

aleees



立凱電

# Investor Conference

This is a translation version, and this version is intended for reference only.  
The Chinese version shall govern all matters stated herein.

## Safe Harbor Statement

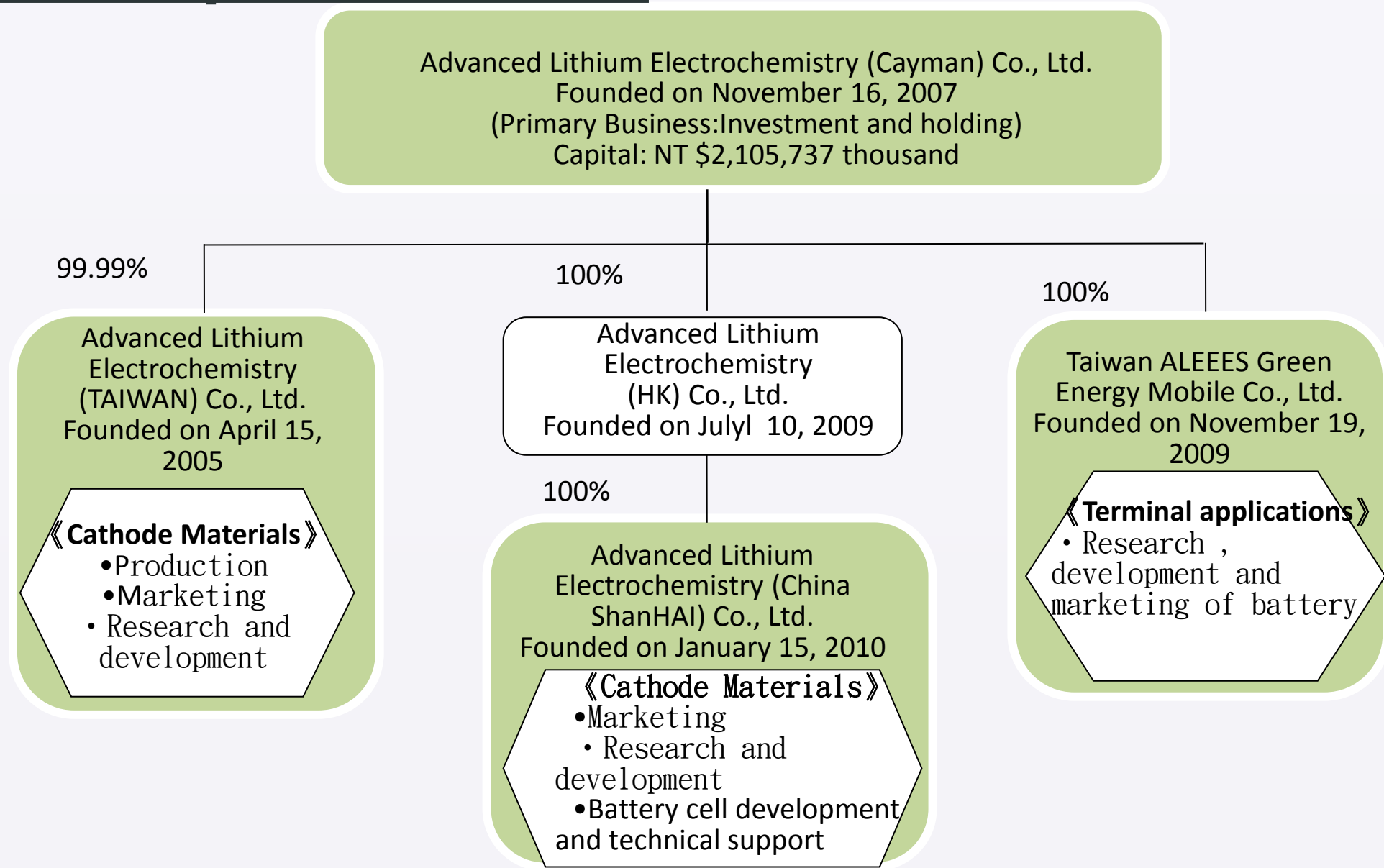
This following presentation may include predictions, estimates or other information that might be considered forward-looking. These forward-looking statements are based on information available to Aleees as of the date of this conference and current expectations, forecasts and assumptions, and involve a number of risks and uncertainties that could cause actual results to differ materially from those anticipated by these forward-looking statements. You are cautioned not to place undue reliance on these forward-looking statements and please keep in mind that except as required by law, we are not obligating ourselves to revise or publicly release the results of any revision to these forward-looking statements.



