

**Global and China Ternary Cathode
Materials (NCA/NCM) and Battery Industry
Report, 2017-2020**

Feb.2017

STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES

- ◆ To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- ◆ To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- ◆ To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- ◆ To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- ◆ To help company to succeed in a competitive market, and

METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

Abstract

In 2016, the global shipment of cathode materials grew 26.7% year on year. Thanks to brisk demand from electric vehicles, LFP and NCA show rapid growth among which NCA gets primarily used for Panasonic 18650 cylindrical batteries (to be supplied to Tesla EVs) and substantial growth of LFP benefits mainly from China's EV demand, particularly robust demand from electric buses as well as application in energy storage field.

Globally, the cathode materials used for electric passenger cars are mostly ternary materials and lithium manganate; however, Chinese electric passenger cars adopt both of LFP and ternary materials. Ternary materials tend to be the mainstream in the future. In the aspect of commercial vehicles, the lifting of the ban on ternary batteries for commercial vehicle in 2017 will conduce to the demand growth for ternary materials.

In 2016, China produced 161,600 tons of cathode materials, a year-on-year increase of 43%. Specifically, the LiFePO₄ output soared 75% year on year to 57,000 tons, under the impetus of power batteries and energy storage lithium batteries. Driven by new energy passenger cars, lithium battery bicycles, medium and low-end digital lithium batteries and other markets, the output of ternary materials swelled 49% year on year to 54,300 tons. The LiCoO₂ shipment jumped 9.4% year on year to 34,900 tons.

After experiencing the downturn in 2013-H1 2015, ternary materials witnessed rising penetration rates in all sub-fields with the rapid growth of new energy vehicles in H2 2015. In China, the average price of ternary materials ascended swiftly from H2 2015, and the NCM523 price hit RMB140,000 -150,000 / ton in 2016.

Major ternary material producers in China have begun to build new projects and expand capacity. In 2016, the overall capacity of top ten ternary material enterprises including Hunan Shanshan, Xiamen Tungsten, Ningbo Jinhe, Shenzhen Zhenhua and Xinxiang Tianli Energy fetched 30,000 tons, enjoying the market share of about 60%.

At present, only a small number of domestic cathode material enterprises boast high nickel NCM622 capacity, for instance, Beijing Easpring Material Technology is the largest Chinese enterprise with the NCM622 capacity of 2,800 tons, and will put its Jiangsu project phase II (NCM622 capacity: 4,000 tons) into production in 2017.

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As concerns technology trends, the novel lithium-rich laminated ternary materials are possible to be utilized as the cathode material for future high-energy-density lithium-ion battery due to exceedingly high specific capacity and excellent cycling competence. Currently, first discharge of 0.1C (C stands for capacity) such material is higher than 250mAh/g and capacity retention ratio is above 90% after the cycling of thirty times, presenting remarkable electrochemical properties.

The report highlights the following:

- ◆ Supply and demand of ternary materials in China and the world, particularly the shares of applications in such fields as new energy vehicle and consumer electronics;
- ◆ Competitive landscape in China and beyond, covering domestic and overseas companies' market share, capacity planning, market pattern, etc.;
- ◆ Technology routes and development trends of ternary materials in China and the world;
- ◆ Analysis on upstream and downstream market segments of ternary materials, consisting of cobalt metal, lithium carbonate, ternary precursor, ternary lithium battery, etc.;
- ◆ Key application growth points of ternary cathode materials, and analysis on electric vehicle industry in China and the world;
- ◆ Operation, technologies, development plans and production & sales dynamics of six manufacturers of ternary cathode materials from countries like Japan, S. Korea, Belgium and Germany;
- ◆ Operation, technologies, development plans and production & sales dynamics of fourteen Chinese ternary cathode material manufacturers;
- ◆ Operation, technologies, development plans and production & sales dynamics of seven producers of ternary lithium battery from nations such as Japan, S. Korea and Europe;
- ◆ Operation, technologies, development plans and production & sales dynamics of nine Chinese ternary lithium battery manufacturers.

