Research on the Application of Computer in Automation of Electrified Testing Equipment

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Abstract. The continuous amelioration of the integration and complexity of the functions of the electrical detection equipment has brought great difficulty to its automatic control, especially to the accuracy and efficiency of the automatic control of the detection equipment. Based on this, this paper first analyses the purpose and value of automation of electrified detection equipment, then studies the automation of electrified detection equipment based on computer, and finally gives the specific application of computer in the automation of electrified detection equipment.

Keywords: Automation, Electrified Testing Equipment, Computer

1. Introduction
With the iterative progress and growth of computer tech, it has been widely and deeply studied and popularized in many fields, especially in the utilization of electrical detection equipment, which greatly accelerates the amelioration of the automation level of electrical detection process. The automation of electrical testing equipment plays an important role in modern industrial production. The utilization of computer tech almost runs through the automation testing process of electrical system [1]. The continuous amelioration of the integration and complexity of the functions of the electrical detection equipment has brought great difficulty to its automatic control, especially to the accuracy and efficiency of the automatic control of the detection equipment. Therefore, using advanced computer tech to realize the automatic operation and management of electrical testing equipment has gradually become an important direction and trend of the current utilization of electrical equipment.

The automation of electrified testing equipment is to manage, control and test the electrified equipment with the help of advanced computer tech. In the automation of electrified detection equipment, the use of computer tech can take several functions as shown in Figure 1 to achieve efficient detection and analysis of the equipment, thus greatly improving the efficiency and quality of work, and significantly reducing the cost of the detection process [2]. Using scientific computer tech to realize the automatic operation and operation of electrified detection equipment can release the energy of relevant workers and ameliorate the stability, reliability and utilization rate of equipment and system.

In addition, the automation tech of electrified detection equipment, as an important link in the process of electrification, can not only change the working mode of traditional electrified detection...
equipment and system, but also ameliorate its intelligent level to a great extent, thus establishing a premise for the stable operation of equipment and system. The amelioration of automation level of electrified detection equipment is increasingly inseparable from the assistance and deep participation of computer tech. The utilization of computer tech in it can significantly ameliorate the operation efficiency and detection accuracy of electrified detection equipment.

In short, the progress of computer tech to the utilization and popularization of intelligent and automation equipment to establish a prerequisite, to enhance the level of automation in various industries injected new technical support [3]. The utilization of computer tech in the automation process of electrified detection equipment can ensure the stable and safe operation of electrified equipment, and ease the related operators from the complicated work pressure, so as to establish a solid technical guarantee for the development of related industries. Therefore, it is of great practical value to study the utilization of computer tech in the automation of electrical testing equipment.

![Diagram](image)

2. The purpose and value of automation of electrified testing equipment

2.1. The value of automation of electrified testing equipment

In the operation process of electrification system, in order to ensure the normal and stable operation of relevant electrification equipment, it is necessary to effectively monitor the operation of equipment and system, collect and analyze the parameters and status data of equipment operation, and constantly monitor all kinds of valuable information and data [4]. The traditional monitoring process is not only inefficient but also has low accuracy, which leads to the poor efficiency and cost of equipment. It is difficult to monitor the status of equipment in the process of system operation in real time to ensure the stable operation of the system. With the continuous progress of computer tech, the degree of automation of electrification detection is also gradually ameliorated, which has expanded from the single parameter detection to the comprehensive detection of the whole operation process.

In addition, it extends from the monitoring of the process to the adaptive process control of the best conditions. Therefore, the automatic operation of the electrified detection equipment is not only an important part of the quality management system, but also an important technical guarantee for the scientific and comprehensive management of the electrified system [5]. The electrical automatic detection equipment can eliminate human error, make the detection results stable and reliable, realize dynamic monitoring, and greatly ameliorate the detection accuracy. The organic combination of process detection and automatic measurement process ameliorates the detection efficiency and expands the detection utilization scope; it can automatically feedback the detection information to the control system and realize the adaptive control and optimization of the electrical process.

2.2. The purpose of automation of electrified testing equipment

In the modern electrification system, the electrification automatic detection equipment can control the quality of the detected object and monitor the status of the detected equipment. First of all, at the level of quality control, the automation process of electrified detection equipment includes on-line detection and off-line detection. Among them, the former is to continuously detect the parameters in the operation of the equipment, and output all kinds of detection information and adjustment compensation, so as to reduce the system error [6]. The latter is to automatically measure the
equipment and system at the back end of the electrification system to determine whether the status of the system and equipment meets the specification requirements.

In addition, the monitoring of the electrification system is carried out with the help of the electrification detection equipment, as shown in Figure 2 below. Among them, the station condition detection is mainly to detect whether the materials are in the normal position, the equipment status is to detect the output power parameters of the motor, the technological process is to detect whether the parameters are reasonable, as well as the vibration and noise, and the transmission process detection of materials and parts is mainly to monitor the station condition of the guidance and automatic warehouse stacker.