# Company Profile

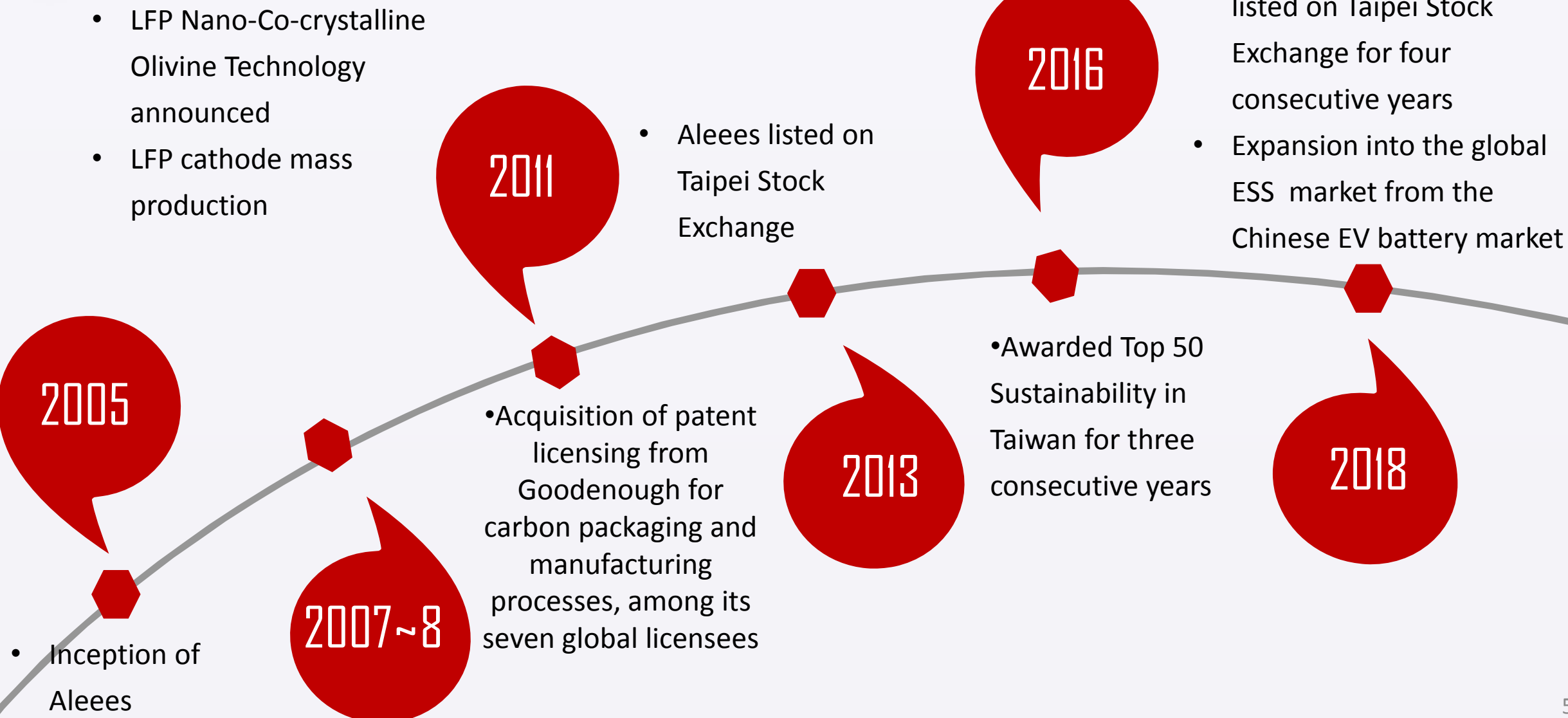


# Group Structure





# Company History







# About Aleees

## Cycle

State-of-the-art carbon packaging

Cathode with the longest cycle



## Products

Cathodes -- LFP and NCM

## Advantages

Long cycle, high quality and consistency, customized specifications offered. 192 global patents: 107 internally developed, acquisition of 85 globally licensed patents from the headquarters of the licensors

## Applications

NEV battery cells, storage systems, start/stop systems in replacement of lead acid batteries

## International Clientele

Certified by customers from China, Japan, Korea, Europe and the U.S.



# Competitive Advantages



# Aleees' Strength

**Long  
cycle**

- Longest cycle in the industry
- Free from SUS impurity

**Patents**

- In-house developed patents and IP protection
- Global patents

**AI+  
automation**

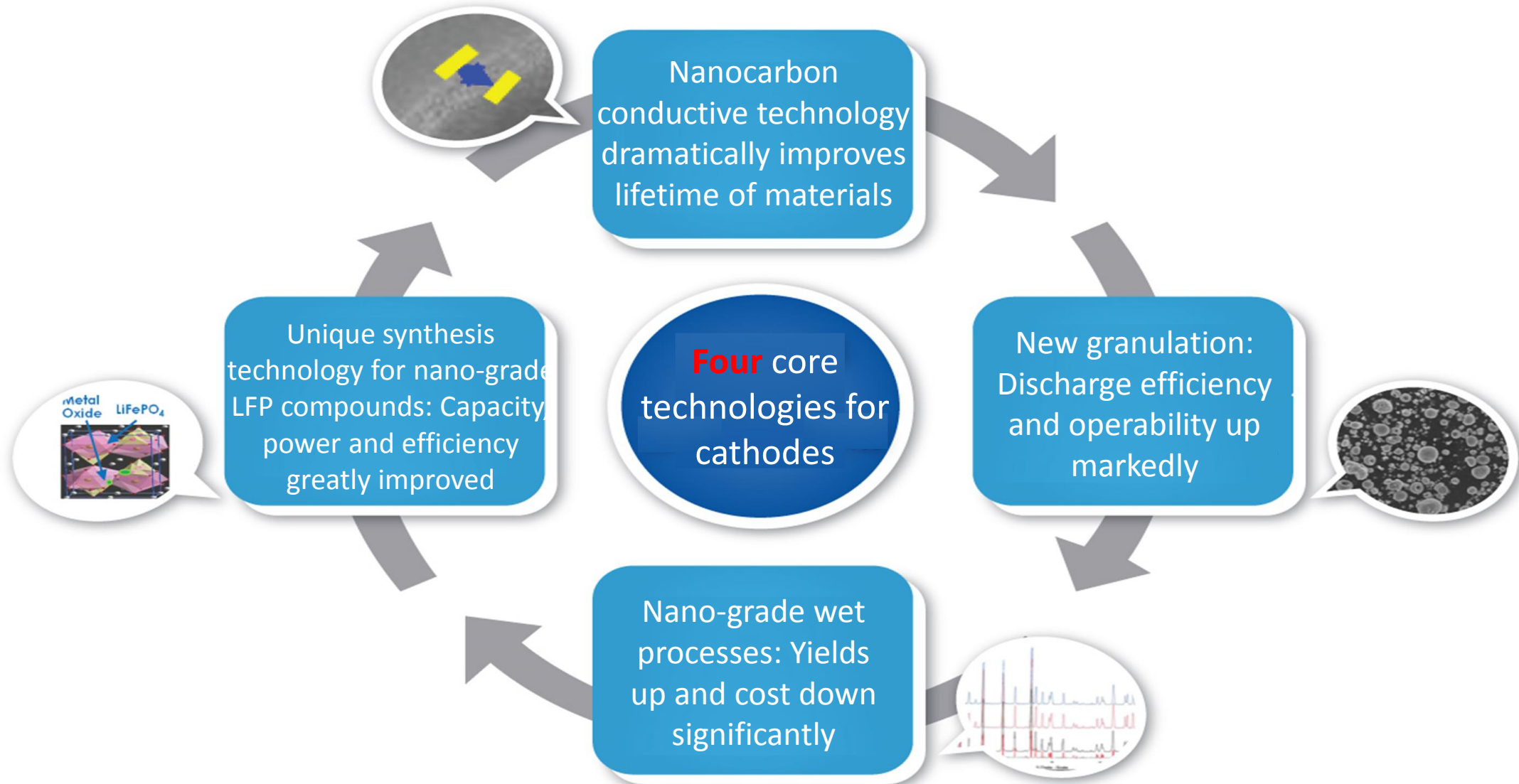
- AI & Big Data
- Quality improvement
- Pollution reduction
- Production efficiency enhancement

**Customized  
production**

- Alliance with VIP customers
- Production lines dedicated to key customers



# Core Competence in Cathodes





# Cathode material advantages



## High quality

- The batch is good in consistency, eliminating adjustment cost in the workshop.
- Conductive speed enhanced one million times.
- Add metallic oxide to contain education of iron lithium.

## High Cost-Effectiveness

- The performance that is 10%-48% higher than the peers, Increasing the clients' revenue by 20%.
- The materials price is 35% higher than average of the industry.
- Specific Capacity is 155-160 mAh/g.
- Cycle life is 10000 times.

## High Reputation

- 179 global patent: 86 self-owned patents, and 93 global patents licensed from HQ.
- The cumulative sales volume in 2018 reached 12500 tons.

