**Shanghai Putailai New Energy Technology Co., Ltd.**

**2023 Annual Report Summary**

* 1. **Company Information**

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| Name of Putailai in Chinese | 上海璞泰来新能源科技股份有限公司 |
| Abbr. of Putailai name in Chinese | 璞泰来 |
| Name of Putailai in English | Shanghai Putailai New Energy Technology Co., Ltd. |
| Abbr. of Putailai name in English | Putailai |
| Legal Representative | Liang Feng |

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| --- | --- | --- |
|  | Secretary of the Board | Representative for Securities Affairs |
| Name | Han Zhongwei | Zhang Xiaoquan |
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* 1. **Introduction to the Main Business of PTL during the Reporting Period**

**1、Business Situation of lithium-ion battery industry**

As a platform company for battery materials and process technology solutions, PTL's products mainly cover key materials and automation equipment for lithium-ion batteries, located in the upstream of the lithium-ion battery industry. Lithium-ion batteries can be divided into three categories: power, consumer, and energy storage, depending on their application scenarios:

**a、Power batteries**

In the domestic market, driven by both policies and market forces, new energy vehicles have gained widespread recognition consumer recognition. According to data from the China Association of Automobile Manufacturers, the penetration rate of new energy vehicles in China reached 31.6% in 2023, an increase of 5.9% points from 2022, and sales of new energy vehicles reached 9.495 million units, a year-on-year increase of 37.9%, which is driving the domestic shipment of power batteries to reach 616.3GWh, a year-on-year increase of 32.4%; The cumulative loading capacity reached 387.7GWh, a year-on-year increase of 31.6%. EV Tank predicts that new energy vehicles will continue to maintain high-speed growth in the future, with domestic lithium battery demand expected to reach 1,532.3GWh by 2030.

In terms of the international market, the growth of the European new energy vehicle market fell short of expectations in 2023 due to factors such as subsidy policy reductions in countries like Germany. The annual sales reached 2.948 million vehicles. However, China's exports of new energy vehicles remained strong, with a cumulative export of 1.203 million vehicles in 2023, a year-on-year increase of 77.6%. Europe, America, and Southeast Asia remain the main export destinations for China's new energy vehicles and power batteries.

**b、Consumer batteries**

Consumer lithium-ion batteries are mainly applied in digital products such as smartphones, PCs, and tablets. Affected by factors such as lower-than-expected global economic growth, rising energy and material costs, supply chains instability, and early release of demand for consumer electronic products during the pandemic, the traditional 3C consumer digital market has experienced varying degrees of decline in 2023. According to IDC data, the global smartphone shipment in 2023 was 1.17 billion units, a year-on-year decrease of 3.2%; The shipment volume of PCs was 295.6 million units, a decrease of approximately 13.9% compared to the same period last year. But with the release of new products from brands such as Apple and Huawei in the second half of the year, the consumer electronics market has shown a recovery trend, with global smartphone shipments reaching 326.1 million units in the fourth quarter, a year-on-year increase of about 8.5%, ending seven consecutive quarters of decline. Canalys predicts that the application of AI big models in smartphones and personal PCs is expected to become a new market growth driver from 2024 to 2027.

In July 2023, the National Development and Reform Commission and other departments successively introduced policy support such as "Several Measures to Promote Electronic Product Consumption", and the consumer electronics market in China also stabilized and improved in the second half of the year. According to data released by the China Academy of Information and Communications Technology, the cumulative shipment volume of mobile phones in the Chinese market reached 289 million units in 2023, a year-on-year increase of 6.5%. In December, the shipment volume of domestic brand mobile phones reached 24.554 million units, a year-on-year increase of 11.7%, accounting for 86.8% of the same period's mobile phone shipment volume. The Chinese consumer electronics market is expected to experience a recovery and growth in 2024, which is conducive to the recovery of demand for consumer lithium-ion batteries.

