Research on the Application of Automobile Detection and Diagnosis Technology in Automobile Maintenance

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Abstract: in Recent Years, People's Main Mode of Transportation, Car Travel, with the Continuous Development of the Country's Economy and Society and Rapid Development, At the Same Time Brought about the Development of Relevant Industries, and Then Promote Economic Progress. China's Automobile Maintenance Industry is Booming on the Basis of the Increase of Automobile Usage. in Actual Automobile Maintenance, Accurate Diagnosis of Automobile Fault is the First Step to Do a Good Job in Automobile Maintenance, and It Directly Determines the Direction of Follow-Up Maintenance, Which is a Difficult Process. Therefore, in Order to Ensure the Healthy and Stable Development of Automobile Maintenance Industry, It is Necessary to Constantly Improve Automobile Detection and Diagnosis Technology, Identify Automobile Faults through Scientific and Efficient Means and Obtain Accurate Diagnosis Results, and Lay a Good Foundation for the Follow-Up Work.

1. Introduction

With the Development of the National Economy, the Consumption Capacity of Chinese Residents Has Been Constantly Improved. At This Time, Residents Put Forward Higher Requirements on the Automobile Industry. of Course, the Increasing Number of Private Cars Benefited from the Favorable and Stable Development Environment of China's Automobile Market, and Also Made an Important Contribution to the Consumption Level of China's Automobile Industry and the Economic Development of the Automobile Industry. for People, High Safety and Stable Operation of the Car is More Likely, Because the Car Interior Structure is Relatively Complex, the Maintenance Work, Must Have Had a Higher Maintenance Technology, Grasp the Auto Detection Technology, after All, the Maintenance of the Auto Industry is the Important Factors Influencing the Automobile Consumption, Thus Stimulate the Development of Chinese Auto Industry Potential At the Same Time. in Order to Ensure the Normal and Safe Operation of the Car, the Car Maintenance Staff Must Carry out the Overall Detection of the Car, Accurately Grasp the Running State of the Car, Analyze the Problems of the Car and Quickly Develop Solutions.

2. Principles of Automobile Testing, Diagnosis and Maintenance

2.1 Economic Principle

The relevant requirements at the technical level are the basis for promoting the smooth development of automobile detection, diagnosis and maintenance. However, in order to achieve better results in automobile maintenance, it is necessary to follow the economic principle and conform to relevant economic indicators so as to create a better environment for the application of automobile detection, diagnosis and maintenance technology. The economic principle can be mainly reflected in the selection of basic repair schemes and the subsequent operation of the vehicle. First, the selection of numerous vehicle fault detection and diagnosis technologies and repair schemes with lower economic cost should be selected on the basis of ensuring the maintenance conditions of the vehicle. Secondly, effective control of fuel consumption is an ideal part of the subsequent operation of the vehicle, and appropriate detection, diagnosis and maintenance must be carried out

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to ensure a good running state. Of course, the economic principle can also make the car maintenance to avoid the economic level of more serious inappropriate problems. [1]

2.2 Principle of Dynamic Performance

In order to better meet people's higher requirements for automobile driving, the principle of power performance is also an indispensable principle in automobile detection, diagnosis and maintenance technology. Usually auto maintenance personnel need to focus on analysis of automobile engine running condition, reasonable evaluation whether the running effect of the automobile engine and ideal match, should also be detailed assessment gradeability and acceleration of the car, the user has a close relationship with the use of feeling, is also to focus on the aspects of the car breakdown maintenance. In order to improve the effect of automobile maintenance, when the maintenance personnel carry out fault maintenance, it is necessary to fully study the above customer requirements and judge the operation effect of the engine's transmission system and output system. After the completion of fault maintenance, repeated detection and evaluation must be carried out appropriately. Therefore, the principle of power performance must be strictly checked.