Figure 2. Test content of electrified testing equipment

2.3. Classification of electrified automatic testing equipment
The types and specifications of automatic detection devices can be divided into different types according to different classification methods [7]. For example, they can be classified according to the conversion principle of measurement signal, according to the contact between the measuring head and the object to be measured, and according to the purpose and method of detection, as shown in table 1 below.

| Classification            | Typical equipment                                                                 |
|---------------------------|-----------------------------------------------------------------------------------|
| Measurement signal conversion | Electrical equipment, Pneumatic equipment                                          |
| Exposure                  | Contact equipment, Non connected equipment                                         |
| Test purpose              | Dimension measuring equipment, Shape measuring equipment, Position measuring equipment |
| Detection mode            | Passive measurement, On line active detection equipment                          |

3. Automation of electrified testing equipment based on computer

3.1. The way to realize automation of electrified testing equipment
With the amelioration of computer tech, sensing tech, mechanical manufacturing tech and its utilization level, as well as the increasingly wide utilization of automated manufacturing system, the automation degree of electrical detection equipment is also constantly improving [8]. The way to realize the automation of electrified detection equipment includes the installation of automatic detection device to realize the online detection in the process, and the setting of special automatic detection station in the automatic line, so as to realize the automatic detection in the key process according to the process sequence. Among them, distributed detection is used when the detection content is complex or difficult to realize in tech. In addition, by setting up special automatic detection equipment, automatic classification line and auxiliary measurement in flexible machining system are realized.

3.2. Key equipment of electrical automation testing
The automation control of electrified detection equipment needs the participation of much auxiliary equipment, including momentum meter, contact type, pneumatic type and laser measurement as the representative of the active measurement device [9]. Among them, the momentum meter includes pneumatic momentum meter and electric momentum meter. The former is easy to realize miniaturization, flexible to use, and has strong anti-interference ability to the surrounding environment. It is widely used in automatic measurement, but it has high requirements for gas source and slow response speed. The latter is a combined measuring device composed of various sensors, discrimination circuits and display devices, which are widely used in multi parameter measurement of workpiece. In addition, the contact measurement and pneumatic measurement of automatic detection active measurement equipment are gradually replaced by laser measurement, because the latter greatly ameliorates the measurement accuracy.

4. The specific utilization of computer in the automation of electrified testing equipment

4.1. Optimize and upgrade electrical automation process
With the iterative progress of computer tech, the utilization level of electrification automation is also constantly improving. The design of electrical equipment schematic diagram and the configuration of related equipment rely more and more on the assistance of computer tech, especially the complexity and diversification of the functions of electrical equipment, which makes the design of electrical connection more difficult [10]. In this context, with the help of computer tech to carry out electrical testing equipment automation design can effectively shorten the design cycle, more quickly establish a solution. Secondly, the utilization of computer intelligent tech in the automation design method of electrical testing equipment greatly accelerates the visualization, flexibility and interaction of the design process. In addition, the computer intelligent tech makes the automation system of electrical testing equipment have higher scalability, and can more effectively meet the automation design requirements of electrical equipment.

4.2. Automation and integrated control of electrified testing equipment
The automation control of electrified detection equipment requires the system to have higher data calculation ability, and realize the fuzzy optimization of control process with the help of computer algorithm. For example, the utilization of computer AI algorithm and related software can effectively ameliorate the automation and integration degree of electrical detection equipment, make the control process of the system more accurate and efficient, and ameliorate the data calculation ability of automatic control process. The utilization of computer intelligent tech in the automation process of electrified detection equipment ameliorates the intelligent degree of the equipment, and makes the automatic adjustment ability and anti-infection ability of the equipment significantly ameliorated. In addition, in the motion control level of automatic detection process, AI algorithm is used to realize the establishment of control model and trajectory calculation, which can make the detection and control more linear.

4.3. Automatic control of electronic testing equipment
The on-line monitoring of electrification system operation process involves many related technologies, such as sensor tech, signal processing tech, computer tech, automatic control tech and artificial intelligence tech. The automatic monitoring system is mainly composed of signal detection, feature extraction, state recognition, decision-making and control. Fault diagnosis is an important part of electromechanical automation tech. To judge the running state of the equipment, the corresponding identification control program should be used to identify the abnormal state in the process. The intelligent automation tech of electrical equipment can quickly process the collected fault related information, realize electromechanical intelligent self-diagnosis, and accelerate the maintenance and management of electrical equipment.
5. Conclusion
In summary, the utilization of computer tech in the automation process of electrified detection equipment can ensure the stable and safe operation of electrified equipment, and ease the related operators from the complex work pressure, so as to establish a solid technical support for the development of related industries. In this paper, through the research on the purpose and value of automation of electrified detection equipment, the classification of electrified automatic detection equipment is analyzed. Through the analysis of automation of computer-based electrical testing equipment, the key equipment of electrical automation testing is studied. Through the research on the utilization of computer in the automation of electrical testing equipment, the process of automation and integrated control, optimization and upgrading of electrical automation of electrical testing equipment is analyzed.

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