1 Overview of Ternary Cathode Materials

- 1.1 Definition
- 1.2 Classification
 - 1.2.1 Nickel-cobalt-manganese Ternary Cathode Material (NCM)
 - 1.2.2 Nickel-cobalt-aluminum Ternary Cathode Material (NCA)
- 1.3 Production Methods

2 Global Ternary Cathode Material Industry

- 2.1 Overview of Global Cathode Material Market
- 2.2 Global Ternary Cathode Material Market
 - 2.2.1 Shipment
 - 2.2.2 Price
 - 2.2.3 Market Share
 - 2.2.4 Competition among Enterprises
 - 2.2.5 Technology Trend
- 2.3 Ternary Cathode Material Market in Major Countries or Regions
 - 2.3.1 Japan
 - 2.3.2 South Korea

3 China Ternary Cathode Material Industry

- 3.1 Overview of Chinese Cathode Material Market
- 3.2 Chinese Ternary Cathode Material Market
 - 3.2.1 Shipment
 - 3.2.2 Price

- 3.2.3 Market Size
- 3.2.4 Competition among Enterprises
- 3.3 Policy
- 3.4 Development Trend

4 Ternary Cathode Material Industry Chain

- 4.1 Upstream
 - 4.1.1 Cobalt
 - 4.1.2 Lithium Carbonate
 - 4.1.3 Ternary Precursor
- 4.2 Downstream
 - 4.2.1 Lithium Battery of Consumer Electronics (3C)
 - 4.2.2 Power Lithium-ion Battery
 - 4.2.3 Ternary Cathode Material Lithium Battery

5 Global and Chinese Electric Vehicle Market

- 5.1 Global Electric Vehicle Market
 - 5.1.1 Overall Market
 - 5.1.2 The United States
 - 5.1.3 Europe
 - 5.1.4 Japan
- 5.2 Chinese Electric Vehicle Market
 - 5.2.1 New Energy Vehicle Output
 - 5.2.2 New Energy Vehicle Sales Volume

6 Foreign Ternary Cathode Materials Companies

- 6.1 Umicore
 - 6.1.1 Profile

- 6.1.2 Financial Operation
- 6.1.3 Production Base
- 6.1.4 Layout in China
- 6.1.5 Ternary Cathode Material Business
- 6.2 Nichia
 - 6.2.1 Profile
 - 6.2.2 Development Course
- 6.2.3 Financial Operation
- 6.2.4 Output
- 6.3 L&F
 - 6.3.1 Profile
 - 6.3.2 Financial Operation
- 6.3.3 Output
- 6.4 Toda Kogyo
 - 6.4.1 Profile
 - 6.4.2 Financial Operation
- 6.4.3 Ternary Cathode Material Business
- 6.5 BASF
 - 6.5.1 Profile
 - 6.5.2 Layout in China and Worldwide
- 6.5.3 Financial Operation
- 6.5.4 Ternary Cathode Material Business
- 6.5.5 Technology Roadmap
- 6.6 Sumitomo Metal Mine
 - 6.6.1 Profile
 - 6.6.2 Financial Operation
- 6.6.3 Global Layout

7 Chinese Ternary Cathode Materials Enterprises

7.1 Hunan Shanshan Advanced Material Co., Ltd.

- 7.1.1 Profile
- 7.1.2 Financial Operation
- 7.1.3 Output and Sales Volume
- 7.1.4 Products
- 7.1.5 Core Competence

7.2 Beijing Easpring Material Technology Co., Ltd.

- 7.2.1 Profile
- 7.2.2 Development Course
- 7.2.3 Financial Operation
- 7.2.4 Capacity
- 7.2.5 Customers
- 7.2.6 Ternary Cathode Material Business
- 7.2.7 Performance Prediction

7.3 Xiamen Tungsten Co., Ltd.

- 7.3.1 Profile
- 7.3.2 Financial Operation
- 7.3.3 Capacity
- 7.3.4 Core Competence
- 7.3.5 Performance Prediction

7.4 GEM

- 7.4.1 Profile
- 7.4.2 Development Course
- 7.4.3 Financial Operation
- 7.4.4 Capacity
- 7.4.5 Ternary Cathode Material Business
- 7.4.6 Core Competence

7.5 Fujian Zhonghe Co., Ltd.

- 7.5.1 Profile
- 7.5.2 Development Course
- 7.5.3 Financial Operation
- 7.5.4 Capacity
- 7.5.5 Core Competence
- 7.5.6 Performance Prediction

7.6 Kingray New Materials Science & Technology

- 7.6.1 Profile
- 7.6.2 Financial Operation
- 7.6.3 Capacity
- 7.6.4 Performance Prediction

