



Presentation Guidance

CHANGE & STABILITY
MANAGEMENT

New Energy Vehicles



2224763 @LIAO

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New Energy Vehicles

PREFECT

Despite the impact of events such as Russian-Uzbekistan conflict, chip shortage, soaring lithium price, and cooling of self-driving capital, China's automobile industry still shows strong resilience and vitality, and the speed of industrial ecological transformation and upgrading is not decreasing.

The sales volume of new energy vehicles has continued to rise, the export has begun to take shape, the local intelligent technology has been introduced, and the automatic driving Robotaxi and the exploration of new post-market models are emerging in endlessly. In 2023, many industry highlights are highlighted.





New Energy Vehicles

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● **Development overview**

The new energy vehicle industry is in the growth period, and the market demand will continue to be strong.

The new energy vehicle industry has experienced rapid development in the past few years, and is moving forward from the embryonic stage to the growth stage. Its ownership has increased more than 9 times in five years. Due to the strategic orientation of pure electric drive that China adheres to, pure electric vehicles account for a large proportion of the population. In 2019, the population of pure electric vehicles reached 3.1 million, accounting for 81.4%.

At present, due to technological and industrial changes, new energy vehicles have become the backbone of the transformation and upgrading of the automobile industry, and the new energy vehicle industry has also ushered in unprecedented development opportunities. By 2025, the sales volume of new energy vehicles in China is expected to reach 5.3 million, and the number of new energy vehicles will be around 20 million.



Development overview

The engine efficiency of traditional fuel vehicles is only 35%~40%, and the efficiency of electric hunting and driving equipment is up to 96%. Pure electric vehicles also reduce the linkage equipment required by traditional fuel vehicle engines.



The drive system design becomes simple, reduces the manufacturing threshold, and makes cross-border vehicle building become a trend. The technical research and development of new energy vehicles focuses on the battery part.



Development overview

2016-2019 Average cost of power battery



Positive materials account for 30% - 40% of the cost of power batteries. The price of power batteries affects the cost of new energy vehicles. The average cost of power batteries has continued to decline over the past four years. Due to the reduction of raw material costs, technology improvement and demand expansion, the cost of power batteries will further decline.





PART01、发展概况



5G promotes the development process of intelligent networking of automobiles.

Intelligent new energy vehicles are a major change in the joint development of China's manufacturing industry and China's Internet industry. Cloud computing, big data, and AI empowerment are changing the global new energy vehicle market.



Development overview

Energy transformation

The energy transformation has transferred the core competitiveness of automobile enterprises

sharing economy

Sharing mode changes personal travel mode



Four moderniza- tions

Driverless

Change driving mode to make it safer and more convenient

Intelligent Internet connection

Car Internet meets people's interactive needs



Development overview

Development and application of intelligent cockpit

Intelligent cockpit is gradually popularized to the public, bringing new driving experience to users, improving user experience and meeting diversified needs.

It will enrich the functions of vehicles, solve more pain points for users, and greatly expand the space for defining product and brand values.





Market status





Market scale of new energy vehicles

Sales volume and penetration rate of new energy vehicles in China (unit: 10000 vehicles)





Market scale of new energy vehicles

China's annual sales list of new energy vehicles:

In the first half of 2022, the sales volume of passenger cars with automatic driving function reached 28.8 million, and the penetration rate rose to 32.4%, up 46.2%, the second half of the competition of electrification was started by the intelligent automobile.





Safety level will become the basis for high-quality development of new energy vehicle industry



Charging and replacement safety

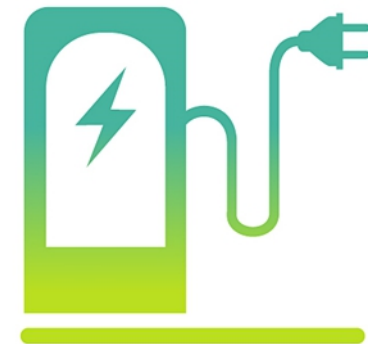
In the fire accident of new energy vehicles, charging scenarios

The proportion is up to 50%, so the charge and replacement safety of the battery, It directly affects the safety of new energy vehicles.