**c、Energy storage batteries**

Energy storage lithium-ion batteries are currently mainly used in three major areas: household energy storage, communication base station energy storage, and power system energy storage. According to the National Energy Administration, the newly installed capacity in China in 2023 is about 22.6 million kilowatts, an increase of over 260% compared to the end of 2022; As of the end of 2023, the cumulative installed capacity has reached 31.39 million kilowatts, achieving the new energy storage installation target of the 14th Five Year Plan two years ahead of schedule. Lithium ion batteries still occupy an absolute dominant position in new energy storage, accounting for 97.4% of the newly put into operation energy storage.

In 2023, due to factors such as the economic downturn in Europe and the decline in electricity prices, the growth rate of global energy storage lithium batteries has slowed down, with a cumulative shipment volume of 224.2GWh for the year, a year-on-year increase of 40.74%; The shipment volume of Chinese energy storage lithium batteries reached 203.8GWh, a year-on-year increase of 58.2%. Electric energy storage lithium batteries still occupy over 80% of the market share, while industrial and commercial energy storage lithium batteries have become the fastest-growing sub sector in 2023. With the intensification of energy crisis and environmental issues, energy storage, as an important way to solve energy consumption, is expected to continue to maintain a long-term positive development trend. Major countries around the world are transitioning towards green and low-carbon energy, which is expected to drive the sustained and rapid development of the new energy storage industry led by lithium batteries. Energy storage lithium battery enterprises with core component supply capabilities and industrial integration advantages are expected to usher in new development opportunities.

**2、Main Business**

PTL’s main business covers anode materials, separator and coating, PVDF and binders, composite current collectors, aluminum-plastic packaging films, nano-alumina and boehmite materials. Meanwhile, we provide services for automated process equipment and intelligent manufacturing systems. Through resource sharing and industrial collaboration among the three major business units of anode material, separator and coatings, and automation equipment, PTL delivers diversified, differentiated, and specialized product combinations and integration services to our customers. PTL provides customers with comprehensive solutions through various business service models

**3、Business Model**

**a、Procurement mode**

PTL currently mainly acquires raw materials through external procurement, and the procurement departments of each subsidiary are responsible for specific implementation according to their own business needs.

By establishing and continuously improving the procurement management system, PTL considers multidimensional indicators such as supplier research and development capabilities, supplier qualifications, safety performance, quality management, sample design and verification. For supplier capability assessment involving chemicals, strict control is exercised over important indicators such as quality and environmental system certification, MSDS certification, national laboratory certification (CNAS certification), ROHS environmental testing reports, etc., to ensure stable supply of raw materials, and to ensure that purchased materials and their processes meet safety, health, and environmental requirements. For the procurement of standard raw materials and equipment standard parts, PTL conducts selective procurement in accordance with the standard procurement process. For non-standard parts customized for automation equipment business, PTL will inquire and purchase from qualified suppliers according to design drawings and specific indicators. At the same time, PTL gradually introduces a series of social and environmental indicators in the supplier management process to ensure that the company and suppliers jointly enhance a long-term sustainable strategic partnership.

**b、Production mode**

PTL adopts a production model of "organizing production according to orders and considering market forecasts for moderate inventory" for anode materials, separator and coating, PVDF and binders, composite current collectors, and aluminum-plastic packaging films. Automation equipment is guided by the actual applicability and functional requirements of customers, and targeted overall scheme selection and design are carried out. Key self-made components and non key outsourced components are integrated and integrated, and the whole machine is delivered in conjunction with self-developed software system integration.

**c、Sales model**

As a key upstream supplier in the new energy battery supply chain, PTL adopts a sales model that the company connects with downstream customers directly through the sales department with collaborative assistance from technical support departments such as research and development and quality. Through strategic cooperation, joint research and development, product design and customization services, PTL has established long-term and stable business cooperation relationships with downstream customers.

