Research on common faults and maintenance of new energy vehicles

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Abstract: with the deepening of the concept of energy conservation and environmental protection, environmental protection awareness has gradually penetrated into people's lives. The wide application of new energy vehicles is the practice and implementation of this concept. However, in the application process, due to the limitations of technology and other factors, a series of faults appear and need to be solved. Therefore, a comprehensive and in-depth study of effective maintenance strategies for common faults of new energy vehicles has gradually become the key research topic of experts. This paper focuses on the common faults and maintenance technology of new energy vehicles, and finally discusses the effective maintenance strategies of common faults of new energy vehicles, in order to play a role in the long-term development of new energy vehicles in the future.

Key words: new energy vehicles; Common faults; Maintenance; Effective strategy

Introduction

In the 21st century, the quality of life of the people has been greatly improved, and the material, life and spirit have been guaranteed to a certain extent. Subsequently, the demand for cars has also shown an increasing trend year by year. However, traditional private car exhaust emissions have caused serious pollution to China's ecological environment. In order to effectively solve this problem, the development and application of new energy vehicles has become extremely urgent. The research on common faults and maintenance of new energy vehicles has important practical significance.

1 Common faults of new energy vehicles

1. Battery failure

Pure electric vehicles that rely solely on electric energy and hybrid vehicles that combine traditional fuel vehicles with new energy technologies are important components of new energy vehicles. Among them, the most prominent advantage of pure electric vehicles is environmental protection. Compared with traditional vehicle types, pure electric vehicles cannot generate power without the power support and guarantee provided by lithium batteries. Generally speaking, the battery pack of a pure electric vehicle contains multiple lithium batteries, and it is difficult to meet the real power demand of the vehicle if any lithium battery fails. In particular, small lithium batteries may sometimes lead to insufficient charging or excessive discharge due to different performance, which will directly shorten the service life of the battery and lead to the failure of pure electric vehicles to be put into normal use. In addition, once improperly used, the battery has been in a high temperature state, which may lead to the aging of the car lines, and ultimately lead to leakage and short circuit problems, leading to fire.

2. Drive motor and motor control system fault

The drive motor system and motor control system are the fundamental guarantee for the power transmission of new energy vehicles. If the corresponding system fails, a series of services of the vehicle may be suspended, especially when the drive motor inside the new energy vehicle is running at high speed for a long time, it is easy to cause overheating or fire accidents, Finally, it seriously threatens the life and property safety of the people in the car.

3. Circuit fault

Generally, the circuit fault of new energy vehicles generally comes from the inside of the circuit, which is one of the common fault types of new energy vehicles. As far as new energy vehicles are concerned, their internal circuit mechanisms are very concentrated, complex and closely arranged. Once the circuit near the battery is softened and old due to excessive temperature, it is easy to cause short-circuit leakage and other situations, and even more serious, it may cause spontaneous combustion of new energy vehicles, with unimaginable consequences. In addition, with the development and progress of modern science and technology, new energy vehicles have more and more functions. There are various sophisticated electronic devices in every corner of the car. Only these electronic devices work together to form a vehicle control system, it will be more convenient for people to drive. However, it is worth mentioning that too many electronic devices will also form a strong burden on the circuit system. Long time high load operation will cause damage to electronic devices, which may eventually increase the possibility of circuit failure.

2 Maintenance technology for common faults of new energy vehicles

1. High voltage capacitor discharge technology

High voltage capacitor discharge technology is mainly used to judge the circuit and power failure, and is one of the most commonly used technologies to detect the failure of new energy vehicles. The maintenance personnel will carry out fault maintenance according to the judgment results, and provide corresponding data reference for their orderly work. The maintenance personnel should first discharge the battery, maintain it for five minutes, and then turn off the maintenance switch before they can carry out the corresponding maintenance

work on the new energy vehicle. Specific technical operation steps: first, the maintenance personnel need to seal the cover at the interface, then discharge the battery with the assistance of insulating equipment, and finally seal the seal with adhesive tape after discharge. A special reminder here is that after the battery bus is disconnected, the maintenance personnel should first check the power of the battery harness bus. The purpose of this is to prevent the residual charge in the line, which is not conducive to the orderly maintenance work.

2. Electronic diagnostic technology

According to the statistics and collation of the failure types of new energy vehicles, it is found that the incidence of battery failure leaps to the top, which is one of the important indicators for the failure judgment of new energy vehicles. In the power supply system of new energy vehicles, battery fault is the most difficult problem to diagnose and maintain, and the maintenance time of this kind of fault is relatively long. Therefore, the importance of selecting electronic diagnostic technology for diagnosis and maintenance is highlighted. In the actual maintenance process, accurately judging the circuit fault is a crucial factor in selecting the maintenance strategy. The processes involved in the maintenance and repair of new energy vehicles are relatively different. For a very simple example, sometimes the maintenance personnel do not find a fault during the inspection process, but a fault occurs during the driving process of the vehicle. At this time, the maintenance personnel can select electronic diagnosis technology according to the relevance of process categories during the maintenance and inspection process, Optimize and improve the maintenance process as much as possible and clarify the maintenance requirements. When the code reader or decoder is involved in the maintenance process, it should be selected to run together with the electronic diagnostic equipment, and then effectively collect the battery energy consumption data, and finally provide the necessary data support for the orderly maintenance. In particular, it should be emphasized that the maintenance personnel should try to avoid unloading the on-board circuit during the maintenance process, so as to provide convenience and guarantee for the later fault diagnosis.

