

# Research on the Technical Development Trend of New Energy Vehicles in the Future

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**Abstract:** New energy vehicle technology is a new type of vehicle based on the concept of sustainable development in China. In terms of functional use, it can reduce the content of toxic gas and carbon dioxide in vehicle exhaust and reduce the impact on urban air quality by means of electric energy or mixed energy. At the same time, with the characteristics of new energy, it can effectively alleviate the problem that non-renewable energy is almost exhausted, and make the construction of urban economic system more suitable for the development situation of sustainable development concept. In this paper, based on the analysis of the types of new energy vehicles, it is expected to provide a good reference for the subsequent research and development of new energy vehicles.

**Keywords:** New Energy Vehicles; Technological Development; Car Type

With the continuous development and improvement of China's economic system, people are paying attention to urban environmental protection while their material needs are basically met. Among them, urban air quality directly affects people's quality of life, and vehicle exhaust, as an important factor affecting urban air quality, needs to be paid attention to accordingly. Starting from two aspects of energy and exhaust, it is necessary to ensure the sustainability of energy acquisition, while the content of toxic and carbon dioxide gas in exhaust is reduced, so that the new energy vehicle technology can meet the goal of building an eco-city system and the urban air quality can be fundamentally guaranteed.

## 1. Type analysis of new energy vehicles

### 1.1 Electric vehicles

Conventional automobiles usually use fuel oil as the main driving energy. After the fuel oil is led into a closed

container and ignited, the engine piston can do work through energy explosion, and then the wheels of the vehicle can rotate through the transmission mechanism, thus meeting the basic use requirements of the vehicle. In the process of driving, vehicles are bound to consume fuel continuously in order to provide sustainable power. However, based on the molecular composition and combustion reaction of fuel, carbon dioxide or toxic gases are generally produced after fuel is burned in a closed space, and the impact of such gases produced by a single vehicle may not be obvious. However, with the increasing number of private cars in recent years in China, such gases are also gathering in small quantities, which affects the urban air quality and threatens the life and health of urban residents. Therefore, attention must be paid to this kind of vehicle exhaust pollution, otherwise the construction effect of eco-city system will be affected. From the perspective of energy saving, fuel resources are also non-renewable resources. With the increasing number of

vehicles in China, the scarcity of automobile fuel energy reserves has been increasing in recent years. If the innovation in existing automobile energy technologies and materials that can effectively replace fuel will not be found, a day of fuel shortage are bound to come, which will make fuel prices exceed the limit of people's commitment and hinder the sustainable development of China's economic system.

From the perspective of energy selection, there are many resources that can provide sufficient kinetic energy for vehicles, but there are few energy sources that can reduce the pollution to the surrounding environment and meet the requirements of sustainable development. Among them, electric vehicles, as the leading type of new energy vehicles, can drive the internal equipment of the vehicles through electric energy, and provide sufficient driving force for the vehicles. After the electric energy is consumed, it will not produce toxic gases and carbon dioxide, so it will not pollute the urban environment and aggravate the urban greenhouse effect. Secondly, in terms of power supply, most cities are gradually transforming from traditional thermal power generation to wind power and water conservancy. From the root point of view, the energy of urban power supply system itself has the characteristics of sustainability, so in terms of energy supply, there is no need to care whether the use of electric energy will cause energy depletion. It can be seen that the birth of electric vehicles completely conforms to the concept of sustainable development in China. From the perspective of the energy system of electric vehicles, the internal structure can be divided into drive system, charger, power battery and motor, and the capacity of power battery is the key factor that determines the driving time of vehicles.

### **1.2 Hybrid electric vehicles**

With the current electric vehicle technology, although it can meet the basic traffic in the city, there are still many problems in driving force and durability. Therefore, before the improvement of electric vehicle technology, it is necessary to provide an effective buffer scheme, so as to effectively reduce exhaust pollution and meet the long-distance and high-load driving requirements of modern vehicles. Hybrid vehicle is a new energy vehicle developed to reduce urban pollution at present. The driving force of this kind of automobile is provid-

ed by a mixture of various energy sources, and the driving force of the automobile can be significantly enhanced by adjusting the fuel ratio. At the same time, the mixed fuel of electricity and gasoline can effectively reduce the pollution caused by single gasoline fuel, so that the pollution content of exhaust gas can be significantly reduced. At present, influenced by the extensive popularization of power technology, more people have recognized the functionality of plug-in vehicles, and the application of hybrid vehicles in urban basic transportation systems has gradually become popular, providing sufficient time for the subsequent research and development of electric vehicles. From the point of view of the internal structure of hybrid electric vehicles, this kind of vehicles are equipped with a special on-board charging device and a systematic fuel system. With the connection of fuel and electric energy driving system, two kinds of energy can react in the closed device, thus providing sufficient driving force.