Battery safety

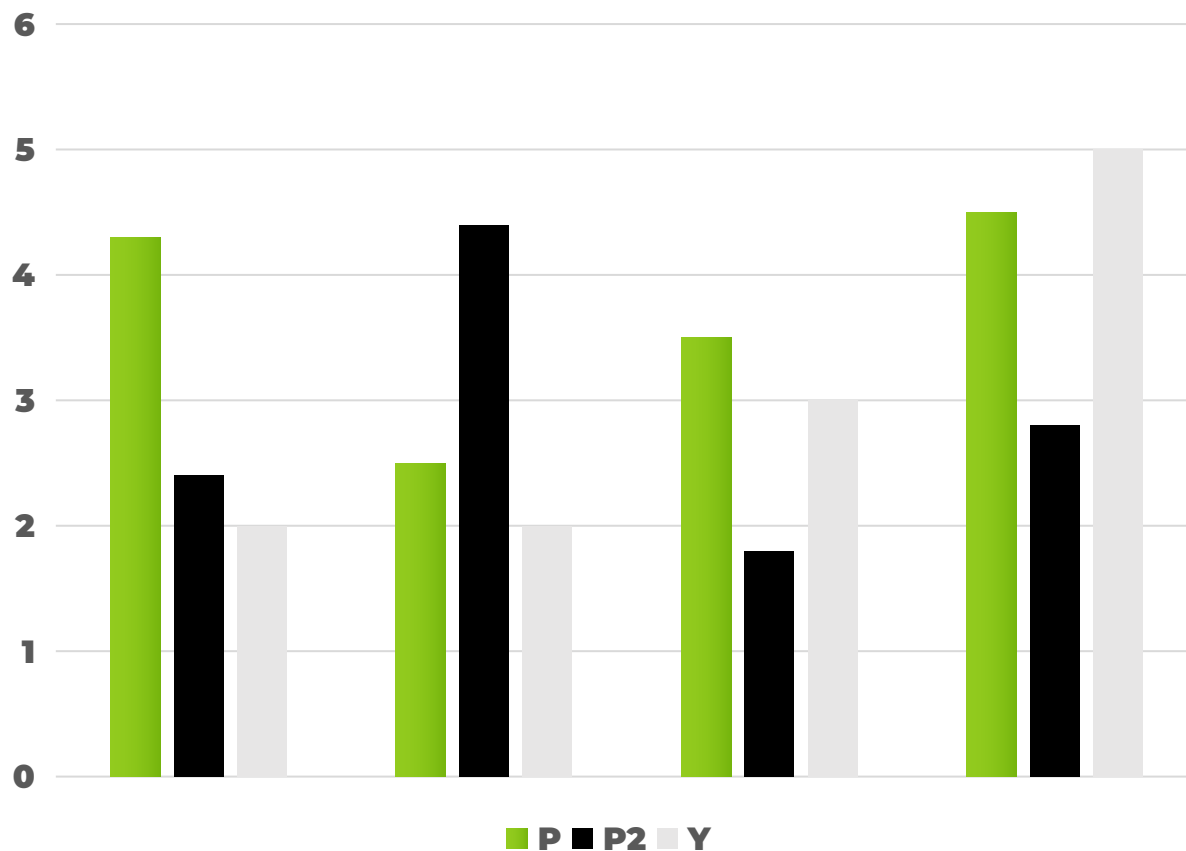
Frequently, new energy vehicle safety accidents will occur in 2020

In 72 new energy vehicle fire accidents, power battery self-ignition accounted for 31%.





Market scale of new energy vehicles



Vehicle functional safety



According to ISO26262, the functional safety of new energy vehicles mainly includes vehicle controller, motor controller, battery management system, electronic power steering, remote information processing system, advanced driving assistance system, etc. It is closely related to driving and riding safety.