2.3 Principle of Reliability

The reliability principle is the main principle of avoiding the hidden danger after the automobile repair and realizing the ideal driving of the automobile. First of all, accurate fault diagnosis is the basis and premise of maintenance work. Therefore, it is necessary to ensure that the detection and diagnosis of automobile faults are accurate and reliable, so as to avoid the existence of fault misjudgment as far as possible. Secondly, in order to present a more ideal safe driving performance after automobile repair, it is also necessary to strictly check the reliability of automobile maintenance stage to avoid the existence of safety hazards. [2]

3. Problems Occurred in the Process of Car Maintenance

3.1 Backward Maintenance Means

At present, a series of problems, such as low maintenance efficiency and low quality of maintenance work, still exist in China's auto maintenance industry. The main reason is that China's maintenance means are relatively backward, and some links still adopt traditional manual maintenance. The simple manpower maintenance makes it impossible to solve the problem of automobile in time when the quantity of automobile is increasing, which is not conducive to the long-term development of China's automobile maintenance industry. Appeared in recent years, people's life more and more imported cars, this depends on the improvement of the national economy, however, China's automobile maintenance technology co., LTD. After all, the lack of corresponding repair materials, coupled with the auto maintenance personnel do not memorize all kinds of models of information, it caused the imported auto repair work harder, rely on vehicle maintenance and repair personnel through access to books, newspapers and other available information is not enough to fully introduce the maintenance work is not enough to cope with the maintenance work. Therefore, China's automobile maintenance industry needs to constantly update the technical equipment, in order to cope with the emergence of complex problems, problems and faults in the maintenance design for statistical analysis, for the later maintenance work to provide a reference and basis. Of course, in daily work, although the computer equipment can help to detect the basic fault of the car, but there are still some small problems cannot be detected by the computer, at this time must rely on the work experience of the maintenance staff to eliminate, to promote the problem to be solved in a timely manner. [3]

3.2 Lack of Automobile Maintenance Technology

In the rapid development of the social economy and the automobile industry, at the present stage, China's automobile gradually realizes electromechanical integration, automobile manufacturing technology has been improved, but the automobile maintenance technology is still in the overall backward state, which is an obstacle to the development of the automobile industry. The current

lack of auto repair technology, as well as the maintenance workers own maintenance technology behind makes the vehicle maintenance and repair needs cannot be satisfied, therefore, in the age of technology, computer technology import car repair, can bring the great convenience, through high-tech testing equipment for testing work, for maintenance personnel to carry out the maintenance work according to provisions of detection provides the reference, effectively improve the working efficiency. The automobile production and the maintenance process gradually present the fine characteristic, in the maintenance application microelectronics technology may fully satisfy the automobile industry higher request. [2].

3.3 The Maintenance System is Not Sound

In our country, most of the automotive maintenance companies often lack the necessary maintenance system even exist WeiXiuZhe charged by exaggerating the car problem severe problems such as the expensive cost of repairs, make consumers generally only in 4 s shop car and free maintenance, rather than an additional maintenance, it's of high price and maintenance and staff credibility is low, it has brought a lot of unnecessary losses to consumers. Therefore, automobile maintenance work should have a complete work system, because the daily fault maintenance and maintenance are usually different, maintenance personnel should also constantly update their service concept, form a unified service standard, in the process of maintenance and work as far as possible to provide better service for consumers.

4. Application Key Points of Automobile Detection and Diagnosis Technology in Automobile Maintenance

4.1 Application of Artificial Diagnosis Method

Manual diagnosis method is the most useful diagnostic technique in vehicle fault maintenance. The main principle of manual diagnosis technology is that maintenance personnel judge the state of the car and possible faults based on their years of maintenance experience, and then take corresponding maintenance measures. However, this diagnosis method has a strong subjective color, and the scientific theoretical basis is weak. In the specific diagnosis process, the maintenance workers are required to analyze the use and fault situation of the car with their own practical experience and professional technology, summarize the problem location of the fault, draw a conclusion, and develop maintenance prevention. For specific maintenance operation, maintenance personnel will typically use simple operation tools, to look at the car, listening, touching, beating and a series of inspection technique, to find the location of the fault, this detection method is simple, but not in a position to accurate fault location, and it takes a long time, is not conducive to improve maintenance efficiency. In other words, although the artificial diagnosis technology is lower than the overall construction cost of the instrument and intelligent diagnosis technology, it is lack of scientific and accuracy, and has higher requirements on the professional skills and comprehensive quality of maintenance personnel. If misjudgment occurs, it will affect the overall maintenance progress and maintenance quality. [5]