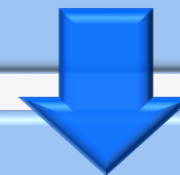


# Operational Profile



# Changing Trends at China Major Market

Scope of subsidy backsliding being gradually increased as well as the implementation of new subsidizing policy(Period of review being extended)



Power battery industry entering market transitional period

Cruel industry competitive posture beginning to reveal



Supply chain rapidly encountering bubble-forming predicament

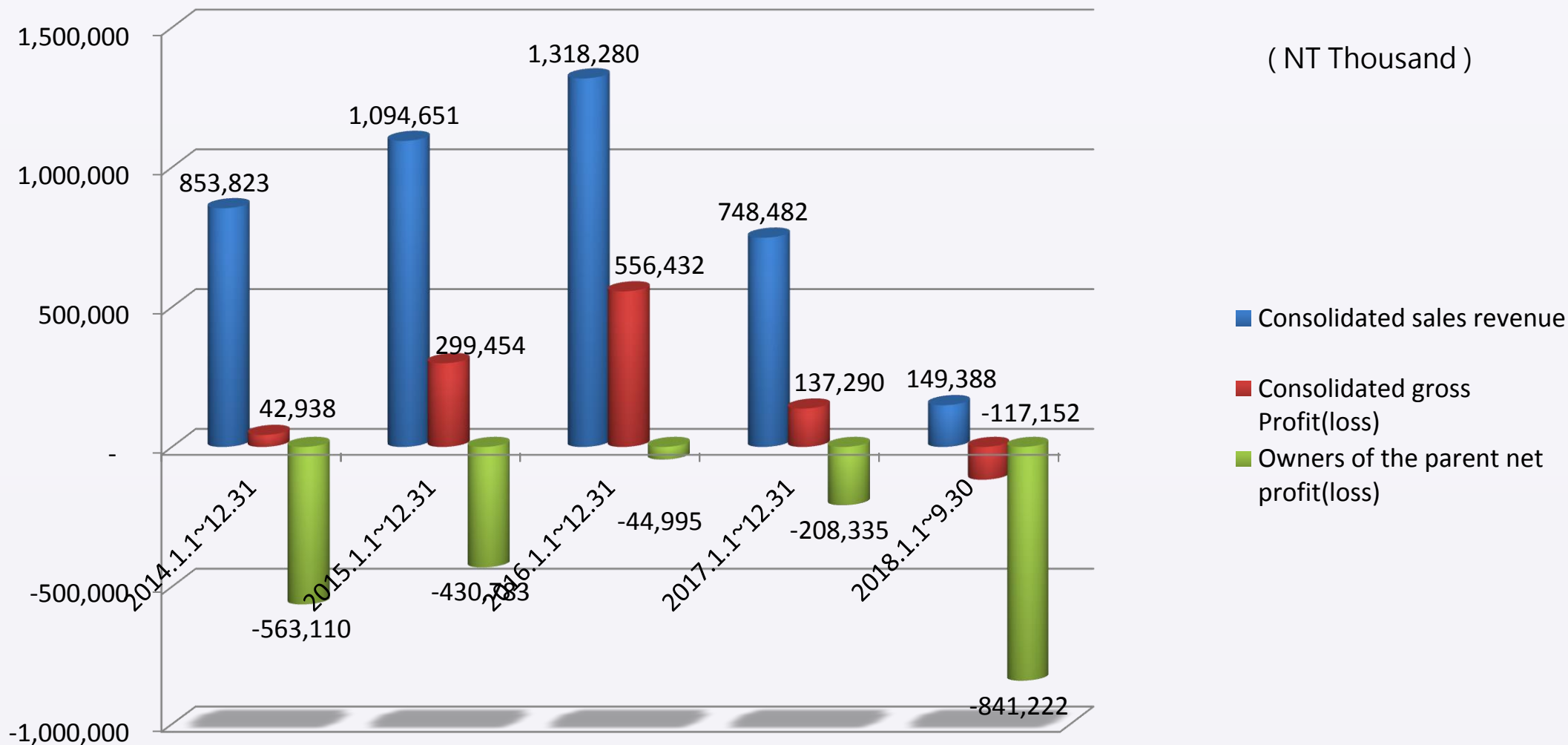
Power battery manufacturers are faced with crisis of funding chain breakage



Costs of power battery accounting for 30% to 50% of total costs of an electric vehicle

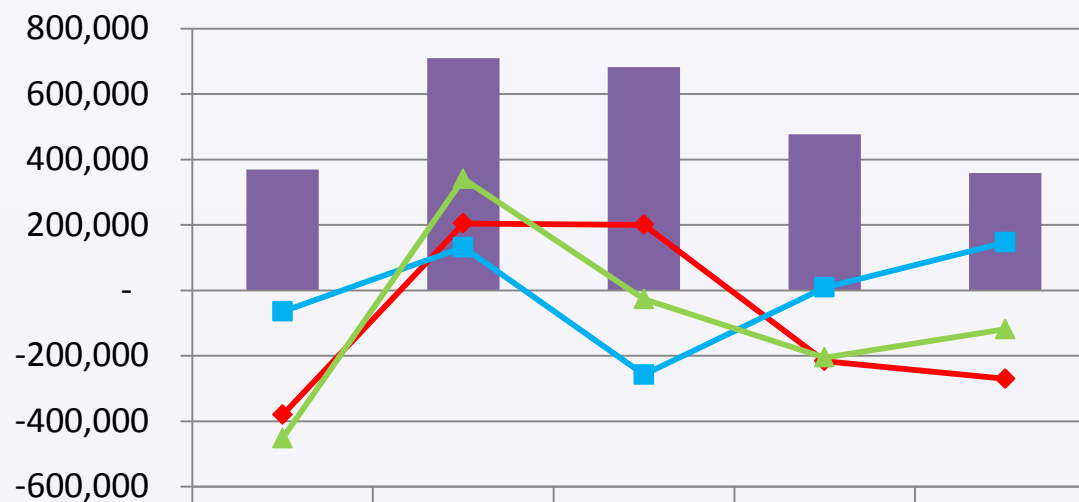
Reducing subsidies means that power battery manufacturers have to bear corresponding price-lowering pressure

# Recent changes of revenue and profit (loss)



# Recent changes of cash flows

(NT Thousand )