Market scale of new energy vehicles

Energy consumption

The large-capacity battery of new energy vehicles can meet the high power demand of intelligent configuration;



Architecture

The electronic and electrical architecture of new energy intelligent networked vehicles has developed from domain integration to centralized development to meet the requirements of intelligent driving, intelligent networking and intelligent cockpit.



Safety

Including functional safety and information safety. The high degree of electrification of new energy vehicles can ensure the strong robustness and high reliability of intelligent systems;





MANAGEMENT 

Industry Aanalysis





Industrial development trend



Industrial development trend

The supply chain structure of the industrial chain will be optimized, and the supply and demand of batteries will gradually restore balance.



Industrial development trend

The high price of raw materials for lithium batteries has restricted the development of the new energy vehicle industry in the short term. With the introduction of relevant policies by the government departments, the production capacity of lithium mines is gradually climbing, and the pressure on the supply and demand of lithium batteries is expected to be eased next year.

1. Acid iron carb cell increased from 0.55 yuan/wh to 0.83 yuan/wh

Ternary cell increased from 0.63 yuan/wh to 0.92 yuan/wh

The price of the cell has increased by more than 40%



Industrial development trend

2. Mitigation is expected in the second half of 2023;

Notice on the coordinated and stable development of the supply chain of the car battery industry chain to promote the formation of the coordinated development mechanism of the battery

The expansion of the production of Li Mine is 6 to 12 months later than that of the battery, and the production capacity is expected to climb in the second half of the year;



Industrial development trend

3. Return to normal level in 2024

Sodium ion battery is expected to realize industrialization and gradually improve the recycling system;

The power battery industry has entered a healthy development

4. Demonstration and exploration of hydrogen fuel cell commercial vehicles are gradually deepening

The hydrogen energy logistics heavy truck has become one of the important scenarios for the commercialization of the hydrogen fuel cell industry. In July and September this year, the number of orders for purchasing hydrogen fuel cell heavy trucks exceeded 10000, It accounts for 44% of the sales of all vehicle segments.



Industrial development trend

5. Hydrogen fuel cell vehicles are maturing

- From January to October this year, China's sales of hydrogen fuel cell vehicles reached 2400, up 1.5 times;
- Based on the demonstration city clusters of Beijing, Shanghai and Guangdong, China's hydrogen fuel cell vehicle demonstration application city clusters cover 47 cities.
- China has built more than 250 gas stations in total, accounting for 40% of the global number.



Industrial development trend

6. High compatibility between hydrogen fuel cell vehicles and commercial vehicles

- Operation scenario adaptation: the energy conversion efficiency of hydrogen fuel cell technology is up to 60%, 2-3 times that of internal combustion engine, suitable for long-distance, heavy-duty and commercial scenarios.
- The long-term use cost is low: in terms of service life, the general life of fuel cell is more than 5000h, which is much higher than that of car battery, and the long-term use cost is lower than that of pure electric truck.



Development ***prospects***





Development prospects

Autonomous vehicle operating system will become the focus of research and development and competition of vehicle enterprises:

The operating system and chips are the core of the new industrial ecology, and the software and hardware must be coordinated to ensure the maximum performance. Foreign chips and operating system enterprises have joined forces, but domestic software and hardware collaboration is still in a weak link. We should accelerate the establishment of autonomous and controllable vehicle operating system



PART04、发展前景

China's automobile
enterprise operating system
is developed based on
foreign infrastructure



Software enterprise



Vehicle enterprises



Overseas on-
board operating
systems are highly
mature



Comprehensive upgrading of new energy vehicle production equipment



Lightweight can improve the driving range of new energy vehicles. To alleviate the anxiety of mileage, it is necessary to realize lightweight without reducing the number of battery packs.

Lightweight

High-efficient battery

Integration

Integration: Simplify the structural design of more than a few new energy vehicles, which can improve the space utilization rate and improve the impact resistance of the battery.

High-efficient battery: The core of the new car is the power battery. The energy efficiency of the battery is closely related to the driving range.





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**THANK
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