Electrical automation control technology of electromechanical equipment based on artificial intelligence technology

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Abstract—Artificial intelligence technology is the basic measure to ensure the good operation of electrical automation control system of electromechanical equipment. Because artificial intelligence technology is widely used, it mainly uses auxiliary electrical automation control systems such as data real-time monitoring, data acquisition and data mining in electrical automation control technology of electromechanical equipment. The application of artificial intelligence auxiliary system in electrical automation is mainly data acquisition, which integrates and analyzes the data generated in the production process of electrical automation system equipment. During the operation of the electrical automation system of electromechanical equipment, the data generated is extensive, the amount of calculation is large and the analysis is complex. Once the equipment fault occurs, it is easy to affect the electrical automation system and even the business activities of the enterprise. Therefore, the purpose of applying artificial intelligence technology to the production process of electrical automation system equipment is to centrally process the data parameters entered by electromechanical equipment, so that the accuracy of operating parameters of electrical automation control system of electromechanical equipment can be greatly improved, which is conducive to the stable development of production efficiency.

1. Introduction
In order to realize the comprehensive system construction of electrical automation control technology of electromechanical equipment, it is necessary to integrate the artificial intelligence technology.¹ The system construction of artificial intelligence technology is generally divided into two parts. Firstly, it needs the necessary support of computer technology theory, and secondly, it improves the interaction between other disciplines and artificial intelligence technology.² By analyzing the application of artificial intelligence technology in the electrical automation control of electromechanical equipment, it can be concluded that simulating human intelligence and creating equipment that can replace human production and life is the ultimate goal of artificial intelligence technology.³ Artificial intelligence technology is still developing and improving, and the most concerned research directions are expert system and robot system. Because the human brain has complex and changeable characteristics, how to simulate the real brain activity is the biggest difficulty of artificial intelligence technology. However, with the continuous innovation of modern technology, people have successfully developed robots that can simulate the human brain, and have been facing the world. The development and progress of electrical automation control technology of electromechanical equipment based on artificial
intelligence technology not only improves the development process of electrical automation, but also reduces the production cost of electrical automation.[4]

Figure 1. Big data technology in the mechanical and electrical equipment application system

2. System analysis of artificial intelligence technology in electrical automation control
The working efficiency of the central control system is the guarantee of the working efficiency of the whole electromechanical equipment system.[5] The application of artificial intelligence technology can greatly improve the intelligent level of the central control system and improve the operation efficiency of the central control system, so as to promote the overall efficiency of the working system. In the production process, the operation state of each link will affect the overall production effect of the system. Each link should not only have accurate monitoring, but also have a strong central control.[6] The production system of the branch enterprise is not completely perfect. The application of artificial intelligence can improve the overall effect through the optimization of the central control system. The implementation process of specific measures is divided into several steps. First, build a complete technical platform, make full use of big data and cloud computing technology to upgrade the central control system, type the process operation data and response plan into the system in the form of code, and realize the real-time control of the operation and status of the whole process of the production line.[7]

The performance computer carries out learning analysis, and then tests the artificial intelligence in the form of modifying parameters and indicators when the data sample size is large enough. It can operate the results of the system. In the working process, the memory bank of artificial intelligence continues to improve itself, and the final operation efficiency will be higher, come higher and higher.

3. Application advantages of artificial intelligence technology
The characteristics of electrical automation control technology of electromechanical equipment are complexity and systematicness, which requires professional electrical personnel to have excellent knowledge reserve and practical experience. However, relying on the traditional manual electrical automation control, the work efficiency is low, and the operation process is slow, which is not conducive to the overall work process. However, the electronic automatic control system of electromechanical equipment shows two advantages after using artificial intelligence technology.[8]