7.7 Ningbo Jinhe New Materials Co., Ltd.

- 7.7.1 Profile
- 7.7.2 Financial Operation
- 7.7.3 Capacity
- 7.7.4 Core Competence

7.8 Shenzhen Tianjiao Technology Development

- 7.8.1 Profile
- 7.8.2 Financial Operation
- 7.8.3 Capacity
- 7.8.4 Performance Prediction

7.9 Xinxiang Tianli Energy Co., Ltd.

- 7.9.1 Profile
- 7.9.2 Financial Operation
- 7.9.3 Capacity
- 7.9.4 Performance Prediction

7.10 Henan Kelong New Energy Co., Ltd.

7.10.1 Profile

- 7.10.2 Financial Operation
- 7.10.3 Capacity
- 7.10.4 Performance Prediction
- 7.11 Hunan ChangyuanLico Co., Ltd.
- 7.11.1 Profile
- 7.11.2 Financial Operation
- 7.11.3 Capacity
- 7.12 Pulead Technology Industry Co., Ltd.
- 7.12.1 Profile
- 7.12.2 Ternary Cathode Materials
- 7.13 Hunan Reshine New Material Co., Ltd.
- 7.13.1 Profile
- 7.13.2 Ternary Cathode Material Business
- 7.14 Jiangxi Ganfeng Lithium Co., Ltd.

8 Major Global Ternary Lithium Battery Manufacturers

8.1 Panasonic

- 8.1.1 Profile
- 8.1.2 Battery Technology
- 8.1.3 Business Development and Prospects
- 8.1.4 Layout in China
- 8.1.5 Customers
- 8.1.6 Output and Capacity
- 8.2 AESC
- 8.2.1 Profile
- 8.2.2 Battery Technology

8.2.3 Business Development and Prospects	8.6.4 Layout in China	9.4 Wanxiang EV
8.2.4 Layout in China	8.6.5 Capacity and Output	9.4.1 Profile
8.2.5 Capacity and Output	8.7 Li-Tec&Accumotive	9.4.2 Battery Technology
8.3LEJ	8.7.1 Profile	9.4.3 Business Development and Prospects
8.3.1 Profile	8.7.2 Battery Technology	9.4.4 Customers
8.3.2 Battery Technology	8.7.3 Business Development and Prospects	9.5 Sinopoly Battery
8.3.3 Business Development and Prospects	8.7.4 Customers	9.5.1 Profile
8.3.4 Customers		9.5.2 Battery Technology
8.3.5 Layout in China	9 Major Chinese Ternary Lithium Battery Manufacturers	9.5.3 Business Development and Prospects
8.3.6 Capacity and Output	9.1 Tianjin LishenBattery	9.5.4 Customers
8.4 LGC	9.1.1 Profile	9.5.5 Output and Capacity
8.4.1 Profile	9.1.2 Battery Technology	9.6 CITIC GUOAN Mengguli
8.4.2 Battery Technology	9.1.3 Business Development and Prospects	9.6.1 Profile
8.4.3 Business Development and Prospects	9.1.4 Customers	9.6.2 Battery Technology
8.4.4 Customers	9.1.5 Capacity and Output	9.6.3 Business Development and Prospects
8.4.5 Layout in China	9.2 ATL	9.7 China Aviation Lithium Battery
8.4.6 Capacity and Output	9.2.1 Profile	9.7.1 Profile
8.5 Samsung SDI	9.2.2 Battery Technology	9.7.2 Battery Technology
8.5.1 Profile	9.2.3 Business Development and Prospects	9.7.3 R & D
8.5.2 Battery Technology	9.2.4 Industry Chain	9.7.4 Business Development and Prospects
8.5.3 Business Development and Prospects	9.2.5 Output, Sales Volume and Capacity	9.7.5 Customers
8.5.4 Customers	9.3 China BAK Battery	9.7.6 Output and Capacity
8.5.5 Layout in China	9.3.1 Profile	9.8 Hefei Guoxuan High-tech Power Energy
8.5.6 Capacity and Output	9.3.2 Battery Technology	9.9 OptimumNano
8.6 SKI	9.3.3 Business Development and Prospects	
8.6.1 Profile	9.3.4 Customers	
8.6.2 Battery Technology	9.3.5 Capacity and Output	
8.6.3 Business Development and Prospects		

