Computer Control System Application for Electrical Engineering and Electrical Automation

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Abstract. Electrical engineering has gradually entered the era of automation technology along with the development of high technology. In computer control systems, the application of automation technology and electrical engineering has gradually improved. The paper mainly discusses the basic concepts of intelligent technology and electrical automation, and focuses on the specific application of intelligent computer control in electrical automation, and analyzes the application prospect and development trend of this technology in electrical engineering in the future.

1. Introduction
Nowadays, with the rapid development of China's social economy, the technical level of all aspects of China has also been improved accordingly. The use of electrical automation technology in China's electrical engineering is more and more extensive, which not only makes us more than electrical systems in electrical engineering. The automation regulation and automatic control have been well realized, and the safety, stability and high efficiency of the operation and management of related electrical equipment have been effectively guaranteed; at the same time, the production, progress and development of China's social industry have been further promoted [1]. Development will ultimately promote the further improvement of China's social and economic level and people's living standards. However, the development of production in our society and the increasing demand for electricity in people's daily life, work and production, we must use advanced, automated technology to achieve the maximum and best quality of electricity to achieve Provide a target of sufficient quantity and high-quality power. Of course, this also puts higher requirements on the relevant managers and technicians in China's electrical engineering. To this end, we must combine the use of high technology and the improvement of our own technical level to make this goal more smoothly, such as the combination of application communication technology, computer technology and tele control technology, through the electrical system equipment itself. Automation of its control, etc.

2. Electrical Engineering and Automation Technology
Electrical engineering and automation technology, which refers to computer technology and electrical technology, is a technology that is widely used in the industrial field [2]. The concept and model of automation, which is mainly used in this technology, plays a very important role in industrial manufacturing. However, with the development of China's market economy, traditional electrical engineering and automation technology can no longer meet the requirements of the market, and the reform and innovation of this technology is an inevitable trend. The introduction of intelligent
technology just solved the above problems and alleviated the current severe form. The application of intelligent technology in electrical engineering automation is mainly used for information collection, analysis and processing. Studies have shown that the application of intelligent technology in electrical engineering has achieved remarkable results, not only conforming to the needs of market economy development, but also promoting the development and progress of electrical engineering automation.

2.1. Theoretical basis analysis of computer control system

Computer control systems are used in disciplines such as control, information, language, and biology. The essence of computer control systems is a logical mindset that is applied to machinery that simulates the human brain's command to the loading and unloading equipment to improve machinery. Self-control ability and operational ability [3].

![Diagram](image)

**Figure 1.** Cross of computer intelligence technology and simulation discipline

2.2. Monitoring methods of computer control systems for electrical engineering and electrical automation

2.2.1. Remote monitoring mode. The remote monitoring of the electrical automation control system refers to the connection of computers that need to be monitored and controlled in the case where both parties access the computer network to dial-up and the Internet. The remote monitoring method cannot only display the desktop environment of the controlled computer to its own computer interface, but also realize the remote operation of the controlled computer. The advantages of this method mainly include saving cable material cost, low installation cost and high reliability. Flexible configuration, etc. In fact, most of the current fieldbus communication speeds cannot meet the growing electrical demand, and at some specific time also need a large amount of electrical part of the communication, these conditions have played a serious role in the application and popularization of remote monitoring Obstruction.

2.2.2. Highly centralized monitoring mode. In the use of electrical engineering and automated computer control systems, the system is designed to be implemented, which also results in high system stability and is very convenient for everyday use and maintenance systems. However, due to the centralization of the computer control system, the optimization of the application principle, and the centralized processing of various functions, the processor is often too busy, which greatly affects the use efficiency [5]. At the same time, a large amount of information needs to be monitored and increased, and higher requirements are also put forward. The performance of the monitoring system, more and more functional modules are integrated in the same processor, and the redundancy of the system is also inevitable. The
ability to process information will be seriously lagging behind, undoubtedly a serious challenge, system reliability and work efficiency.

2.2.3. Fieldbus monitoring mode. This kind of monitoring means that the sensor of the appropriate type and quantity is selected according to the scope of the project, and the sensor is arranged in the engineering site to sense the change of relevant parameters during the construction process, and then a feasible control scheme is proposed according to the monitoring result. The risks and hidden dangers in the project are kept to a minimum. Compared with other monitoring methods, the advantages of this monitoring method mainly include the following: First, the independence advantage. The fieldbus monitoring method divides the computer control system of electrical engineering and electrical automation into several different modules. Each module independently monitors. When one or more of the modules fails, the other modules are still able to perform monitoring functions steadily. Second, the targeted advantage. In this monitoring mode, the layout of the computer control system is completely in accordance with the actual characteristics and requirements of the project, and the level of targeting is relatively high.