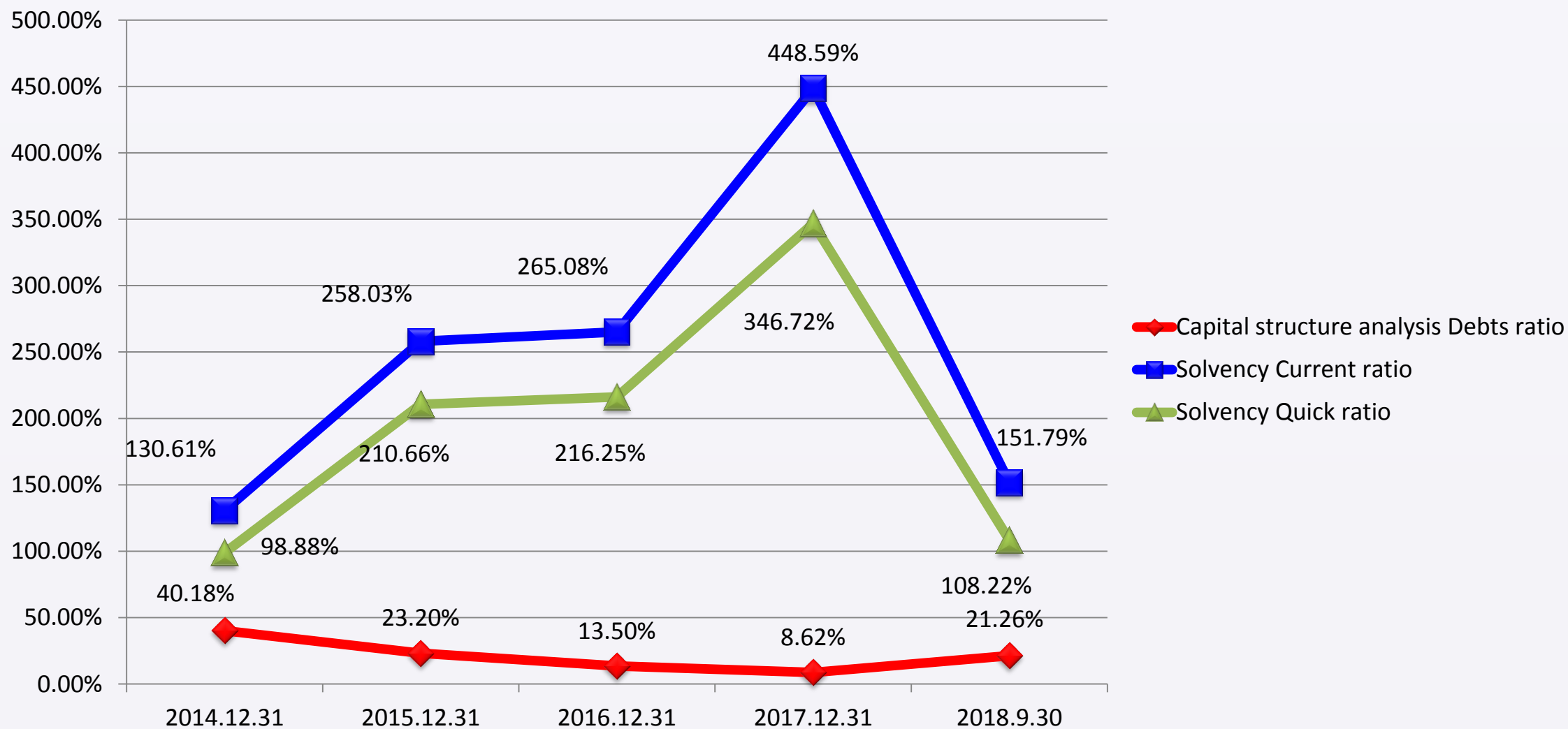


cash and cash equivalents balance at the end of the period	2014.1.1 ~12.31	2015.1.1 ~12.31	2016.1.1 ~12.31	2017.1.1 ~12.31	2018.1.1 ~9.30
	369,113	710,165	682,964	477,258	358,334
Net cash flows (used in) from operating activities	-380,595	204,188	200,680	-216,212	-270,424
Net cash flows from (used in) investing and financing activities	-64,591	131,578	-257,821	8,616	146,640
Net increase(decrease) in cash and cash equivalents	-452,654	341,052	-27,201	-205,706	-118,924

- cash and cash equivalents balance at the end of the period
- ◆ Net cash flows (used in) from operating activities
- Net cash flows from (used in) investing and financing activities
- ▲ Net increase(decrease) in cash and cash equivalents



# Recent changes of financial ratios





# Strategic Updates



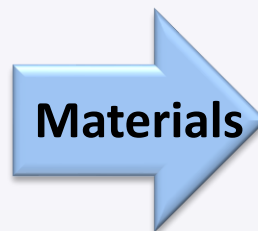
# Household energy storage markets



- Reportlinker.com, an international market research institute, recently published a research report on household battery energy storage market and stated that by 2022, global household battery energy storage market scale will reach 3.6 billion dollars.
- Germany, the U.S., Japan, Australia and others have implemented policies offering incentive subsidies, encouraged an integration between new energy power generation and development and application of energy storage technology. Energy storage manufacturers include Panasonic, Kyocera-Nichicon, Sharp, Samsung, LG, Sonnen, Tesla, and Byd.
- Advanced Lithium Electrochemistry Co., Ltd. has entered into cooperation with a certain leading Japanese manufacturer of electronic parts and consumer goods. The two parties have ventured into high-end household energy storage market. The former has thus laid a pivotal foundation for future exploration of other overseas energy storage clients.