- 
- Structure Diagram of Laminated $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$
 - Performance Comparison of Ternary Cathode Materials
 - Performance Parameters of Ternary Cathode Material (NCM)
 - Metal Demand from Ternary Cathode Material (NCM)
 - Merits and Demerits of Ternary Synergy
 - Comparison of Different Kinds of NCM Ternary Cathode Materials
 - Cost Analysis of Different Kinds of NCM Ternary Cathode Materials
 - Performance Comparison of NCM under Different Proportions
 - Performance Parameters of Ternary Cathode Material (NCA)
 - Metal Demand from Ternary Cathode Material (NCA)
 - Comparison between NMC, NCA and LFP
 - Features of NCM Manufacturing Method
 - Chemical Coprecipitation Process for NCM
 - Global Shipment of Cathode Materials (LFP/NCM/LCO/LMO/NCA), 2012-2020E
 - Consumption Structure of Cathode Materials for Lithium Battery Worldwide, 2016
 - Performance Comparison between Ternary Cathode Materials and Other Cathode Materials
 - Development Orientation of Cathode Materials for Lithium-ion Battery
 - Michael Porter's Five Forces Model of Global Cathode Material Industry
 - Shipment of Ternary Cathode Materials (NCA/NCM) Worldwide, 2011-2016
 - Price Trend of Ternary Cathode Materials in the World, 2010-2020E
 - Percentages of Cathode Materials (LFP/LCO/LMO/NCM) (for Electric Vehicle), 2020E
 - Percentages of Cathode Materials (LFP/LCO/LMO/NCM) (for 3C Consumer Electronics), 2020E
 - Global Market Share of Ternary Cathode Material Manufacturers, 2014
 - Application for Patents about Ternary Cathode Materials Worldwide
 - Development Tendency of Ternary Cathode Material Technologies, 2015-2030E

Selected Charts

- 
- Vehicle Models Supported by Ternary Cathode Materials in Japan
 - Shipment of Ternary Cathode Material (NCM) in Japan, 2012-2015
 - Sales Revenue of Ternary Cathode Material(NCM) in Japan, 2012-2015
 - Vehicle Models Supported by Ternary Cathode Materials in South Korea
 - Ternary Cathode Material Development Roadmap in South Korea
 - Shipment Percentages of Cathode Materials (NCM/LCO/LFP/LMO) in China, 2015-2016
 - Output of Cathode Materials (NCM/LCO/LFP/LMO) in China, 2015Q1-2016Q2
 - Product Capacity and Revenue of Key Cathode Material Manufacturers in China, 2016H1
 - Price Trend of Cathode Materials in China, 2010-2016E
 - Shipment of Ternary Cathode Material (NCM) in China, 2011-2015
 - Shipment of Ternary Cathode Materials (NCM/NCA)in China, 2015-2020E
 - Production Capacity of Major Ternary Cathode Material Manufacturers in China
 - Production Capacity of Major Chinese Power Battery Manufacturers, 2015-2017
 - Prices of NCM 523 and LiFePO4 in China, 2011-2016
 - Market Size of Ternary Cathode Materials in China, 2013-2020E
 - Market Share of Leading Ternary Cathode Material Manufacturers in China, 2016
 - Proportions for Shipment of Ternary Cathode Materials (by Type), 2016
 - Requirements Posed by National Policy on Lithium Battery
 - Current Research on Lithium-rich Ternary Cathode Materials in China
 - Development Trend of Ternary Cathode Materials in China
 - Percentages of Cobalt's Key Applications
 - Cobalt Consumption of Different Ternary Cathode Materials
 - Distribution of Cobalt Resource Reserves in the World
 - Distribution of Cobalt Resource Reserves in China
 - Cobalt Supply and Demand in China, 2011-2015

