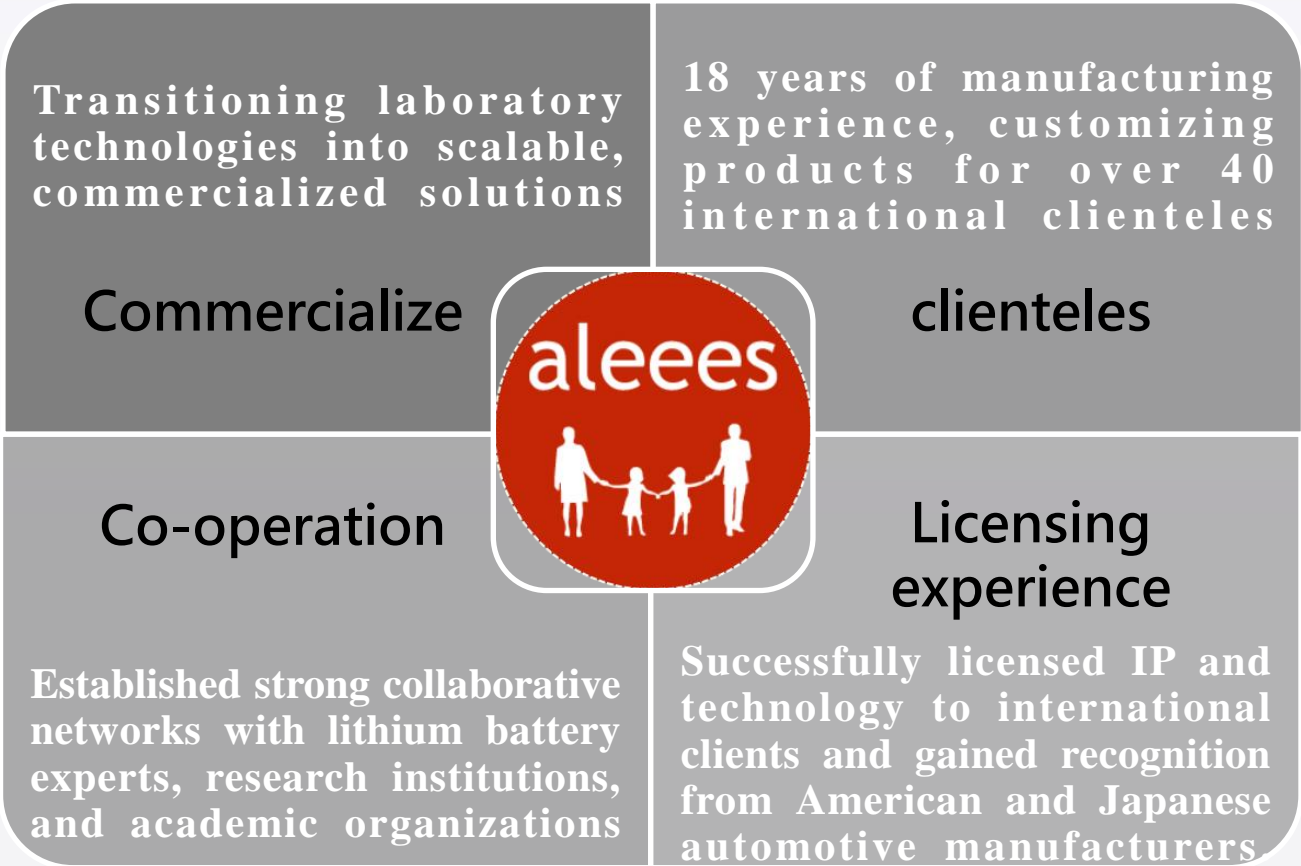
Battery Structure



<u>Material</u>	<u>Cost %</u>
Cathode	45%
Anode	10%
Electrolyte	10%
Separator	10%
Others	25%

Source : Fubon / Aleees

Integrating the IP platform and clienteles to create maximum profit together





The Long-Term Strategy



Platform of Battery materials IPs

Flexible product / process verification line

Satisfy clientele

Source of technology :



Individuals



R&D Institutions



Academic Institutions



Startups



Enterprises

We will expand into patents for anode, cathode, electrolyte and separator, covering a wide range of battery material patents. We will commercialize the patented content to satisfy clientele

Aleees integrates various patents from different units and commercializes them to meet clientele



Aleees

License

Licensees
who are interested in manufacturing battery materials

Manufacturing by Licensees to meet clientele demands

Collaborating with clientele to develop products

SELL

More than 40 international clientele worldwide, and the number is continuously increasing

End users :



1.EV



2.ESS



3.Mobile/NB



4.Airplane



5.Army



6.Medical



THANK
YOU