* 1. **Key Accounting Data and Financial Indicators in the past three years**
  2. **Key accounting data**

Unit: CNY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Key accounting data | 2023 | 2022 | Change(%) | 2021 |
| Operation revenue | 15,340,041,057.24 | 15,463,905,959.37 | -0.80 | 8,995,894,111.31 |
| Net profits attributable to shareholders of the the listed company | 1,911,603,496.56 | 3,104,433,993.56 | -38.42 | 1,748,727,819.13 |
| Net profits attributable to shareholders of the listed company after deduction of non-recurring gains and losses | 1,780,776,488.62 | 2,959,051,738.74 | -39.82 | 1,660,041,467.57 |
| Net cash flow from operating activities | 1,117,806,387.29 | 1,223,361,736.87 | -8.63 | 1,725,113,559.10 |
|  | 31 December 2023 | 31 December 2022 | Changes of the Same Period ( % ) | 31 December 2021 |
| Net assets attributable to shareholders of the listed company | 17,774,487,767.57 | 13,456,926,161.06 | 32.08 | 10,486,702,727.06 |
| Total assets | 43,674,947,626.61 | 35,697,309,157.66 | 22.35 | 21,450,262,561.84 |

* 1. **Key Financial Indicators**

Unit: CNY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Key Financial Indicators | 2023 | 2022 | Change (%) | 2021 |
| Basic earnings per share (CNY/share) | 0.95 | 1.54 | -38.31 | 0.88 |
| Diluted earnings per share (CNY/share) | 0.94 | 1.54 | -38.96 | 0.88 |
| Basic earnings per share after deducting non-recurring gains and losses (CNY/share) | 0.88 | 1.47 | -40.14 | 0.83 |
| Weighted average ROE (%) | 13.27 | 26.00 | Decreased by 12.73 percentage points | 18.07 |
| Weighted average ROE after deducting non-recurring gains and losses (%) | 12.36 | 24.76 | Decreased by 12.40 percentage points | 17.16 |

* 1. **Main Accounting Data for the Reporting Period by Quarter**

Unit: CNY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | First Quarter | Second Quarter | Third quarter | Fourth quarter |
| Operating income | 3,698,994,031.12 | 4,106,603,396.20 | 3,881,930,177.93 | 3,652,513,451.99 |
| Net profits attributable to shareholders of the the listed company | 701,974,570.75 | 602,416,917.13 | 324,528,176.33 | 282,683,832.35 |
| Net profits attributable to shareholders of The listed company after deduction of non-recurring gains and losses | 678,128,782.15 | 575,760,548.81 | 293,186,370.43 | 233,700,787.23 |
| Net cash flow from operating activities | -494,777,529.29 | 1,327,897,857.29 | -192,170,530.98 | 476,856,590.27 |

* 1. **Discussion and Analysis of Business Situation**

PTL is committed to becoming a leading provider of comprehensive solutions for key materials and automation equipment in the new energy battery industry. Our main business covers anode materials, separator and coating, PVDF and binders, composite current collectors, aluminum-plastic packaging films, nano-alumina and boehmite materials. Meanwhile, we provide services for automated process equipment and intelligent manufacturing systems. Through resource sharing and industrial collaboration among the three major business units of anode material, separator and coatings, and automation equipment, PTL delivers diversified, differentiated, and specialized product combinations and integration services to our customers.

In 2023, PTL achieved a revenue of CNY 15.34 billion and a net profit attributable to shareholders of the listed company totaling CNY 1.91 billion.

**1、Anode Materials**

In 2023, PTL's anode material business achieved a shipment volume of 155,317 tons, making an 11.35% year-on-year increase. However, the main operating income of the anode material and graphite business amounted to CNY 6,610.77 million, reflecting a 16.01% year-on-year decrease.

In 2023, the anode material market faced challenges from oversupply and destocking bydownstream battery customers, leading to a continued decline in product selling price. These market dynamics, coupled with changes in customer product preferences and raw material properties,affected the company's production process and the cost. Consequently, the company made provisions for inventory depreciation for sluggish consumption of high-priced inventory in the initial phase. These factors resulted in a narrowing of the gross profit margin and operational pressure for company's anode material products. As of the end of 2023, the inventory scale and cost of the company's anode materials have significantly improved compared to the beginning of the year.

In response to these challenges, PTL accelerated R&D efforts in non-petrochemical raw materials and high-pressure fast charging products, tailored production processes to meet customer requirements, and achieved the introduction of some introduced cost-effective new products. With the consumption of historical high cost inventory, innovation in non-petrochemical raw materials, and the growing adoption of high-pressure fast charging products, PTL anticipates a significant improvement in the profitability of its anode materials in 2024.