Selected Charts

- Structure of Cobalt Demand in the World
- Supply and Demand Relations and Price of Cobalt in the World
- Structure of Cobalt Demand in China
- Global Supply of Lithium Carbonate, 2012-2020E
- Global Demand for Lithium Carbonate, 2012-2020E
- Global Demand for Lithium Carbonate (by Sector), 2012-2020E
- Output of Lithium Carbonate in China, 2009-2020E
- China's Output of Lithium Carbonate as a Percentage of Global Total, 2012-2020E
- Gap between Supply and Demand of Lithium Carbonate in China, 2009-2020E
- Downstream Application Structure of Lithium Carbonate, 2013
- Downstream Application Structure of Lithium Carbonate, 2015
- Cathode Materials Selected by World's Major EV Manufacturers
- Ternary Precursor Capacity of Major Chinese Manufacturers
- Monthly Output of Ternary Precursors in China, 2016
- National Policy of Export Rebates for Ternary Precursors in 2015
- Ternary Precursor Preparation Method
- Comparison of Mainstream Ternary Cathode Material Precursor Preparation Processes
- Structure of Global Demand for Lithium Battery, 2012-2020E
- Global Consumption of Lithium Battery (by Product), 2015
- Global Demand of Consumer Electronics for Lithium Battery and Growth Rate, 2013-2020E
- Global Sales Volume of Mobile Phones and Demand for Lithium Battery, 2012-2020E
- Global Sales Volume of Tablet PCs and Demand for Lithium Battery, 2012-2020E
- Competitive Landscape of Global Tablet PC Market, 2013-2015
- Global Sales Volume of Notebook Computers and Demand for Lithium Battery, 2012-2020E
- Global Sales Volume of Electronic Cigarettes and Share (%), 2012-2020E

Selected Charts

- Global Demand for Power Lithium-ion Battery (by Type) from Electric Vehicles, 2011-2020
- Single-vehicle Battery Capacity of Electric Passenger Vehicle Worldwide, 2011-2020E
- Supply and Demand of Power Lithium-ion Battery in China, 2011-2020E
- Cost Structure of 100Ah Ternary Cathode Material Li-ion Battery
- Energy Density Development Trend of Ternary Cathode Material Battery, 2015-2020E
- Penetration of Ternary Power Battery in 2015
- Percentages of Ternary Battery Installed to Various Electric Vehicles, 2012-2015
- Vehicle Models Supported by Ternary Cathode Material Lithium Battery Abroad
- Ternary Lithium Battery Projects Newly Built or Put into Production in China
- Market Size of Ternary Cathode Material Battery, 2020E
- Sales Volume of Electric Passenger Vehicle in Major Countries/Regions, 2013-2016H1
- Progress in the International Battery Electric Passenger Vehicle Market
- Monthly Sales Volume of New Energy Vehicle (EV&PHEV) Worldwide, 2014-2016
- Ranking of World's NEV Makers by Sales Volume, Jan-Sept.2016
- Global Sales Volume of Electric Passenger Vehicle (EV&PHEV), 2011-2020E
- Monthly Sales Volume of Electric Vehicle in the United States, 2014-2016
- Monthly Sales Volume of Electric Vehicle in Europe, 2014-2016
- Sales Volume of Electric Vehicle (by Model) in Japan, 2013-2016
- Production and Sales Volume of Electric Vehicle in China, 2010-2016H1
- Monthly Output of Electric Passenger Vehicle in China, 2015-2016
- Monthly Output of Electric Vehicle (by Special Vehicle and Commercial Vehicle) in China, 2015-2016
- Output of Electric Buses in China, 2015-2016
- Output of Battery Electric Trucks in China, 2015-2016
- Output of Battery Electric Passenger Vehicle Makers in China, 2016
- Electric Passenger Vehicle (EV&PHEV) Sales Volume in China, 2015-Oct 2016

Selected Charts

- Ranking of New Energy Passenger Vehicle Models by Sales Volume, Jan-Oct 2016
- Sales Volume and Market Share of New Energy Passenger Vehicle (EV & PHEV) in China, Jan-Oct 2016
- Umicore's Finance, 2011-2015H2
- Cathode Material Production Bases of Umicore Worldwide
- Status Quo of Umicore's Business in China
- Umicore's Offices and Business Distribution in China
- Ternary Cathode Material (NCM) R&D Roadmap of Umicore
- Development Course of Nichia
- Revenue of Nichia, 2009-2014
- Cathode Material Output of Nichia, 2012 & 2013
- Total Revenue of L&F, 2006-2014
- Cathode Material Output of L&F, 2012 & 2013
- Finance of Toda Kogyo, 2012-2015
- Lithium Battery Cathode Material Product Structure of Toda Kogyo
- Performance of Ternary Cathode Material Products of Toda Kogyo
- Global Integrated Network and Production Bases of BASF
- BASF's Layout and Distribution of Production Bases in China
- BASF's Finance, 2011-2015
- Key Ternary Cathode Material Products of BASF
- Cathode Material Research and Manufacturing Bases of BASF Worldwide
- Focus and Method of BASF's Research on Ternary Cathode Materials
- Comparison between BASF's Ni-MH Battery and Lead-acid Battery
- SMM's Finance, 2012-2015
- Revenue Structure of SMM, FY2015
- Global Presence of SMM's Material Business

