

Application of Intelligent Technology in Electrical Automation Control

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Abstract: The application of intelligent technology in electrical engineering has its uniqueness. Because of this, intelligent technology has been effectively promoted in the field of electrical engineering and better meets the development needs of electrical engineering automation control technology. According to the actual situation, intelligent technology is applied in electrical engineering. Based on the author's work practice, this article analyzes and discusses the application of intelligent technology in electrical engineering automation control. It is hoped that the preliminary discussion in this paper can lead to more attention and exchanges. At the same time, we hope to provide some valuable information for the research work in this area for reference.

Keywords: intelligent technology; electrical engineering; automation; control.

1. INTRODUCTION

In recent years, economic construction and social progress have brought new challenges to the power industry, which has in turn fuelled the rapid development of the power industry and led to the development of electrical engineering that is closely related to the power industry. The previous electrical engineering automation control was achieved through low voltage electrical contactors and relays. With the development of industry, the requirements for the automation control technology of electrical engineering are getting higher and higher, and the serious challenge to its automation level and intelligence level is presented.

2. ANALYSIS OF CHARACTERISTICS OF INTELLIGENT TECHNOLOGY APPLIED IN ELECTRICAL ENGINEERING

2.1 Real-time performance

In the adjustment of the electrical control system, the traditional approach is to control personnel according to the changes in the control system requirements and control parameters, relying on the experience of relevant personnel, manual adjustment of the existing automation controller. This requires that the operator not only has a keen observation ability, but also has rich professional knowledge and control experience. The stability of the control system operation depends on the adjustment of the operator. In order to improve the real-time and accuracy of system control, intelligent control technology can be adopted [1]. The intelligent control technology has a real-time logic judgment ability, can give an output by calculation

according to the input conditions, and control the device to perform corresponding actions. Based on this characteristic, the electrical control system can be adjusted in real time, so that the electrical system's working performance can be effectively guaranteed and the automatic control system can be operated safely and stably. It can be seen that the use of intelligent control technology has advantages over traditional automation controllers and has positive significance for the practical application of electrical engineering automation.

2.2 Unmanned control

Compared with the traditional electrical engineering automation control technology, the intelligent control technology can better grasp the changes of the robustness of the electrical engineering in the application process, so as to meet the actual needs of the electrical engineering automation control. In the application of intelligent technology, it is only necessary to combine the design situation with the design of related program information, which can realize unmanned control, save manpower, and can reduce the actual problems that may exist in the process of manpower control. Through unmanned control, the effect and quality of electrical automation control can be guaranteed, making the electrical equipment more reliable and stable [2].

2.3 Stability

The stability and consistency of traditional automatic controllers are relatively poor, while the intelligent controllers have good consistency. When dealing with changing input data, the intelligent controller can ensure the stability of the output by changing the calculation methods. Automation control stability requirements. The intelligent controller algorithm is the core of achieving control stability. For different control systems and control objects, different control algorithms are used to achieve different control effects. In operation, the intelligent controller collects input data, selects control algorithms according to control requirements, and achieves expected results, ensuring the stability of the control system and ensuring the safe operation of the electrical equipment.

3. APPLICATION OF INTELLIGENT TECHNOLOGY

3.1 Application of intelligent controller

The outstanding feature of the intelligent controller is the high level of intelligence. Through effective program design, the intelligent controller can play a more prominent role in the application of electrical engineering automation control technology. Compared with the traditional controller, the intelligent controller does not need to design the control model for the controlled object, which makes the application efficiency of the intelligent controller have been greatly improved, and can have complex problems in the control process. To better solve the problem, the accuracy of the controller is improved. In the application process of the intelligent controller, its robustness exhibits a certain degree of dynamicity. With the help of the controlled fall time and response time, the control system can be effectively adjusted, thus providing automation control for electrical equipment. Reliable protection. At the same time, during the application process, the intelligent controller has the characteristics of automatic adjustment,

and can adjust the related parameter information according to the actual situation of the electrical equipment. In this case, the probability of failure of the equipment can be reduced, and the reliability of the electrical equipment during operation is greatly improved. In addition, combined with the author's work experience, in the process of controlling the electromechanical equipment, the differences in controlled objects will have a greater impact on the control effect.

3.2 PLC control system application

In the development of intelligent technology, PLC control system has played an important role in the field of electrical engineering automation control. PLC control system has strong anti-interference, and its high level of intelligence, which has created favorable conditions for the development of electrical automation control technology. PLC is a clock programmable logic controller. Its application in the field of electrical automation control has achieved electrical automation control goals. In the field of coal mine production, various process flows are dominated by switch control and sequence control. This control method lacks intelligence level, which may be due to the omission of staff and adversely affect the actual control [3]. In the application process, the PLC control system can take an overall view of the various links to effectively grasp, so that the control effect has been greatly improved. The PLC control system can effectively control the process flow and coordinate the various aspects of the coal production in conjunction with the electrical engineering situation, so that the coal mine production efficiency can be greatly improved. The application of PLC control system also includes the use of coal, coal storage, coal blending, etc. In this process, in order to achieve the PLC control objectives, it is necessary to use remote I/O stations to transmit data information. In order to grasp the production of each link. In the application process of PLC system, the key point is how to realize the effective monitoring of each system, so that the PLC system can effectively monitor the operating status of the electrical engineering. In general, during the monitoring of the electrical system, the PLC can quickly spread the data information through the I/O interface. After processing the data information, the PLC can grasp the operating status of each part. Figure 1 below shows a schematic diagram of a PLC control system design.