### **1.3 Fuel cell vehicles**

Fuel cell vehicle is a relatively new research project in the new energy system. This kind of device can provide sufficient kinetic energy for moving vehicles, and fuel cells are used as the main source of driving force to provide energy for motors. From the structural point of view of fuel cell, this kind of automobile driving system mainly includes hydrogen storage system, driving motor, power storage battery and fuel cell, etc. During the driving process of the vehicle, the fuel cell can provide the chemical reaction space of energy, and after the internal hydrogen and oxygen are mixed and burned, it can provide sufficient electric energy, so that the vehicle has sufficient driving force. In the process, the combustion product of hydrogen and oxygen is water, so it will not cause pollution to the surrounding environment. Moreover, the technology of hydrogen preparation is relatively mature, which can provide a continuous energy supply channel for vehicles, and there will be no use risk.

## **2. New energy vehicle technology development trend**

Fuel cell vehicles, hybrid vehicles and electric vehicles are typical of new energy vehicles at present. Under the influence of national conditions, countries have set different emphases in the process of developing new en-

ergy vehicles. From the current situation of China's new energy vehicles, electric new energy vehicles were born in the early new century. Up to now, the above three types of new energy vehicles are being researched and developed one after another. It can be seen that the relevant measures to research and develop new energy vehicles are in line with the purpose of energy saving and environmental protection of the automobile industry, and are also closely related to macroeconomic progress and development. When choosing the focus of new energy vehicles, the current energy saving and environmental protection situation should be closely combined, in order to better improving the industrial structure.

Limited by the technical conditions at this stage, technical personnel have not achieved perfection in the specific research and development of new automobile energy, and it is urgent to improve the existing new energy automobile technology. When choosing different types of new energy vehicles, it is necessary to consider them comprehensively according to the most fundamental industrial policies. From the present situation, it is urgent for the automobile industry to introduce more hybrid vehicles at this stage, which is due to the excellent potential of hybrid vehicles, which conforms to the fundamental technological trend. Hybrid electric vehicles are equipped with fuel engines, which can also be supported by electric energy. Compared with other types of cars, hybrid cars can drive longer mileage, so consumers also prefer to buy such cars. From the perspective of environmental benefits, hybrid vehicles have also created excellent comprehensive benefits, which is helpful to provide basic technical support.

In the future technological evolution, pure electric vehicles will occupy more market share. At present, pure electric vehicles are still difficult to occupy the large-scale automobile market. The root of this situation lies in the lack of mature new energy technologies. However, from the perspective of environmental protection performance of this kind of technology, it is bound to be vigorously promoted in China in the future, which will make more and more people change their way of life and travel. Therefore, at present, people related to pure electric vehicle technology must devote themselves to shortening vehicle charging time and extending cruising range, so as to make transportation more convenient for users and improve the running stability of vehicles, so

that more and more people can accept pure electric vehicles. From the technical root point of view, the government has set up a special R&D guarantee mechanism for pure electric vehicles and built a relatively specialized technical guidance platform, which objectively provides sufficient guarantee for R&D of pure electric vehicles and lays a foundation for the subsequent entry of electric vehicles into the market platform. Therefore, the market of pure electric vehicles is immeasurable, and the large-scale promotion of such vehicles will essentially promote the technological development process of the whole new energy vehicles, and significantly improve the energy-saving efficiency and level of vehicles.

Based on the above data, at present, hybrid electric vehicles have incomparable advantages in energy saving, which can provide sufficient power for the construction and promotion of the whole new energy vehicle system. However, from the perspective of sustainable development, pure electric vehicles are the ultimate development trend of the new energy vehicle system. From the perspective of the essence of new energy, China is currently constrained by technology, and does not yet have the conditions for the transformation of hybrid vehicles. At present, urban roads are usually long in distance. If vehicles want to maintain stable running status throughout the whole process, they need to have a strong engine drive system, followed by sufficient energy reserves. Hybrid electric vehicles usually contain a small proportion of fuel in energy, which is bound to have advantages over pure electric vehicles in energy power. Secondly, based on the evolution characteristics of automobile electric power structure, it can lay a foundation for the continuous development and improvement of new energy automobile technology, and make more and more consumers travel acceptable. From the point of view of transportation development, consumers are more able to accept hybrid new energy vehicles, so they should also focus on research and development here.

### **3. Conclusion**

To sum up, the effective application of new energy vehicle technology in modern urban transportation system can significantly reduce the overall emissions of toxic gases and carbon dioxide in cities, significantly improve urban air quality, alleviate environmental problems such as greenhouse effect, and ensure the quality of

life of urban people continuously. At the same time, relying on the sustainability of new energy, it can delay the loss rate of non-renewable resources in China and lay a foundation for the sustainable development of China's economy and functional system. Therefore, during the discussion of the development trend of new energy vehicle technology in the future, it is necessary to clarify the basic types and characteristics of new energy vehicles and evaluate them from the perspective of environmental pollution and non-renewable energy loss, so that the new

energy vehicle technology can gradually improve and finally be recognized by the public.

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