- 
- Organization Structure of Shanshanin New Energy Field
 - Business Performance of Hunan Shanshan, 2010-2016H1
 - Cathode Material Product Line of Hunan Shanshan
 - Physical and Chemical Indexes of Major Products of Hunan Shanshan
 - Joint-stock and Shareholding Companies of Beijing Easpring Material Technology
 - Development History of Beijing Easpring Material Technology, 1992-2015
 - Business Performance of Beijing Easpring Material Technology, 2010-2016H1
 - Operating Revenue Structure (by Product) of Beijing Easpring Material Technology, 2016H1
 - Operating Revenue Structure (by Region) of Beijing Easpring Material Technology, 2016H1
 - Global Key Customers for Small Cathode Material Products of Beijing Easpring Material Technology
 - Key Cathode Material Products of Beijing Easpring Material Technology
 - Ternary Cathode Material Sales Volume of Beijing Easpring Material Technology, 2011-2016
 - Cathode Material Technology Roadmap of Beijing Easpring Material Technology
 - Performance Prediction of Beijing Easpring Material Technology, 2015-2017
 - Business Performance of Xiamen Tungsten Corporation, 2010-2016H1
 - Operating Revenue Structure (by Product) of Xiamen Tungsten Corporation, 2016H1
 - Capacity Planning of Xiamen Tungsten Corporation, 2016
 - Performance Prediction of Xiamen Tungsten Corporation, 2016-2017
 - Development Roadmap of GEM, 2001-2016
 - Business Performance of GEM, 2009-2016H1
 - Operating Revenue Structure (by Product) of GEM, 2016H1
 - Existing Capacity and Future Planning of GEM
 - Layout of GEM's Battery Material and Recycling Business Bases
 - GEM's Revenue from Ternary Cathode Materials, 2013-2015
 - Key Ternary Materials and Ternary Precursor Contracts Signed by GEM in 2016

Selected Charts

- Performance Prediction of GEM, 2016-2018
- Lithium Battery Industry Chain of Zhonghe
- Lithium Battery Industry Development History of Zhonghe
- Business Performance of Zhonghe, 2010-2016H1
- Operating Revenue Structure (by Product) of Zhonghe, 2016H1
- Production Capacity and Planning of Major Products of Zhonghe
- Performance Prediction of Zhonghe, 2016-2017
- Business Performance of Kingray New Materials Science & Technology, 2010-2016H1
- Operating Revenue Structure (by Product) of Kingray New Materials Science & Technology, 2016H1
- Capacity Details of Kingray New Materials Science & Technology
- Performance Prediction of Kingray New Materials Science & Technology, 2016-2017
- Capacity Details of Ningbo Jinhe New Materials
- Business Performance of Shenzhen Tianjiao Technology Development, 2013-2016H1
- Ternary Cathode Material Production Capacity Forecast of Shenzhen Tianjiao Technology Development, 2016-2017
- Performance Prediction of Shenzhen Tianjiao Technology Development, 2016-2017
- Business Performance of Xinxiang Tianli Energy, 2013-2016H1
- Operating Revenue Structure (by Product) of Xinxiang Tianli Energy, 2015
- Output Forecast of Xinxiang Tianli Energy, 2015-2017
- Major Customers for Cathode Materials of Xinxiang Tianli Energy
- Performance Prediction of Xinxiang Tianli Energy, 2015-2018
- Revenue Structure of Kelong New Energy, 2013
- Ternary Cathode Material Capacity Details of Kelong New Energy
- Performance Prediction (Battery Material Business) of Kelong New Energy, 2015-2017
- Product Features of PU50A
- Product Features of PU50B