3. Hybrid electric vehicle maintenance technology

Hybrid electric vehicles are not uncommon, especially in the early stage of the development of new energy vehicles, hybrid electric vehicles have been quickly introduced to the market, aiming to better meet the development of the automotive market and the specific living needs of the people. Although hybrid electric vehicles have high compatibility, their failure frequency is also quite high. Hybrid vehicle maintenance technology requires relevant maintenance personnel to determine the specific location and type of failure and find the cause before maintenance. Secondly, when the braking performance of the hybrid electric vehicle is restored, the maintenance personnel need to judge the specific maintenance components of the hybrid electric system at this time. Taking BYD song DM hybrid power system as an example, it mainly adopts the plug-in hybrid power system. Its special feature is the addition of clutch and transmission. However, due to the high complexity of the power transmission mode of this system, maintenance personnel need to spend a lot of time and energy to detect faults.

4. Maintenance technology of pure electric vehicle

The most common fault causes of pure electric vehicles are closely related to batteries and circuits. In the process of maintenance and detection, it is an important direction to judge whether the battery of new energy vehicles has power loss. In the process of use, the battery of new energy vehicles often suffers from high consumption, which is also one of the important reasons for circuit system failures, and may eventually lead to the failure of normal operation of the vehicle. In addition, the battery of a pure electric vehicle is likely to be seriously sulfated after a long time of storage, which will greatly reduce the performance and life of the vehicle. In order to effectively solve this problem, the key of maintenance technology is vehicle maintenance, and try to avoid power loss of new energy vehicles. In the process of daily use, users can evaluate the operation of pure electric vehicles by means of regular detection.

3 Effective strategies for common fault maintenance of new energy vehicles

1. Strengthen cooperation with manufacturers

In order to improve the overall maintenance level of new energy vehicles, we can also start from the following aspects while promoting the popularization of new energy vehicles:

First, dealers or maintenance manufacturers should strengthen close cooperation with automobile manufacturers, establish long-term and stable communication, timely feed back fault types and maintenance suggestions to automobile manufacturers based on market demand, and require automobile manufacturers to continuously improve the manufacturing level of new energy vehicles by introducing new technologies and equipment. In addition, new energy vehicles should strengthen the development of new technologies, especially the continuous improvement of the shortcomings of new energy vehicles. If possible, it is best to continuously introduce new technologies and new functions, so as to fundamentally reduce the failure probability of new energy vehicles.

Second, on the one hand, from the perspective of manufacturers, they should regularly send professional technicians to provide professional guidance and face-to-face demonstration for maintenance personnel, in order to improve the operation and practice of maintenance personnel. On the other hand, from the perspective of maintenance manufacturers, they should establish a long-term and stable cooperative relationship with manufacturers, provide a broad platform for the communication of technicians on both sides and create good opportunities. Through face-to-face guidance and feasibility suggestions, the technical skills of maintenance personnel can be improved by leaps and bounds.

2. Improve the professional ability of maintenance personnel

In the process of new energy vehicle maintenance, maintenance personnel are extremely important key technical force. Therefore, in order to successfully solve the faults of new energy vehicles and improve the quality and efficiency of maintenance, it is necessary to

improve the professional ability and level of maintenance personnel. The focus is to let maintenance personnel understand and master the root causes of new energy vehicles' faults in many aspects, so as to promote the comprehensive development of new energy vehicles.

First, maintenance manufacturers should regularly arrange theoretical and technical training for maintenance personnel, strengthen training efforts, and provide more opportunities for technical practice for maintenance personnel. At the same time, maintenance personnel themselves should also actively improve their professional level. In particular, they should reasonably use their spare time to learn and understand new processes and technologies through the Internet or other channels, improve their theoretical and practical knowledge, strengthen their ideological guidance, and establish special learning and exchange groups, It really provides a new idea to solve the problem of weak technical force of maintenance personnel in the current new energy vehicles.

Second, improve the practical ability of maintenance personnel. The most important test of new energy vehicle maintenance is the practical ability of maintenance personnel. While strengthening the practical ability of maintenance personnel, we should also cultivate their teamwork spirit, and provide maintenance personnel with professional practice platforms for different faults, so that they can understand the specific maintenance methods corresponding to various faults of new energy vehicles. In practice, maintenance personnel can also learn while practicing and learning while doing, greatly improving their technical and emergency handling capabilities. Only when the hands-on ability of maintenance personnel is enhanced, can they quickly find the specific causes of the failure and make a quick judgment. Only in this way can they ensure the effectiveness and effectiveness of the work and the smooth progress of the maintenance work.