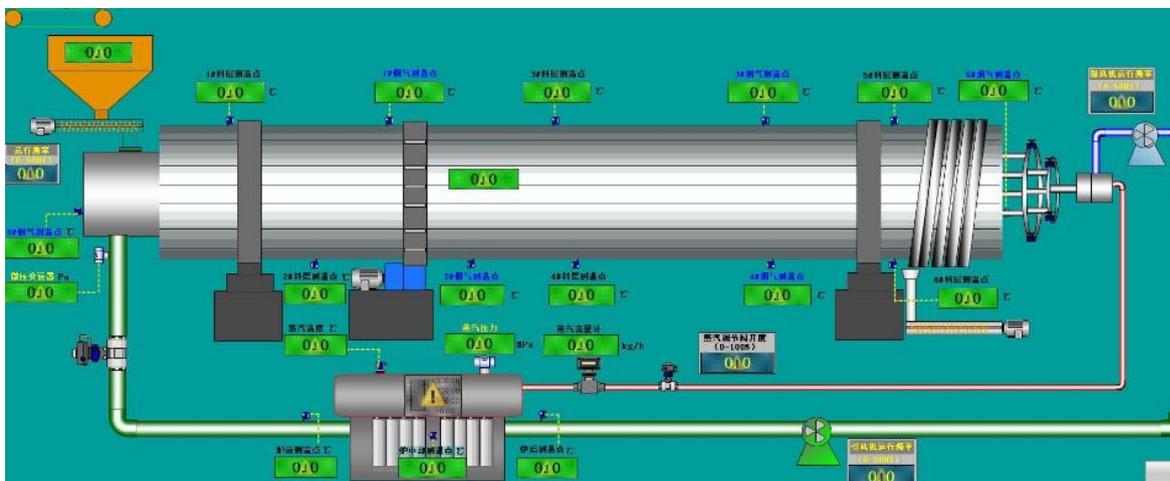


Figure 1. PLC control system design

3.3 Fuzzy logic and control applications

The principle of fuzzy logic and control is of great significance for improving the control effect of the current electrical engineering automation technology. With the development of electrical engineering automation control technology, how some fuzzy control devices function is the key to ensuring the automation of electrical engineering. In general, fuzzy control devices can replace PID controllers, mainly S-type and M-type control devices. Taking the M-type control device as an example, the M-type control device mainly involves the knowledge base, anti-fuzzification, inference engine and other parts during the application process. The coordination of these links is the key to achieve intelligent control objectives [4]. With the rapid development of coal mining industry, the automation level of coal mine electrical engineering has been greatly improved. In this process, fuzzy control equipment has been effectively applied. The application of fuzzy logic and control in the electric automation control technology pays attention to combine the previous experience and innovate the original technology, so that the electrical engineering automation control technology level is greatly improved.

3.4 The application of fault diagnosis

Most of the traditional fault diagnosis mode applications rely on the experience of the staff to check the equipment faults one by one, so as to confirm the fault point, and then take certain measures to solve the fault problem. This solution can not meet the needs of fault diagnosis, may result in low efficiency of fault diagnosis, or can not grasp some potential faults, and brings inconvenience to the reliable operation of the electrical engineering automation control system. With the development and application of the electrical engineering automation control system, the safety and reliability of its operation has become a key issue that people pay close attention to. How to take effective measures to eliminate hidden dangers of safety fault must be considered effectively. Take the transformer fault in electrical engineering as an example. After a failure in the power system, the traditional overhaul method will deviate the equipment operation situation one by one, and finally determine the fault, and take relevant measures to solve the fault [5]. With the aid of intelligent technologies, fault detection systems can be set up to quickly find faults and find fault solutions. During the application process, the intelligent system can monitor the running status of the device. By setting corresponding parameter information, once the device fails, the parameter information will inevitably be changed, so that the fault can be determined quickly and an effective solution to the fault problem can be achieved.

4. CONCLUSION

Through the above research and analysis, intelligent technology has played an important role in the field of electrical engineering automation. The effective use of intelligent control technology can transform the manual labor in the production process of enterprises into mental work and improve the market competitiveness of enterprises. Therefore, the application of

intelligent technology in the automation control of electrical engineering has an important role in promoting the development of the economy and the progress of the industry.

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