Figure 2. Electrical automatic calculation model algorithm of mechanical and electrical equipment
The data acquisition and processing of electrical automation control of electromechanical equipment rely on artificial intelligence technology to complete comprehensive analysis.\[9\] With this function, we can systematically analyze the complex and cumbersome data information of electrical equipment, extract valuable information, process and save relevant data in time. In this way, we can clearly see the operation process and specific data calculation in the control process of electromechanical equipment, accelerate the improvement of the work efficiency of electrical automation of electromechanical equipment, and realize the further improvement of its control system. At the same time, the electrical automation process of electromechanical equipment is inseparable from real-time monitoring equipment.\[10\] Faults and accidents are easy to occur in the automatic production process of electromechanical equipment, but it is impossible to rely on manual for effective prediction and intervention. Therefore, the real-time monitoring technology using artificial intelligence technology is very necessary. The monitoring equipment can upload the production data to the system management personnel, so that the management personnel can judge whether the production status of the equipment is reasonable, and carry out rectification according to the specific problems on site, so as to reduce the phenomenon of product quality non-compliance as far as possible. Artificial intelligence technology can also simulate the data of the main operating equipment of the electrical system, analyze the potential hazards and analysis, and help enterprises better reduce the safety cost.\[11\]

As the core function of the electrical automation control system of electromechanical equipment, the operating system controlled by artificial intelligence can help the electrical equipment complete the control and management of the automation system by using keyboard, mouse and so on. This can not only better control the electrical program, but also complete the same level of load operation, which not only reduces the work intensity of electrical operators to a certain extent, but also improves the performance of electrical automation control equipment. Artificial intelligence control also has the function of fault prediction and announcement. It is precisely because of the effective use of this function that the management equipment can timely capture the frequency of equipment production faults and carry out response plans in time, which greatly improves and improves the operation efficiency and safety performance of electrical equipment.\[12\]

4. Development trend of electrical automation control technology for electromechanical equipment

Under the background of the digital age, if various industries want to obtain long-term development, they must strengthen the connection with digitization. In the future development trend, it will gradually become digital, and the construction of electronic automatic control system of electromechanical equipment must be combined with digitization. Taking data information as the overall goal and applying artificial intelligence to the automatic production process, the professional digital reform of electromechanical equipment control system is carried out.\[13\] The construction and continuous innovation of electrical automation engineering control system can continuously reduce the cost of electrical automation and save materials to the greatest extent. The electrical automation control system of electromechanical equipment guides the electrical industry to carry out intelligent and digital development And continuous innovation and use of the reform, can let the electrical automation engineering control system has a long-term prospect, so as to achieve a great leap forward development of mechanical and electrical equipment.

The core part of the control process of electrical automation is the process of controlling electrical. In the process of electrical control, the scientific and reasonable application of artificial intelligence technology can effectively improve the level of electrical automation control, and the smooth application of electrical automation in the process of electrical control, which can greatly improve the actual work operation efficiency, make the development more scientific and promote the reduction of operation cost, Especially for the reduction of labor cost.\[14\] In addition, as far as electrical automation
control is concerned, the application of artificial intelligence technology is highly centralized, and expert system, fuzzy control and neural network control are the main artificial intelligence systems.

In the future development of electrical automation system, we should continue to integrate and innovate the electrical automation control system, enhance the investment in capital and talents of the electrical automation control system, and finally develop the electrical automation control system with independent intellectual property rights. The electrical automation control system of electromechanical equipment will gradually be managed uniformly in the future development trend, which will promote the comprehensive management of electrical equipment in product design, test, operation and commissioning, realize the different needs of customers, and obtain long-term technical support in the electrical automation market competition of electromechanical equipment.

5. Conclusion
Under the promotion of modern science and technology, China's electrical automation control system will make new development, so as to change the traditional electrical control structure, and optimize the electrical automation system through artificial intelligence technology, so as to achieve the goal of intelligent and scientific automation control of electromechanical equipment. With the continuous development and progress of remote system monitoring technology, the combination of electrical automation control system and remote monitoring system can meet the needs of current electrical automation production and manufacturing. Therefore, remote monitoring technology will become the development direction of electrical automation control system in the future. In addition to using artificial intelligence technology and remote monitoring technology, enterprises should also widely use computer technology, big data technology and information technology, strive to improve the application effect and software technology of electrical automation control system, and further promote the development process of electrical automation in China.
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