In its pursuit of long-term cost reduction, PTL actively employs various methods such as technological innovation, process optimization, and product serialization to enhance efficiency. The under-construction Sichuan Zichen factory is positioned to emerge as the industry’s next-generation advanced production facility and benchmark factory which is designed to be environmentally friendly, green and low-carbon, energy intensive, highly automated and intelligent. It will be more suitable for the production adaptation of high-cost-effective anode materials.

**2、Separator and coating**

Regarding the separator and coating business, PTL achieved a coating and processing volume (sales) of 5.27 billion m2, representing a year-on-year growth of 21.50%. The main operating income from the separator and coating processing business reached CNY 4,815.81 million, showing a year-on-year growth of 23.63%. Additionally, PVDF products generated a main operating income of CNY 1,021.28 million (including internal sales).

**a、Coating**

In 2023, PTL's coating processing business maintained a positive growth trajectory, capitalizing on its comprehensive competitive advantages in separator, coating materials, coating equipment, binders, and coating processing. Thanks to its high level of customization and strong customer loyalty, the business secured a stable position within the industry. In 2023, PTL's coating separator and processing volume (sales volume) reached 5.27 billion square meters, accounting for 40.73% of the domestic wet separator shipment volume (12.94 billion square meters) during the same period.

During the reporting period, PTL successfully achieved its targets in various areas, including domestic substitution of coating materials, accelerated deployment of coating equipment, cost improvements in adhesive technologies, and increased self-sufficiency in separator. These achievements led to synergistic effects and cost optimizations within the coating processing business.

Furthermore, by leveraging its scale advantages, PTL steadily enhanced production efficiency and product performance, ensuring consistent profitability.

**b、Separator and coating material**

Separator: Sichuan Zhuoqin's separator production line boasts leading speeds, widths, and efficiency in the industry, enabling mass production capabilities. As a result, the sales volume of separator has steadily increased each quarter. Leveraging its strong production equipment advantages, PTL separator products demonstrate significant cost competitiveness.

Ceramic coating materials: In terms of production technology, PTL has completed the platform construction of the boehmite production line, which has been evaluated by customers as the best in the industry. In terms of product R&D, PTL has developed and mass-produced next-generation ceramic materials such as ultra-fine alumina, ultra-fine boehmite, and fibrous boehmite for ultra-thin separator coating, and further expanded the application areas of boehmite products, including edge coated boehmite for cathode electrodes, water-based edge coated slurry catalyst carriers, and copper clad plate fillers, providing downstream customers with better cost improvement solutions. In terms of cost reduction and efficiency improvement, PTL synchronously achieves a comprehensive cost reduction through BOM, energy recovery, equipment improvement, etc.

PVDF and Binder: In 2023, PTL gradually put its newly built PVDF production capacity into operation, leading to a quarterly increase in sales. The total annual sales reached 10,627 tons, a significant year-on-year increase of 97.82%. During the reporting period, continuous significant adjustments in the selling price of domestic lithium battery-grade PVDF had a considerable impact on the company's PVDF business revenue. However, the gradual commissioning of new pre-process production capacity and reductions in raw material prices maintained the overall profitability of PVDF. Despite the PVDF industry entering a new phase of market competition, PTL remains confident in maintaining excellent market competitiveness and growth potential due to its advantages in full-process cost and long-term research and development. Regarding the PAA product, the optimization and enrichment of customer structure and product applications continued, particularly in the energy storage sector, achieving significant breakthroughs in business, thereby driving steady growth in PAA product sales, revenue, and profits. Additionally, new products designed to meet the demand for high dynamic performance and ultra-fast charging are expected to create new value for customers in 2024.

**c、Composite current collector**

During the reporting period, PTL achieved breakthroughs in developing composite aluminum foil and composite copper foil current collector. In October 2023, PTL signed a "Strategic Cooperation Agreement" with CATL to establish a long-term cooperation mechanism for the composite copper foil current collector business, and jointly explore new energy marketsdomestically and abroad. Currently, PTL’s composite aluminum foil products have achieved small-scale shipments in the consumer sector, while composite copper foil products are meeting customer demands steadily, with continuous progress in industrialization efforts.