# Lithium to Replace Lead Acid

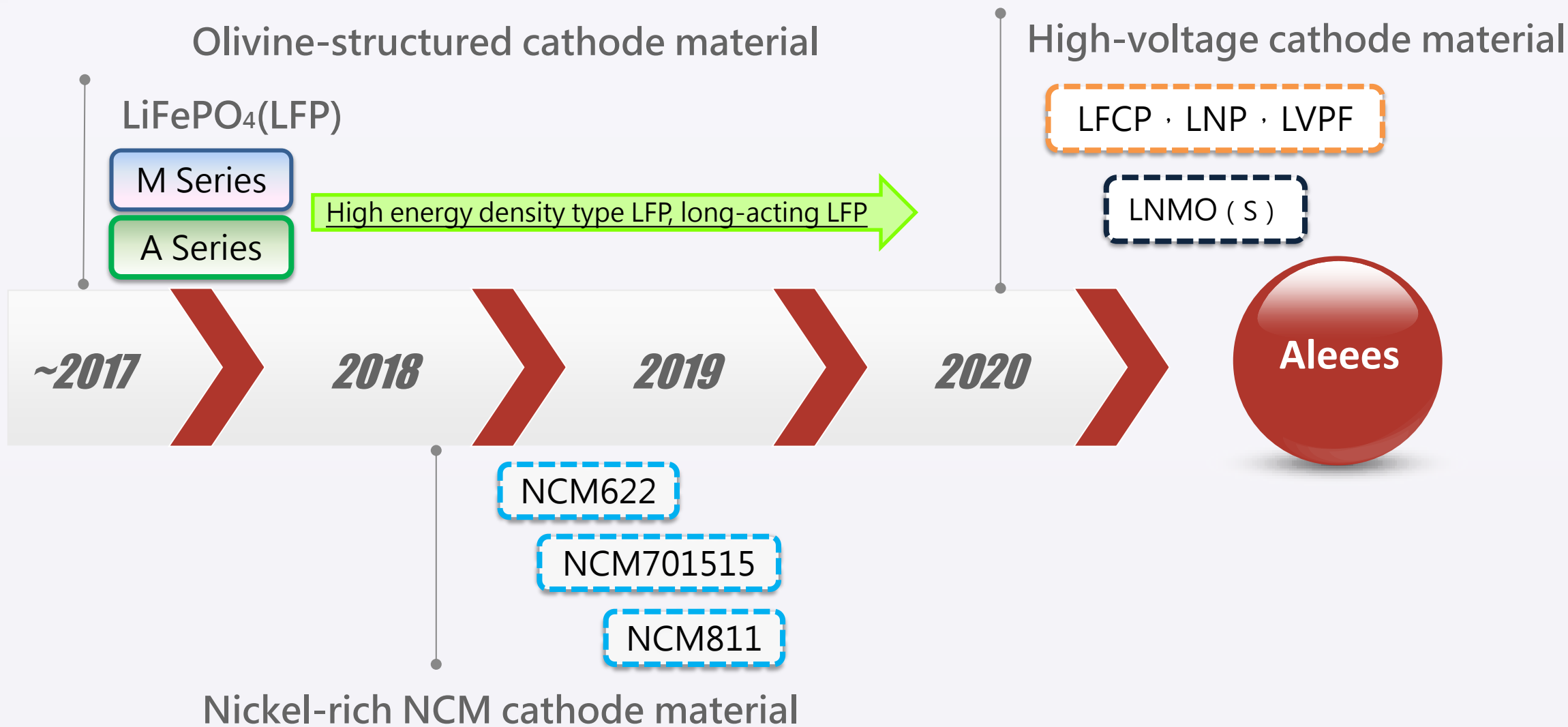


**Applications  
By OEMs from Japan,  
Korea, Europe and the US**

- According to Grand View Research, the global market size for lead acid batteries was US\$46.6bn in 2015 and is expected to reach \$84.46bn in 2025.
- The largest lead acid battery manufacturers in the world are Johnson Controls, GS YUASA, Exide Technologies, Tianneng, Chilwee and EnerSys.
- Aleees has been certified by an international auto OEM for its lithium battery, and will become the only lithium cathode producer that offers a 10-year warranty
- In response to even more stringent emission standards in the European Union in 2020 and the demand for lighter weight and higher fuel efficiency, a world-renowned battery company has teamed up with Aleees to become the first lead acid battery maker in active pursuit for lithium battery.