3. Innovation and optimization of maintenance methods

Compared with the maintenance methods of traditional vehicles, the maintenance of new energy vehicles is more complex and refined. Therefore, in the actual maintenance process, the maintenance personnel should conduct a comprehensive inspection of the vehicle in order to determine the cause of the failure. In addition, when designing new energy vehicles, automobile manufacturers should design maintenance equipment for common faults, enrich detection methods, and improve maintenance efficiency.

At present, the development of new energy vehicle technology is very fast, which naturally puts forward higher requirements for the technology of maintenance personnel. Especially with the rapid development of information technology, the new energy maintenance technology should also be updated. Maintenance personnel should especially apply modern information detection technology to the fault detection and maintenance of new energy vehicles. On the one hand, it is conducive to reducing the cost of fault diagnosis, on the other hand, it is conducive to improving the quality of maintenance.

Finally, maintenance manufacturers should pay close attention to the update and development of new energy vehicle testing equipment, and purchase advanced instruments and equipment to lay a solid foundation for maintenance, such as code readers, decoders, locators, diagnostic instruments, etc. In addition, in the actual maintenance process, maintenance personnel should pay attention to the optimization method, especially to avoid fuse short circuit during circuit detection.

4. Strengthen vehicle maintenance and regular inspection

The refined inspection before maintenance is the key to ensure the quality of subsequent maintenance work. The maintenance personnel should pay attention to the following aspects when inspecting: 1Whether the functions of controller and vacuum pump are normal; 2. check whether there is air leakage or wear in each line of the vacuum pipeline; 3. detect the internal circuit of the vehicle, minimize the internal safety hazards as far as possible, and ensure that the new energy vehicle is in the normal driving state to the maximum extent.

In addition, because there are many precision electronic devices inside the new energy vehicle, and the control links of each device are different, the failure of the vehicle may cause serious safety accidents. Therefore, automobile enterprises should establish a complete set of automobile maintenance system, and regularly carry out safety inspection on the internal electronic devices of new energy vehicles, so as to fundamentally eliminate potential safety hazards. In addition, enterprises should optimize and upgrade the production line based on the vehicle maintenance situation to comprehensively improve the production quality of new energy vehicles.

epilogue

To sum up, more attention has been paid to the problems related to new energy vehicles, especially the common faults and effective maintenance technologies and Strategies of new energy vehicles. With the deepening of research, new energy vehicles have ushered in new development opportunities, which can truly lay a solid foundation for the popularization and application of new energy vehicles, and ultimately help promote the sustainable development of new energy vehicles in China.

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Ideological and political teaching reform and practice of "professional core literacy" course based on Blended Teaching

- Take Baiyin Mining and metallurgy vocational and Technical College as an example

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Abstract: in recent years, enterprises have higher and higher requirements for employees' professional core literacy. In order to better cultivate higher vocational students' professionalism, professional habits, and professional ability, combined with the concept and pattern of "great ideological and political education", taking the professional core literacy of Baiyin Mining and metallurgy Polytechnic as an example, this paper will systematically explore the ideological and political elements in the professional core literacy course, Focus on the construction of the curriculum system of "professional core quality", and better promote the implementation of the ideological and political teaching reform of the professional core quality curriculum through the implementation of the hybrid teaching method, which has a certain reference value in the ideological and political teaching reform of our college and other higher vocational colleges.

Key words: professional core quality; Curriculum ideological and political education; Blended teaching

According to the guidance of the Ministry of education on the ideological and political construction of efficient courses, colleges and universities in the process of Ideological and political construction of courses "should deeply sort out the teaching contents of professional courses, combine the characteristics, thinking methods and value concepts of different courses, and deeply excavate the ideological and political elements of the courses, so that the ideological and political elements can be organically integrated into the course teaching to achieve the effect of moistening and silently educating people". This requires vocational colleges to pay attention to the cultivation of professional core quality in the process of cultivating excellent professionals. Although there are studies on the exploration of Ideological and political education in the course of professional core literacy, it is not sufficient. For this reason, this paper explores the construction of the ideological and Political Curriculum System of the course of professional core literacy and the implementation of the ideological and political teaching reform and practical exploration of the course of professional core literacy.

1 The importance of Vocational College Students' professional core quality training and its relationship with curriculum ideological and Political Education

1. The importance of cultivating vocational core quality of Higher Vocational Students

In the process of cultivating higher vocational students, we must strengthen the cultivation of their professional core quality. Only in this way can we make them better serve the country and the people, and better be responsible for their work and loyal to the country; To stand out from a large number of employed people; In order to better meet the needs of enterprises; Only in this way can we establish a good reputation in enterprises and further promote the in-depth cooperation between schools and enterprises; Can help students achieve twice the result with half the effort in their work. Therefore, whether from the national level, the enterprise level, the school level or the individual level, the requirements of students' professional core quality are getting higher and higher. At present, there are still some problems in the cultivation of students' professional core quality in higher vocational colleges, such as unclear training objectives, traditional teaching as the main teaching method, paying attention to the cultivation of knowledge and skills in the teaching content, while the cultivation of students' professional core quality is more of a one-off and formality; Not to mention the systematic teaching design for professional core

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