Selected Charts

- Business Performance of Panasonic, FY2008-FY2015
- R&D Expenditure of Panasonic, FY2008/09-FY2013/14
- Revenue Structure (by Segment) of Panasonic, 2012-2014
- Operating Income Structure (by Business) of Panasonic, 2012-2014
- Revenue Structure (by Region) of Panasonic, 2014
- Technical Parameters of Panasonic's NCA 18650 Cell for Tesla
- Material Cost Structure of Panasonic's PHEV Cell
- Development Plan of Panasonic's Automotive Batteries, 2013-2019E
- Development Plan of Panasonic's Automotive Segment, 2013-2019E
- Development Plan of Panasonic by Business Unit, 2013-2019E
- Electric Vehicle Supported by Panasonic's Power Lithium-ion Battery
- Deliveries of Tesla EVs, 2013-2020E
- Panasonic's Shipment of Power and Energy Storage Battery, 2011-2016
- Equity Structure of AESC, 2015
- Specifications of Li-Tec's High-capacity Power Battery
- Performance Parameters of Li-Tec's High-capacity Power Battery
- Li-Tec's Power Battery Plant in Landkreis Kamenz, Germany
- Equity Structure of Tianjin Lishen Battery
- Business Performance of Tianjin Lishen Battery, 2011-2016H1
- Power Cell Technology Roadmap of Tianjin Lishen Battery
- Power Battery Module Technology Roadmap of Tianjin Lishen Battery
- Performance Parameters of Spirally Wound Power Cell of Tianjin Lishen Battery
- Performance Parameters of Laminated Power Cell of Tianjin Lishen Battery
- Performance Parameters of Polymer Power Cell of Tianjin Lishen Battery
- Technical Parameters of Power Cell of Tianjin Lishen Battery

Selected Charts

- Power Battery Customers of Tianjin Lishen Battery
- Performance Parameters of Power Battery Module of Tianjin Lishen Battery
- Lithium Battery Capacity of Tianjin Lishen Battery, 2000-2016
- Power Battery Investment Plan of Tianjin Lishen Battery, 2012-2015
- Business Performance of ATL, 2008-2014
- Milestones of ATL
- Customers Supported by ATL's Power and Compact Battery
- Power Battery Suppliers of ATL
- ATL's Revenue from and Shipment of Power and Energy Storage Battery, 2012-2016
- Power Battery Output and Capacity Utilization of ATL, 2012-2015
- Power and Compact Battery Capacity Layout of ATL
- Business Performance of BAK Battery, 2008-2015H1
- Revenue Structure (by Region) of BAK Battery, 2009-2014
- R&D Investment of BAK Battery, 2010-2015H1
- Technical Parameters of Power Cell of BAK Battery
- Product Planning of BAK Battery, 2014-2018
- Plan for Energy Density Improvement of BAK 18650 Battery, 2012-2017
- BAK's Prismatic Power Battery and Plan for Energy Density Improvement, 2015-2018E
- Profile of BAK International (Tianjin) Co., Ltd
- Profile of Dalian BAK Power Battery Co., Ltd.
- BAK's Revenue from Power Lithium-ion Battery, 2009-2014
- Power Battery Investment Plan of BAK Battery, 2013-2015
- Revenue and Gross Margin of Sinopoly Battery, 2011-2015
- Net Income of Sinopoly Battery, 2011-2015
- Technical Parameters of Power Cell of Sinopoly Battery

Selected Charts

- 
- Business Performance of CITIC GUOAN Mengguli, 2010-2016H1
 - Technical Parameters of Cathode Materials of CITIC GUOAN Mengguli
 - Technical Parameters of Power Battery Modules of CITIC GUOAN Mengguli
 - Equity Structure of China Aviation Lithium Battery, 2016
 - Business Performance of China Aviation Lithium Battery, 2010-2014
 - China Aviation Lithium Battery's BMS for Battery Electric Vehicle
 - Battery Certifications of China Aviation Lithium Battery
 - Global Sales Network of China Aviation Lithium Battery
 - Major Customers of China Aviation Lithium Battery
 - Business Performance of Guoxuan Hi-tech Power Energy, 2009-2016H1
 - Specifications of LiFePO₄ Power Battery of Guoxuan Hi-tech Power Energy
 - Technical Parameters of Vehicle Models Supported by Power Battery of Guoxuan Hi-tech Power Energy
 - Price of Power Battery Module of Guoxuan Hi-tech Power Energy, 2009-2015
 - LiFePO₄ Cathode Materials and Power Battery Capacity of Guoxuan Hi-tech Power Energy, 2009-2015
 - Power Battery Shipment of Guoxuan Hi-tech Power Energy, 2009-2015
 - Capacity Planning of Guoxuan Hi-tech Power Energy, 2015-2017

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