# Development and Manufacturing of High Cost-Performance Products





# **Applications of Final Products**



# Main Applications of Lithium Batteries around the World

Cars, EV, and vehicles



Stationary ESS



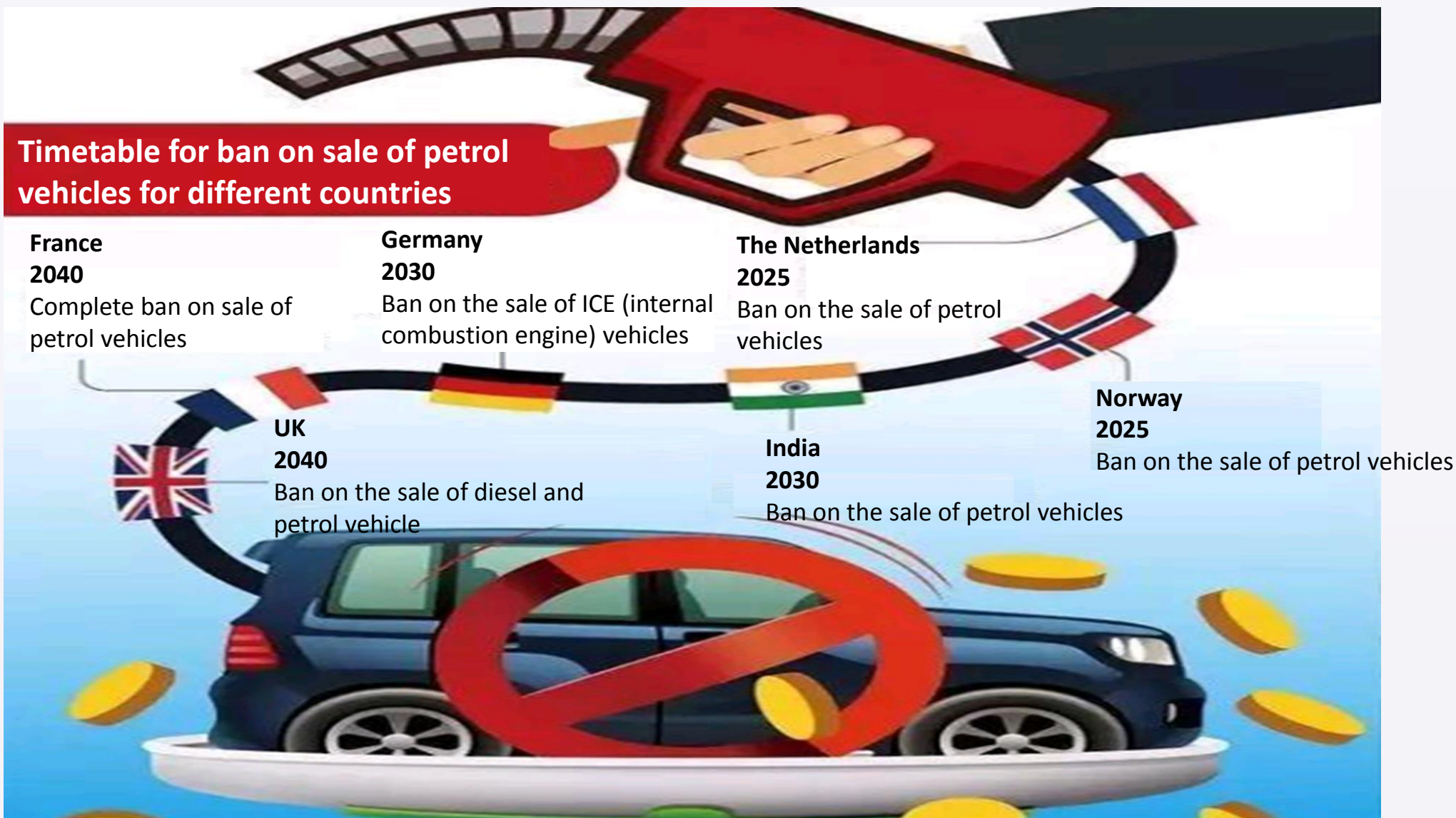
Lithium battery packs

Replacement  
for auto  
applications



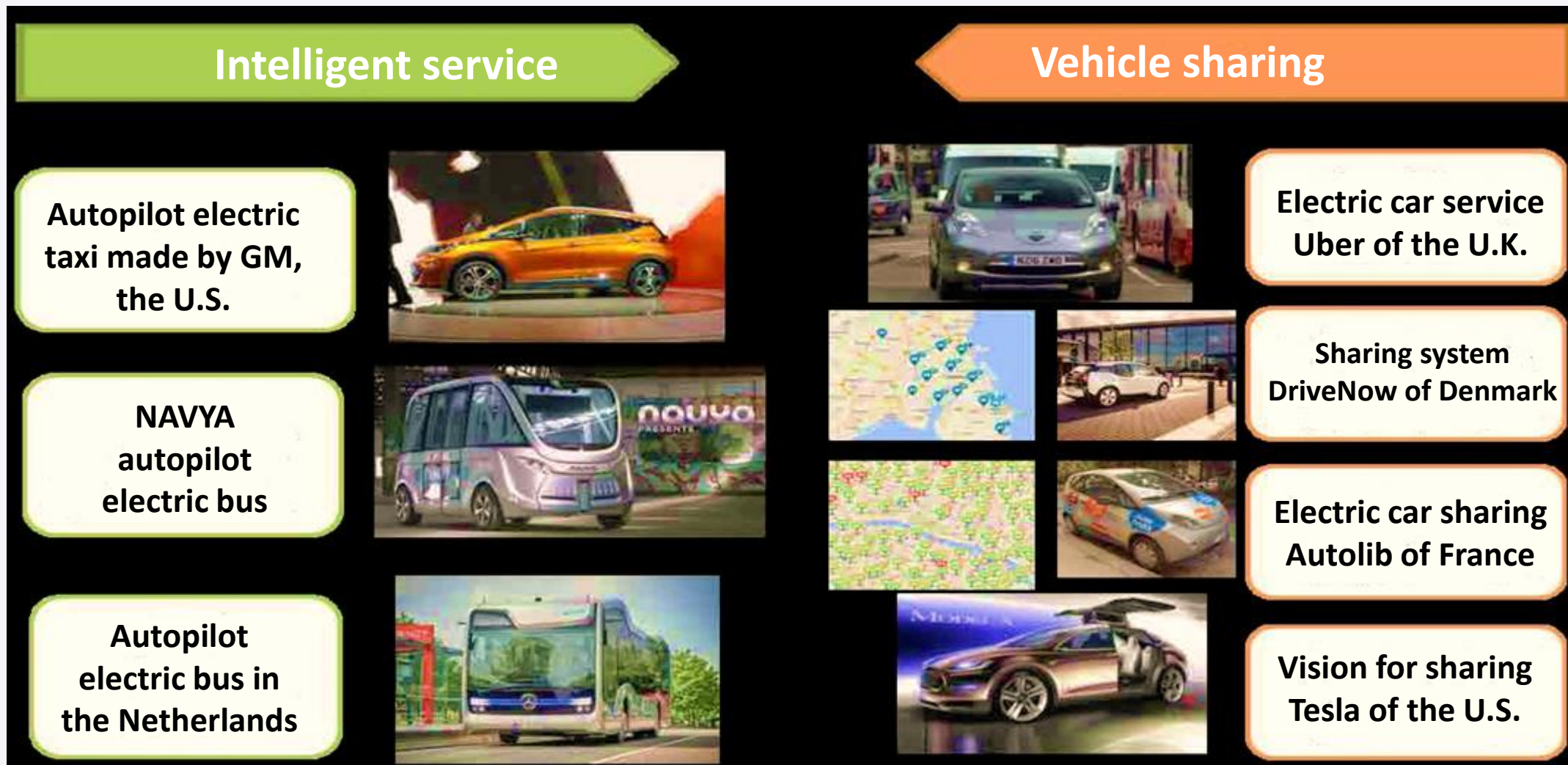
Lead acid batteries

# Policy Drives in Different Countries

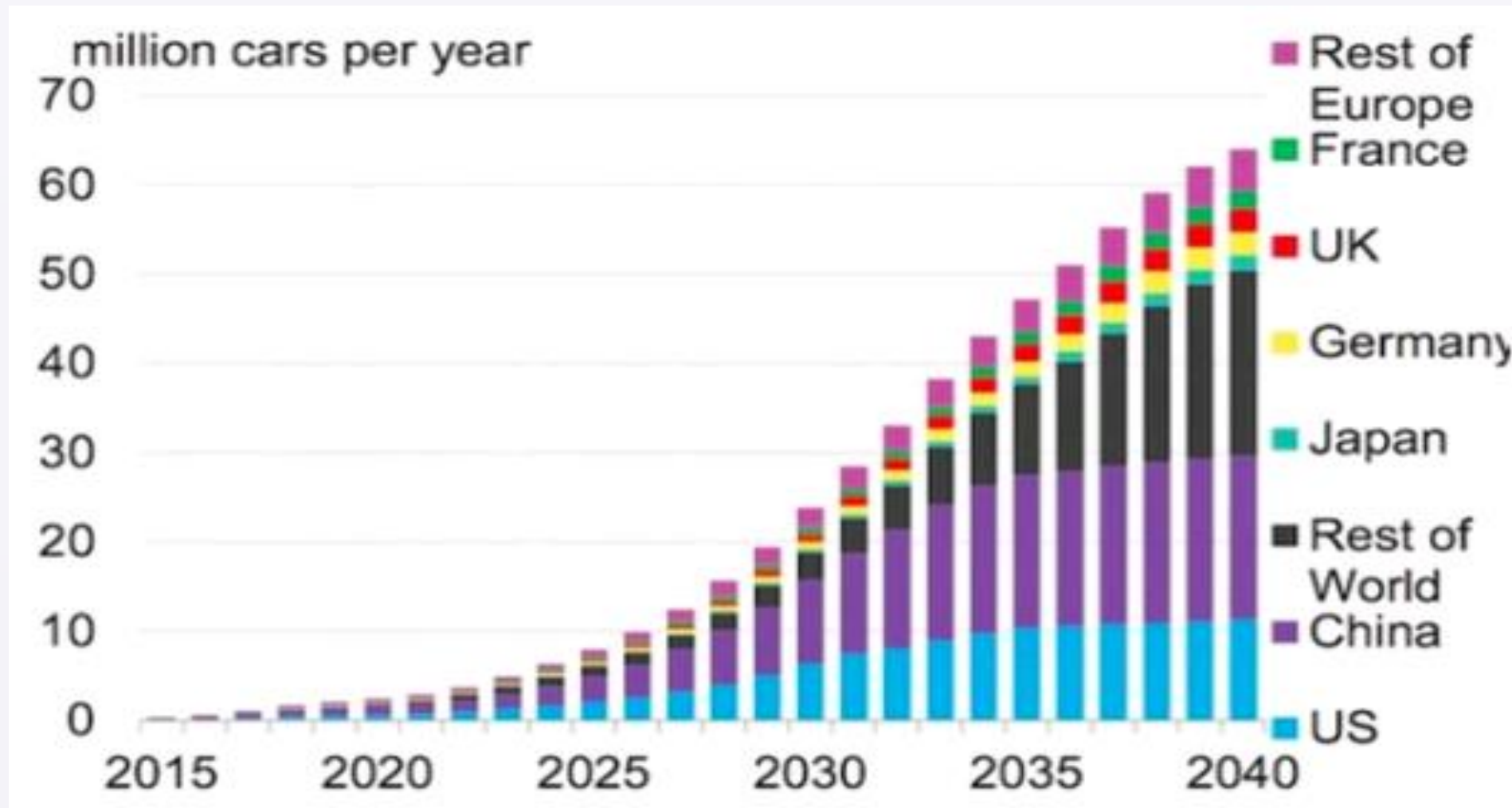




# Innovative Operational Model for Electric Vehicle







# High Growth Expected for Global EV Market



Source: Bloomberg New Energy Finance, 2015

# Stationary Storage Systems

			
Small-scale indoor energy storage	Energy storage Chest	Energy storage container	Permanent energy storage power plant
<ul style="list-style-type: none"> <li>Mainly providing such functions as matching it with indoor power regulation, making efficient use of renewable power sources, and offering backup power</li> </ul>	<ul style="list-style-type: none"> <li>Medium-sized indoor power regulating facilities</li> <li>Basic modularized patterns of Energy storage container and energy storage battery</li> </ul>	<ul style="list-style-type: none"> <li>Mainly used outdoor</li> <li>Matched with operation of (renewable) power plant or power grid regulation</li> </ul>	<ul style="list-style-type: none"> <li>Regional permanent power plant facilities</li> <li>Mainly regulating operation of regional power grid</li> </ul>

Source: compiled by IEK under Industrial Technology Research Institute

The growing demand from the renewable energy industry for grid-connected storage systems is driving for the need for lithium technology and continued cost reduction of lithium batteries. According to most recent forecasts by MarketsandMarkets, the global market for ESS batteries will grow at a CAGR of 33.9% from \$1.98bn in 2018 to \$8.54bn in 2023. Asia Pacific is the highest growing region.