![Figure 2. Advantage analysis of different computer control systems in electrical engineering](image)

3. Design and analysis of electrical automation control system based on computer technology

3.1. FCS control system design

In the computer-based electrical automation control system, the FCS system usually adopts a one-to-many transmission mode when transmitting signals, that is, the two-way transmission mode. Since the transmission method uses high-precision digital, the signal transmission has strong reliability [4]. can make electrical equipment always in the state of being monitored. In view of the lack of unified communication protocol in FCS control system, slow communication transmission speed, less connectable equipment, and inability to effectively integrate with intelligent instrument, when designing FCS control system, it can cooperate with other systems in the process of layout bus, which is FCS. The control system provides various auxiliary functions.

3.2. Distributed Control Design of Electrical Automation Control System

The electrical automation control system is composed of a serial wire to connect the central processing unit, intelligent instrument, network technology, frequency converter and low-voltage circuit breaker, and the central processor is used to refine and process the information of each electrical device. These data. The electrical automation control system adopts the distributed control mode, which can divide the data into branch frameworks, which facilitates the organic connection of various intelligent devices through the automation system and the communication bus, and comprehensively improves the operation efficiency of the electrical automation console [5].
3.3. Centralized monitoring design of electrical automation control system

The centralized monitoring principle of the electrical automation control system is to concentrate the information data of the electrical automation control system into the same central processor. Due to the huge amount of information collected and processed by the system, the speed of the system operation will inevitably slow down [6]. When the electrical automation system detects and controls the operating conditions, there are many operations involved, resulting in an increase in the number of cables, an increase in the host space, and a large distance of signal transmission, which affects transmission efficiency. Therefore, in the design of the centralized monitoring of the electrical automation control system, it is necessary to fully consider the improvement of centralized monitoring safety, accuracy and convenience, and improve the centralized monitoring design.

4. Development trend of computer control systems for electrical engineering - artificial intelligence

The superiority of artificial intelligence technology is very significant, mainly because artificial intelligence technology realizes the collection, feedback and processing of information, which largely replaces the complicated work of human beings. Therefore, in the field of electrical automation control, artificial intelligence technology Application, it is bound to be a leap-forward development. First of all, electronic automation control based on artificial intelligence technology, to achieve better production, circulation and other production processes, to a large extent achieve real automation; on the other hand; electrical the realization of automation has greatly reduced the input of manpower, reduced the cost input, and improved the production efficiency [7]. In this regard, the application of artificial intelligence technology in electrical automation control has promoted the upgrading of the electronic automation industry and promoted the industry. Structural optimization.

![Figure 3. Application of artificial intelligence in computer control system](image_url)

The operation of electrical automation equipment requires the operator to have a good comprehensive quality and complete professional knowledge. The complexity of electrical automation, emphasizing the effectiveness of operations, can reduce accidents or downtime caused by operational errors or improper. In this regard, in the solution of these practical problems, artificial intelligence technology will undoubtedly play the role of bottom-up. First of all, artificial intelligence technology uses computer as the core of the theory [8]. Through the programming of the program, intelligent control under the computer can be realized. That is to say, the operation of electrical equipment is intelligent, which replaces the shortage of human brain labor operation. The efficiency of the work, and reduce the cost of investment; Secondly, the application of artificial intelligence technology, improve the scientific operation of electrical automation equipment, and optimize the real environment of equipment operation.

The rapid development of science and technology has changed our lives. The emergence of artificial intelligence technology has promoted the development of modern civilization. As an emerging high-tech, its application value in reality is unlimited. First, based on artificial intelligence technology. Electrical automation control has transformed the traditional electrical control mode and achieved leap-forward development. Secondly, artificial intelligence technology has improved the efficiency of
electrical automation control, which greatly reduces the cost input both in manpower and in material resources. Shows good value in the real sense [9].

5. Conclusion
Combined with the actual application of Chinese computer monitoring system, the common monitoring methods mainly include fieldbus monitoring, remote monitoring, and highly centralized monitoring. With the continuous development of electrical automation technology and other related technologies, the computer control system of electrical engineering and electrical automation has achieved good application results in unit operation and steam electro-hydraulic adjustment [10].

In short, under the influence of global economics, the role of electrical automation in our national economy is becoming more and more important. The electrical automation control system has completely changed the management mode of the traditional substation. The advanced and scientific electrical automation control system can ensure the safety and reliability of the distribution and minimize the occurrence of power failure. In addition, the computer-based electrical automation control system cannot only combine automation technology and computer technology, but also provide high-quality power services for the power sector, and can also save energy resources, provide high-quality power for people, and facilitate people's life and production. As a professional electrical engineering technician, we must base ourselves on the status quo of electrical automation control, comprehensively improve our comprehensive quality, and promote the sustainable development of China's electrical automation control.

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