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# Analysis of Key Problems in New Energy Vehicles' Faults and Maintenance

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## Abstract

New energy vehicles are a new type of vehicles with renewable energy as the main raw material. They have received great attention and recognition from the society in today's shortage of petroleum resources. In recent years, the state has given certain policy support to the development of the new energy automobile industry, and has rapidly promoted the popularization and use of new energy vehicles. This paper makes an in-depth analysis of the common faults of new energy vehicles, and focuses on the application of key maintenance technologies.

## Keywords

New energy vehicles; fault problems; maintenance technology; analysis.

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## 1. Introduction

Automobile emissions are the main cause of air pollution, and in order to fundamentally suppress air pollution, it is necessary to adjust the type of energy of automobiles. In addition, as the number of non-renewable energy reserves such as oil continues to decrease, the search for new automotive energy has become a social problem. New energy vehicles born under this background can effectively alleviate the contradiction between social development and energy shortage. Under the strong promotion of the country, the new energy automobile industry is developing rapidly. However, new energy vehicles will inevitably have certain fault problems in actual use, and strengthen the analysis of key problems and new technologies for new energy vehicles, and further promote new technologies. The development of the energy automobile industry and the popularization of new energy vehicles have certain practical significance.

## 2. Analysis of common faults in new energy vehicles

### (1) Common faults of electric vehicles

Electric vehicles mainly rely on batteries for driving. Compared with conventional gasoline vehicles, the biggest advantage of electric vehicles lies in the efficiency of energy resources. The increase in energy efficiency means that the energy consumption and the pollution emissions generated during the consumption process are relatively low, so electric vehicles have obvious advantages in energy conservation and environmental protection. However, from the perspective of the car drive, the drive system of the electric car is far lower in quality and stability than the conventional gasoline car. After years of development, gasoline vehicles have a relatively high degree of perfection of the drive system and guaranteed operational reliability. The drive system of electric vehicles has not been tested for a long time, and the stability and reliability of operation are insufficient. Secondly, the common faults of electric vehicles are mainly concentrated on the battery, such as lithium battery overcharge and overdischarge. As we all know, the charging and discharging of lithium batteries for electric vehicles is difficult to control effectively. Since lithium batteries for electric vehicles are composed of a

plurality of small lithium batteries, if overcharge and overdischarge occur, the small lithium battery as a whole The lack of consistency leads to a decline in the service life of lithium batteries, which in turn directly affects the cruising range of electric vehicles.

### 3. Optimization analysis of hybrid electric vehicles

A hybrid electric vehicle is a new energy vehicle that combines traditional gasoline energy with electrical energy. The hybrid electric vehicle not only has excellent driving performance, but also can fully improve the economy of gasoline. The main power of the hybrid electric vehicle comes from gasoline, but the engine mainly relies on the electric motor during the operation. The application of this technology can not only ensure the running effect of the car, but also reduce the fuel consumption. In the same specification and the same displacement, the fuel consumption of the hybrid electric vehicle is much lower than that of the conventional gasoline vehicle. For this reason, the hybrid electric vehicle has been widely recognized by consumers, and it has become the most common new energy vehicle at this stage. From the point of view of the technical principle of the hybrid electric vehicle, in the initial stage of driving, the capacity of the battery is saturated, which can ensure the normal use of the vehicle, and the auxiliary power system does not need to be started. When the battery power is below 60%, the auxiliary power system starts to start, and the car is powered for the drive system when the car has a large power demand. At this stage, the driving technology of China's hybrid electric vehicles is relatively mature, and the operation of the engine can be guaranteed in any state and condition. However, since the hybrid electric vehicle is still based on gasoline, its optimization direction should focus on emission control. The common types of failures for new energy vehicles is shown in figure 1.