## Lithium-ion battery is top priority in energy storage technology

Based on latest report of GlobalData, five major contributors to amazingly rapid development of energy storage technology are the U.S., South Korea, China, Japan, and Australia. Relevant facilities in the said five countries accounted for 80% globally in 2017. The U.S. took up the biggest share of 28%.

Asia-pacific region was a leader globally and accounted for 54.1%, with America taking up 32.8%. As for Region of Europe, the Middle East, and Africa, it accounted for 13.1%.

Lithium-ion battery had always been top choice in energy storage. In 2017, it accounted for over 75% on BESS.

### Distribution and percentages of 2017 global electrochemistry energy storage project technology

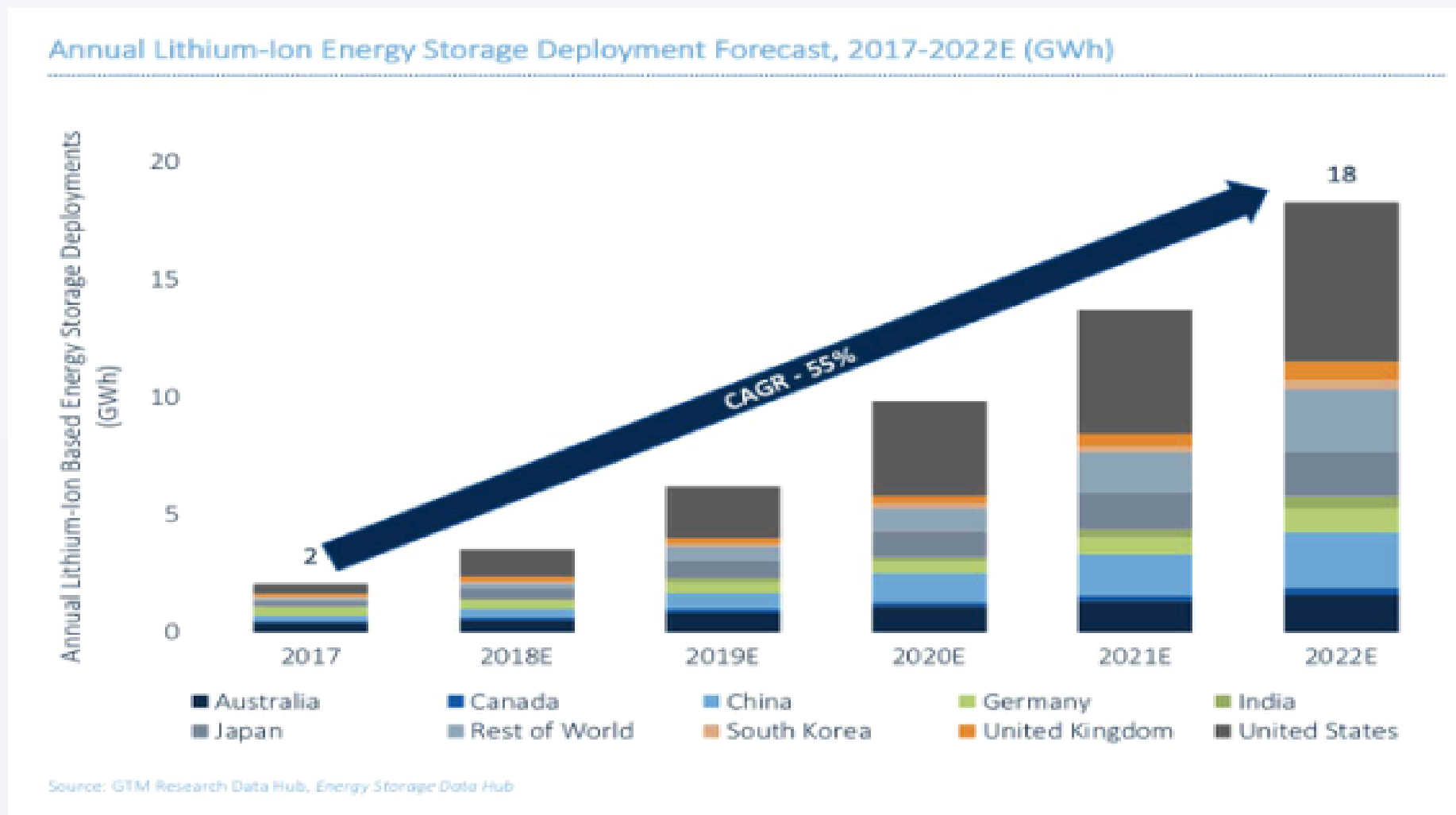
Technical categories	Percentages
Lithium-ion battery	76%
Sodium sulfur battery	13%
Lead storage battery	7%
Flow battery	3%
Supercapacitor	0%
Other	1.1%

Source: Data bank of China Energy Storage Alliance



# Global Lithium Battery ESS Installation Capacity up 55% p.a.

According to the most recent forecasts from GTM Research

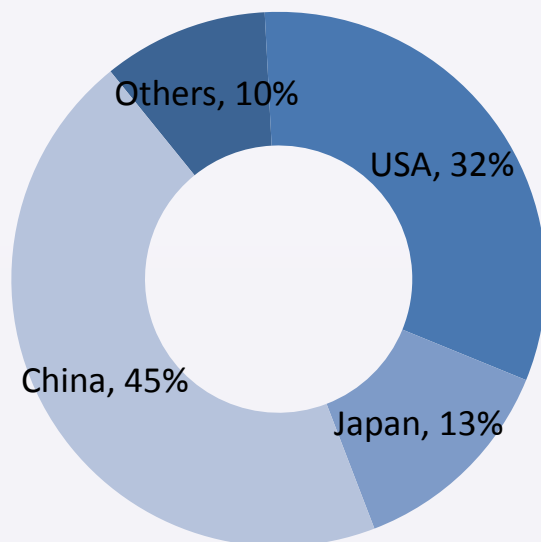




# Lead Acid Battery Market

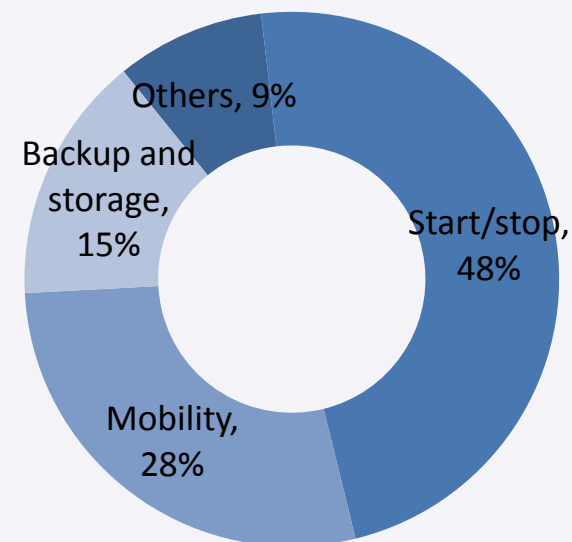
Start/stop batteries for car engines have become a standard accessory in mid-to-high end models manufactured by OEMs in Japan, Europe and the U.S. Examples are Audi, BMW, Benz, Volkswagen, Mazda and Citroen.

