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Analysis of Application of Electrical Automation in Electrical Equipment

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Abstract: With the rapid development of science and technology, the development of industry, agriculture, information technology and other fields in our country is very significant, and the living standard of our people is also improving by leaps and bounds. At the same time, people's use of electric energy and electric equipment has been everywhere, and has formed a certain dependence, More and more attention has been paid to the development of power system and electrical automation control technology.
Keywords: Power equipment; Electrical automation control technology; Application

1 Introduction

Electrical automation control technology mainly refers to the use of automation control technology in the power system to organize production and further improve the production efficiency. Its power source is mainly the motor, and then the power transmission device is used to realize the power transmission. The transmission object is the system, and the electro-pneumatic control system is its core. Electrical automation control technology is the basic technology of modern construction in today's industrial production. It has been applied in various industrial fields and achieved excellent results. Electrical automation control technology has become one of the most important technologies in today's social industrial production[1]. Electrical automation control technology plays a very important role in the whole industrial production, it is the cornerstone of industrial production to modernization. In depth to study the electrical automation control technology, to maximize its role, for our country to promote industrial modernization service.

2 Manifestation of electrical automation control technology

2.1 Transformation of converter circuit

Nowadays, the power electronic devices are updated, and the replacement of the converter circuit has become the key. It is well known that when the common thyristor is applied in traditional mode, its phase controlled rectifier is the converter of retained power transmission. However, with the development of the times, PWM converter is applied, which not only improves the power factor, but also reduces the influence brought by high harmonic to a certain extent, and then improves the torque ripple phenomenon of the motor[2]. The other is that the torque ripple caused by the harmonic component of voltage and current acts on the stator and rotor, which is easy to generate noise. In order to solve this problem fundamentally, the switching frequency needs to be improved.

2.2 General frequency converter changes

Theoretically, the so-called general frequency converter mainly refers to the medium and small power frequency converter with seriation and small market share. The first generation of frequency converter is the general function U / F control type, and the second generation is the high function U / F type. This type of general frequency converter mainly adopts flux compensator and slip compensator, which is also known as non trip frequency converter, In the market share is relatively large. The third generation belongs to the vector control type with high dynamic performance, which mainly adopts full digital control and adaptive control by means of application software[3].

2.3 Primary device connection

At present, the connection between the electrical secondary system equipment and the primary equipment has attracted much attention. According to the author's analysis, at this stage, improper connection is easy to cause major accidents. Among them, there are often electrical anti tripping circuits in the high-voltage circuit breaker mechanism. Because of different attributes, there are conflicts between the parallel anti tripping circuit and the microcomputer protection circuit, After connecting, there will be bad phenomena such as microcomputer protection adjustment, so in the new period, it is necessary to disconnect the anti tripping circuit of the mechanism. In addition, GIS equipment is mostly used in the integrated automation substation in the city center. The principle of GIS main wiring design is to simplify the wiring and use its reliability to reduce the cost. One point that needs to be noted is that the isolation of voltage transformer can not play a role in the whole operation, especially in the maintenance, it is necessary to separate the PV of voltage transformer from the main circuit.

2.4 Single chip microcomputer, integrated circuit, industrial control computer

Nowadays, the 8-bit level represented by MCS-51 still occupies a dominant position. Its function is relatively simple, and its confidentiality is good. In addition, with the continuous development of the current, the application scope of single-chip microcomputer

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has been expanded, and its advantages have been brought into full play. In recent years, the development means of single-chip microcomputer have evolved more and more obviously, not only assembly language, but also assembly language, More importantly, we need to adopt modular C language. In addition, in the aspect of integrated circuit, we need to pay attention to the integrated analog multiplier, and in the aspect of motor control, we also need to select the appropriate equipment according to the actual situation. Among them, in the aspect of logic circuit, the most important is to use ASIC to implement logic design[4]. The main devices in the programming logic array include prom, FPLA, etc., which can be compatible with TTL, with fast response speed and high programmable security bit. Because of this, the volume of the product can be further reduced, and its stability and reliability can be improved.

3 Application of electrical automation control technology

3.1 Application in the integrated system

The power supply system is not only the carrier of the development of power enterprises, but also the source of ensuring the orderly operation of various equipment. Its comprehensive system is of great significance. In order to fundamentally improve the work efficiency and play a good role in saving electric energy, we need to improve the degree of automation and introduce the electrical automation technology into it[5]. The system is controlled by computer and can provide powerful data processing, To achieve data collection, collation, improve the efficiency and quality of data transmission.

3.2 Application of GIS in substation

The application of electronic automation control technology in power transformation and distribution places is also very important, and the main performance is as follows: first, it can protect lines, transformers, capacitors, etc., so as to play the role and value of over-voltage and over-current protection. The second is to strengthen the application of electrical automation control technology, which can also realize the interconnection between power system stations, and improve the power data communication, remote control and other data reporting. Third, the application of electrical automation control system can monitor the system fault light, and realize telemetry, fault alarm and so on. Fourth, it can also monitor the operation management and protection management of the substation.

Countermeasures to improve the level of electrical automation control

In the new period, we need to pay attention to and research the level of electrical automation control, and we should not imitate the electrical automation equipment in the west, but also need to innovate independently according to the actual development situation, and further choose the electric gas automation technology suitable for the application of electric equipment in China. Of course, we should do a good job in training and education of electrical automation technical personnel, strengthen the integration of theoretical knowledge and practical knowledge, improve the practical ability through practical activities as far as possible, or realize innovation through preferential policies, so as to realize the level of electric and gas automation of power equipment[6].

4 Conclusion

Electrical automation technology has penetrated into all walks of life, which is of great significance for power equipment and power system. In order to further play the stability of power system, we need to further improve the intelligent level of power system, strengthen analysis and research, improve work efficiency and promote the progress of national economy.

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