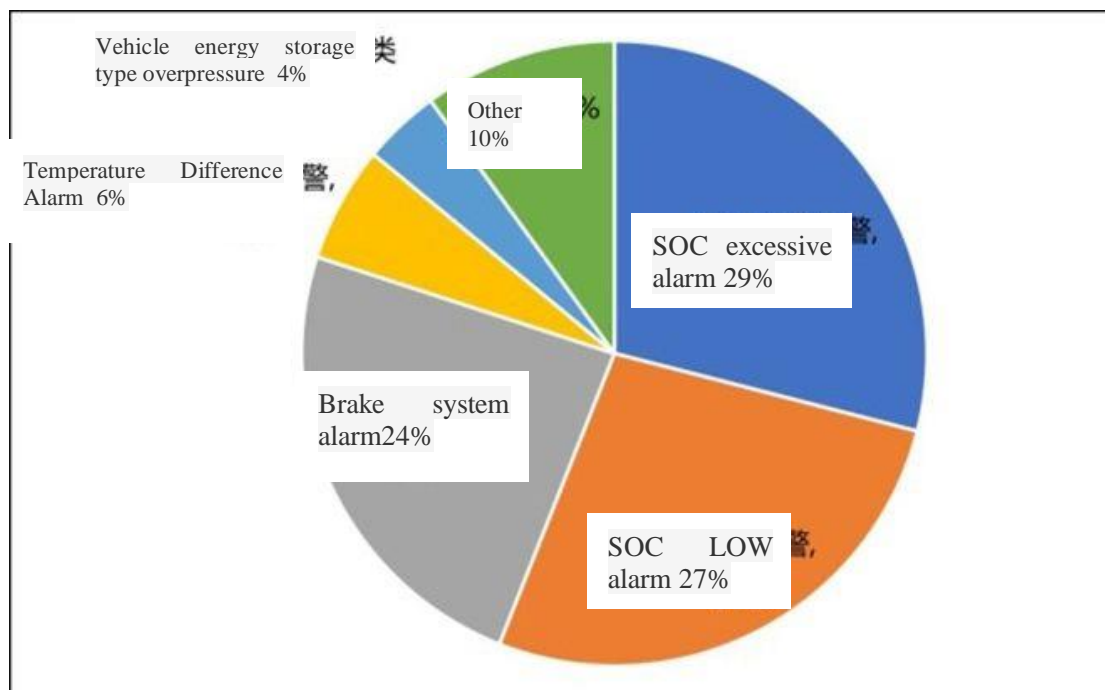


Fig.1 Common types of failures for new energy vehicles

Second, the key technology of maintenance of new energy vehicles

#### (1) Analysis of maintenance and maintenance of electric vehicles

Avoiding battery loss is the principle of battery storage for electric vehicles. If the battery is in a deficient state, it will cause sulfation problems due to electrochemical influences. Crystallized objects generated by sulphation will be adsorbed in the plates of the battery. It can even cause blockage of the ion channel, which in turn reduces battery life and capacity. On the surface of the relevant research, the longer the battery lasts in the deficient state, the greater the damage will be. Therefore, in order to reduce the impact of battery loss, it needs to be charged periodically.

If there is a situation in which the cruising range of the electric vehicle is greatly reduced during the operation, it indicates that the battery pack of the electric vehicle has a problem such as a grid breakage problem. In the face of this situation, the battery needs to be repaired, and the battery can be repaired by fully matching.

When performing the controller check of the electric vehicle, it is necessary to ensure that the controller is in the power-off state, and the effect is best when the power-off state continues for 90 days. Since the controller has completed the adjustment and configuration of all parameters at the factory stage, the inspection process requires a demolition inspection of the controller. Secondly, the controller needs to be regularly maintained to remove impurities and dust adhering to the surface during maintenance.

#### **4. Analysis of maintenance and maintenance of hybrid electric vehicles**

When the hybrid electric vehicle fails to start, it indicates that the ignition system or the oil circuit of the car is faulty. When the non-human factors are excluded and the road conditions during driving are not good, the ignition system of the car has failed. If the power before the start of the car is different from the power at the start stage, and the vehicle power is in a state of continuous decline, the car's oil system is faulty. Maintenance personnel need to correctly determine the cause of the failure according to different fault response conditions, and carry out targeted maintenance.

When the hybrid electric vehicle has a starter failure problem, the maintenance personnel need to focus on checking the battery connector and battery power. Battery connectors are prone to loosening and oxidation after prolonged use, and can be removed by tightening or cleaning. In the judgment of whether it is caused by the battery power problem, it is necessary to start the lighting system inside the car. If the lighting system is not working properly, such as when the brightness is insufficient or extinguished, the cause of the failure is that the battery is depleted, and the battery is generally replaced. Or charge processing.

When there is a problem that the engine cannot be started, it is first necessary to check the amount of oil in the car. When the oil in the tank is insufficient, it often causes the fuel gauge to malfunction. Secondly, the maintenance personnel need to check the ignition system, especially the wire joint of the ignition system. When the position is loose, the engine will not start. Finally, the maintenance personnel need to check the ignition device. When the oil and gas volume in the cylinder reaches a certain standard, the humidity of the ignition device is relatively high, which makes it impossible for the automobile to start ignition. If this happens, specific measures must be taken to achieve control of the cylinder's oil and gas volume.

Third, the conclusion

On the whole, there are many reasons for the failure of new energy vehicles. Maintenance personnel need to actively understand the operating principle of new energy vehicles to ensure that the main causes of failures can be correctly judged in the face of automobile failures, and based on the maintenance of traditional gasoline vehicles. Experience makes appropriate adjustments to the application of maintenance technology to ensure the rationality and practicality of technical applications.

#### **References**

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