Global lead acid battery market  
by geography (%)



Source: Qianzhan Industry Institute

Global lead acid battery market  
by application (%)



Source: Qianzhan Industry Institute

# Lead Acid Batteries Shipment Reaches 565 GVA in 2020

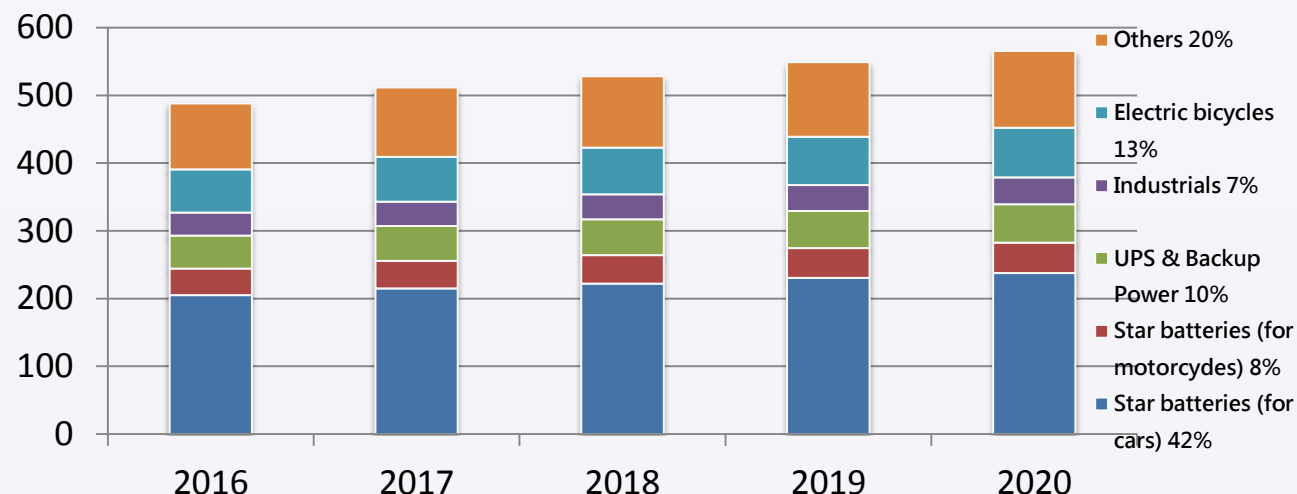
According to Industrial Economics & Knowledge Center in 2017, the global shipment of lead acid batteries totalled 488.24 GVA in 2016.

Below is the summary of the shipment forecasts for 2017-2020.

Year	GVA
2016	488.24
2017	511.7
2018	528.39
2019	548.99
2020	565.5

CAGR c. 4%

Source: Industrial Economics & Knowledge Center



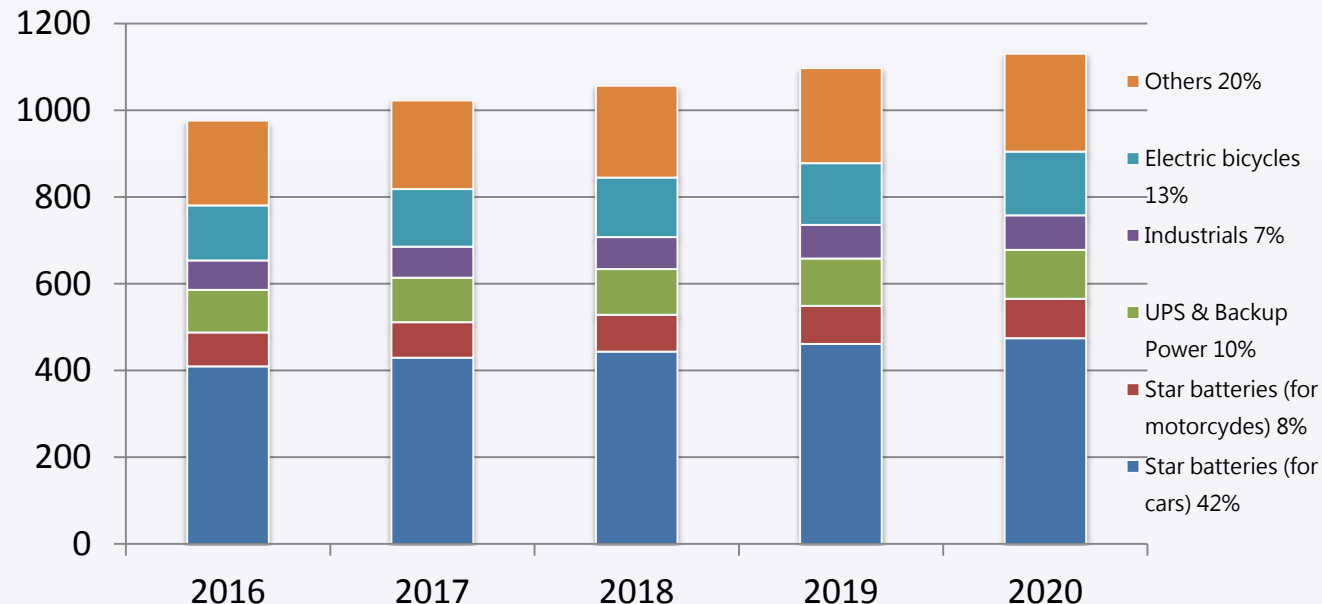
Unit: GVA

Star batteries (for cars)	205.06	214.9	221.92	230.57	237.51
Star batteries (for motorcycles)	39.06	40.94	42.27	43.92	45.24
UPS & Backup Power	48.82	51.17	52.84	54.89	56.55
Industrials	34.18	35.82	36.99	38.43	39.58
Electric bicycles	63.47	66.52	68.69	71.37	73.51
Others	97.65	102.34	105.68	109.8	113.1
<b>Total</b>	<b>488.24</b>	<b>511.7</b>	<b>528.39</b>	<b>548.99</b>	<b>565.5</b>

Power (in GVA) \* 0.8 (in MWatt) / 3.2V \* 8 = LFP Powder (in KTon)



# Market Forecast for Replacement of Lead Acids with LFP



Start batteries (for cars)	410.1	429.8	443.8	461.1	475
Start batteries (for motorcycles)	78.1	81.9	84.5	87.8	90.5
UPS & Backup Power	97.6	102.3	105.7	109.8	113.1
Industrials	68.4	71.6	74	76.9	79.2
Electric bicycles	126.9	133	137.4	142.7	147
Others	195.3	204.7	211.4	219.6	226.2
Total	976.5	1023.4	1056.8	1097.9	1131

Source: Industrial Economics & Knowledge Center

Limitations such as 12V, security and cobalt scarcity, only LFP can replace lead acid for auto applications

A 10% replacement of the auto lead acid market p.a. is translated into the demand of 40,000 tons of LFP cathodes.

Aleees and Sumitomo Osaka Cement are the only two companies with a global portfolio of patents, over 10 years of experience in mass production, products of long cycles and high quality