To seize the initiative in the industrialization wave of composite current collectors, Jiangsu Zhuoli's First Phase production base, with an annual capacity of 16,000 tons of composite copper foil, has completed the construction of its plant. The decoration of the plant, customization, and installation of equipment have commenced. It is expected that by 2024, the production base will gradually commence operations, scaling production capacity according to customer demand.

**d、Aluminum plastic packaging film**

In 2023, the global consumer electronics market continues to be sluggish, and the competition in the aluminum-plastic packaging film market is becoming increasingly fierce. During the reporting period, PTL continuously improved the performance and cost structure of its aluminum-plastic packaging film products through comprehensive measures such as organizational optimization, energy conservation and cost reduction, and improving yield. The product shipment volume reached 15.75 million square meters in 2023, laying a solid foundation for the growth of sales volume in 2024.

3、**Automation Equipment**

In the aspect of automation equipment business, PTL's performance and delivery scale have significantly increased. In 2023, PTL achieved a total operating income (including internal sales) of CNY 3,591.80 million.

PTL's competitive advantage lies in lithium battery front-end coating equipment, particularly high-speed wide-width double-sided coating machines. Through continuous R&D and the introduction of new process products, the product line covered key production processes of lithium battery front, middle, and back. This includes comprehensive product service capabilities such as coating, slitting, winding, stacking, injection, and formation and capacity matching for key cell processes. During the reporting period, the scale of delivery of front, middle, and back-end equipment has significantly increased, promoting the increase in operating income.

Additionally, in other new energy manufacturing equipment, PTL's lithium battery separator production equipment has been gradually delivered, and the production equipment for cathode and anode materials and photovoltaic equipment research and development have entered the design and verification stages.

Actively expanding into the international market, PTL focuses on developing the European market centered around Europe's KATOP, increasing sales teams in North America and Southeast Asia, and establishing and improving the internal overseas coordination team within the factory. During the reporting period, overseas orders achieved good results, with expectations for further increase in 2024.

* 1. **Shareholdings of the Top Ten Shareholders**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Shareholdings of the top ten shareholders | | | | | | |
| Shareholder name  (full name) | Increase or decrease during the reporting period | Number of shares held at the end of the period | Proportion(%) | Number of shares held with restrictions on sales | Shares in pledge, marked or frozen | |
| Share Status | Quantity |
| Liang Feng | 164,951,653 | 531,510,881 | 24.86 | 0 | In pledge | 197,091,320 |
| Ningbo Shengyue Venture Capital Partnership (Limited Partnership) | 71,460,411 | 230,261,325 | 10.77 | 0 | In pledge | 68,208,000 |
| Ningbo Kuoneng Venture Capital Partnership (Limited Partnership) | 62,006,756 | 199,799,546 | 9.35 | 0 | none |  |
| Chen Wei | 54,865,241 | 175,942,165 | 8.23 | 0 | none |  |
| HKSCC | 50,234,935 | 161,754,249 | 7.57 | 0 | none |  |
| Chengdu Advanced Capital Management Co., Ltd. - Chengdu Major Industrialization Project Phase I Equity Investment Fund Co., Ltd. | 43,177,892 | 43,177,892 | 2.02 | 43,177,892 | none |  |
| Xiaodong Qi | 11,790,000 | 37,990,000 | 1.78 | 0 | none |  |
| Postal Savings Bank of China Co., Ltd.-East Growth Small and Medium Cap Hybrid Open-end Securities Investment Fund | 20,352,967 | 31,962,062 | 1.49 | 0 | none |  |
| China Construction Bank Co., Ltd.-Huaxia Energy Innovation Equity Securities Investment Fund | 9,297,021 | 29,957,067 | 1.40 | 0 | none |  |
| Industrial and Commercial Bank of China Co., Ltd.- ABC-CA New Energy Theme Flexible Allocation Hybrid Securities Investment Fund | -2,687,180 | 15,572,077 | 0.73 | 0 | none |  |

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