4.2 Diagnosis and Maintenance of Instruments and Equipment

Vehicle maintenance and repair personnel of maintenance of equipment maintenance experience and all kinds of diagnosis are automotive fault detection diagnosis and maintenance treatment necessary, of course, in the use of all kinds of testing diagnostic instruments and equipment, often also must have a professional repair personnel to assist, only in this way they can better understand the status of the vehicle running, thus offer the direction for subsequent car troubleshooting and accurate maintenance. In the selection of testing instruments and equipment, it is necessary to select equipment with high accuracy and apply it appropriately in combination with the actual situation, so as to reduce the economic pressure, make full use of simple and efficient testing equipment and instruments, and assist visual diagnosis mode to promote the continuous improvement of automobile maintenance level. The application of these instruments and equipment diagnosis

technology can detect and identify almost all vehicle fault problems, which provides a great reference for accurate maintenance treatment.

Of course, to improve automobile fault detection diagnosis accuracy, we must attach great importance to the choice of monitoring instruments and equipment, at the same time, combined with their own maintenance experience and select the appropriate equipment fault state, the prompt effective identification of all kinds of auto fault equipment, according to the data to obtain the effective information to targeted repair processing, so that you can avoid maintenance after the completion of the safe hidden trouble. [6]

4.3 Intelligent Detection and Diagnosis

At present, many intelligent detection devices are often applied in the automobile industry. Therefore, the characteristics of intelligent detection and diagnosis are presented. Of course, this must be attributed to the development and application of high-tech, which is conducive to the healthy and rapid development of the automobile industry. China's automobile industry still has room for development in the field of fault analysis and diagnosis data. The application of intelligent instrument and equipment and new and high technology in the automobile industry can greatly improve the speed and accuracy of automobile maintenance on the basis of the experience and judgment of maintenance personnel, providing great convenience and help for automobile maintenance. Of course, intelligent detection and diagnosis can make auto maintenance and detection turn from artificial eyes, ears and hands to high-tech and intelligent equipment detection, which can better eliminate the hidden dangers in the operation of cars and contribute to the comprehensive development of China's scientific and technological level. However, there are still many shortcomings in many parts of intelligent small test equipment in automobile test, for example, in the detection of automobile engine, chassis failure and other problems will be dwarfed, so intelligent equipment may continue to innovate and improve. [7]

5. Optimization Measures in Automobile Maintenance

5.1 Take Advantage of Current Advanced Technologies

In the information age, information technology in the continuous innovation and all walks of life have a close relationship. For the vehicle maintenance department, the choice of more efficient new technology, actively integrate information technology, can bring more long-term development for their own enterprises, thus creating higher economic benefits. With the aid of advanced electronic equipment, fault problems can be found in a timely and accurate manner and solutions can be quickly analyzed, which replaces a lot of manual work and improves the maintenance efficiency, service ability and level of the car. Of course, the application of information technology can also establish an advanced database, which is conducive to the timely understanding of the status of each vehicle, can completely replace the previous backward management mode, bring great convenience for the vehicle maintenance work. [8]

5.2 Optimize the Test System

It is very necessary to optimize the test system to realize the optimal management when carrying out the automobile test diagnosis and maintenance, because the automobile maintenance work is very complicated. Generally speaking, when the car is in use for a certain period of time, it is easy to have faults, which must be detected, diagnosed and solved in time. Maintenance enterprises can set up testing stations, which are used to detect and analyze the basic parts such as automobile performance, system, and original parts, and centrally manage the problems in maintenance, which can provide maintenance reference for the vehicles that have not been seen and the components inside the vehicles that have not been heard during the maintenance process, and help solve automobile problems in a timely and effective manner [5].

6. Conclusion

To sum up, due to the different car problem of species diversity, often difficult, and thus for vehicle inspection diagnosis and maintenance of the many difficulties and obstacles, therefore, to better enhance the level of vehicle inspection diagnosis and maintenance, vehicle inspection diagnosis and maintenance technology need to be flexible application, starts with the basic principles of economy, power performance and reliability, pay attention to the study of intelligent diagnosis and maintenance technology, the problem of all kinds of faults are on, so as to promote stable development of automobile industry.

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