Application of Power Automation Technology in Power Engineering

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Abstract:

TThe continuous progress of science and technology has promoted the further development of the power industry, and the continuous development of economy has driven the development of electronic automatic control technology. The application of automation technology in the power system is more and more extensive, which improves the operation efficiency and quality of the power system, and promotes the further development of the power industry. Through the application of automation control technology can not only improve the efficiency of work, but also reduce the cost of power enterprises, create more economic benefits for enterprises, better integration of resources.

Keywords:

Power automation; automation technology; electric power engineering

Introduction:

At present, with the support of science and technology, a large number of electrical equipment is used to provide convenience for life. People have increased the demand for electricity consumption and put forward higher requirements for the quality of electricity consumption, which has brought challenges to China's power enterprises and also provided more space for development. In order to gain more market share in the increasingly fierce market competition, power enterprises should make full use of modern science and technology, play the role of power automation technology, and gradually improve the level of power system automation. Construction personnel should pay attention to the development of power automation engineering, follow the safety principle, and implement effective supervision and safety management for the problems in the construction of power automation engineering, so as to ensure the normal operation of power system.

1 Problems existing in the construction of power automation engineering

1.1 Deficiencies in Device Management

The equipment used in the construction of some power automation projects is too old, and the advanced construction equipment is not introduced in line with the development trend of science and technology, and the automation level of equipment cannot be guaranteed. The construction personnel do not understand the performance and operation mode of the equipment, and do not effectively play the role of the construction equipment in practical application, which is not conducive to improving the construction efficiency of the project and affecting the construction quality of the power automation project.

1.2 Ignoring the safety management of power automation engineering construction

There are safety risks in the construction of electric power automation projects, and some construction contents are dangerous, such as high-altitude work, live work, etc. At present, the safety awareness of relevant personnel is not strong, and safety is not put in the first place in construction, which leads to a high probability of safety accidents and affects the smooth development of power automation engineering construction.

1.3 The construction management level of power automation projects is not high

The staff ignored the management of the construction of the electric power automation engineering, lacked a sound construction management system, did not formulate a sound quality management system, could not implement the construction plan, and was difficult to ensure that the construction was completed in high quality within the specified construction period.

2 Application of power automation technology in power engineering

2.1 Simulation modeling technology

In the power system, simulation modeling technology is also very important, power control technology can play an important role in the power system, has been extremely widely used, with the continuous improvement of science and technology in China, China's research on simulation modeling technology has increased, simulation modeling technology has been rapidly developed, and in line with international standards, the use of simulation modeling technology in the operation of the power system, can improve the efficiency of data transmission and the accuracy of data transmission, ensure the accuracy of data, and the use of simulation modeling technology can also improve the efficiency of relevant data processing, improve the efficiency of workTherefore, in the power system, the application of simulation modeling technology can help the maintenance personnel of the power system to eliminate the existing fault problems, solve the fault problems in time when the fault problems are found, and improve the efficiency of power system fault maintenance.

2.2 Intelligent control technology

With the continuous development and progress of automatic control technology, the application of intelligent control technology in the power system is more and more extensive, the level of intelligent control technology is significantly improved, the use of intelligent control technology can improve the safety and stability of the operation of the power system, ensure the stable supply of power resources, meet people's demand for stable power resources, and use intelligent control technology at the same time, can also be found in the power system when there is a problem in the operation process, carry out intelligent automatic processing, and take scientific and effective treatment to ensure the normal operation of the power systemFinally, the use of intelligent control technology can also enable the staff to realize the remote operation of the relevant power system, and the use of this technology can not only reduce the number of manpower consumed in the operation of the power system and reduce the labor cost. At the same time, it can also reduce the occurrence of work safety accidents, improve the economic benefits created by power enterprises, and promote the further development of the power industry.

2.3 Bus Technology

Through the application of bus technology in the power system, the power enterprise can connect the control network of the power system with the related power equipment, such as connecting some electrical control equipment and intelligent instruments in the power system to the specific power control system, and using the network connection to remotely monitor such equipment and instrument wiring to improve the efficiency of work. It also helps power enterprises to use network technology to unify the connection and control of each control system, and help power enterprises to realize the control and monitoring of the entire power system. With the continuous research of bus control technology, the electric power enterprises can use bus technology to regulate the power system and improve the intelligent control and management level of the power system.

2.4 Active real-time database technology

In the current power system management, active real-time database technology is also an important automation control technology. Such technology has high requirements for real-time data, and also requires data consistency and sharing. Therefore, in order to better implement active real-time data technology, power monitoring system is required to play a role and have active and real-time characteristics. Relevant power enterprises can develop active real-time database technology according to the actual situation. This technology can combine monitoring technology with traditional database technology, and improve the automatic control level of power system by monitoring the events and conditions of database [1]. In addition, the active real-time database technology can also be used to monitor the power system in time. When it is found that the monitored real-time data can meet the control conditions of the power system, the power system will issue an alarm and make independent responses to improve the control degree of the power system, reduce the occurrence of emergencies, and reduce the impact on the power system.

3 Effective measures to improve the construction level of power automation engineering

3.1 Strengthen equipment management

The normal operation of the construction equipment of power automation engineering will affect the construction efficiency and construction quality of the project, so it must be effectively controlled. When purchasing construction equipment, appropriate equipment models must be selected to meet construction needs, and the number of construction equipment must be controlled to avoid idle construction equipment [2]. Technical personnel should introduce advanced construction equipment, improve the construction efficiency, improve the operation system of construction equipment, strengthen the training of construction personnel, improve the equipment operation level of staff, ensure the normal operation of construction equipment, and do daily overhaul and maintenance work.

3.2 Strengthen safety construction management

Before the construction, carry out a comprehensive field investigation, master the actual situation of the construction site, find possible safety hazards, formulate a scientific safety assessment report, do a good job in the investigation, and formulate effective countermeasures for possible safety problems. The management personnel shall formulate a sound construction safety management system, strictly implement it, and severely punish those who violate the safety management requirements [3]. It is necessary to strengthen the safety training of construction personnel, so that construction personnel clearly understand the necessity of safe construction, wear appropriate safety protection tools in the actual construction process, and perform operations in accordance with the specified operation requirements. A special safety management team can be set up to find out the hidden safety risks in the construction in time and solve them.

3.3 Establish a sound management system

① According to the actual situation of power automation engineering construction, formulate a scientific construction material procurement plan and do a good job of budget work. Ensure the quality and economy of construction materials, and reduce the procurement cost of construction materials. Before entering the construction materials, strict quality inspection work must be implemented, and the materials that pass the quality inspection can be used in the actual construction. ② Establish a sound construction quality supervision and management system, select the appropriate construction technology according to the characteristics and construction requirements of power automation engineering, and execute the operation in strict accordance with the construction process requirements. Quality acceptance shall be carried out after the completion of all construction links, and the next stage of construction shall begin after acceptance [4]. ③

Formulate a sound personnel supervision and management system, management personnel should pay attention to the training of construction personnel, can set up a scientific assessment mechanism, establish a sound incentive system, in order to stimulate the enthusiasm of construction personnel, improve the technical level of construction personnel, comprehensive quality, to ensure construction quality and safety.

Conclusion

The application of automation technology in the power system plays an extremely effective role, through the use of automation technology can improve the efficiency and quality of work, provide people with more stable power resources, promote the further development of the power industry, and create more economic benefits for power enterprises.

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