

## **Discussion on the Necessity of Electricity Supervision and Management**

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**Abstract.** Rational planning of power supply, and the development of the national economy, the improvement of people's living standards are closely related. The electric power departments at all levels have set up electricity supervision and management institutions, to monitor the power supply policy execution. By carrying out the supervision and management of electricity, can supervise, guide and help customers to use electricity in an economical and safe way. In this paper, combined with the current situation of supervision and management in China, this paper points out that the "three kinds of relations" need to be coordinated, and puts forward the corresponding solutions. Through the development of a reasonable power supply plan, regular testing of electrical equipment, do a good job in the prevention of testing and other aspects, the current problems can be effectively improved.

### **Introduction**

In recent years, the rapid development of social economy, the supporting role of electric energy has become more and more prominent, so it is necessary to carry out a comprehensive, strict supervision and management of the power system. Electricity supervision and management work is of great significance to the maintenance of electricity market order, which requires the whole process of using electricity to be guided, inspected and supervised. A qualified electrical inspector must master the basic knowledge of electrical equipment, but also have the ability to solve problems, management and organization. Only with the above knowledge ability, can be effective in the safety of the operation of electrical equipment, to ensure that the user's electrical equipment safe operation. Rational planning of power supply, and the development of the national economy, the improvement of people's living standards are closely related. The electric power departments at all levels have set up electricity supervision and management institutions, to monitor the power supply policy execution. By carrying out the supervision and management of electricity, can supervise, guide and help customers to use electricity in an economical and safe way.

### **Current Situation of Supervision and Inspection Management of Electricity**

In the use of electricity in the process of supervision, inspection personnel often according to their own practical experience to carry out the work. However, in the specific implementation process, because the awareness of laws and regulations is not enough, the legitimacy of the audit work is often neglected. Electricity monitoring responsibilities, in the familiar national policies, laws and regulations under the premise of the service and guide customers, so that customers use a safe and economical way of electricity. The electricity inspector also has supervision and protection of the legitimate rights of both parties.

## **Existing Problems**

Electricity supervision management involves the whole process of power supply. Therefore, in the supervision and management of the use of electricity, the following 3 relationships are urgently needed to be resolved:

(1) The relationship between the electric supervision departments and "plan of electricity, saving electricity, safe use of electricity." They are complementary to each other. Electric power supervisory departments should assist with the electricity sector to carry out the work, while the relevant provisions of electricity also need its implementation.

(2) The relationship between the electric supervision departments and customers. Electricity supervision departments should strictly for customers to good quality. The installation process includes customer application, enterprise drawing planning and circuit installation, customer acceptance.

(3) The relationship between the electricity supervision departments and business ability. In recent years, with the innovation of new technology, all kinds of large capacity, automation and high parameters of the device is put into the power system applications, which requires the user to master the requirements of its equipment. Electric power supervision staff not only to fully understand the power enterprise policy, price strategy, etc., their professional ability also need to constantly be improved.

## **The Concrete Implementation of Electric Power Supervisory Work**

### **Reasonable Power Supply Scheme.**

The power supply department should make scientific power supply plan according to the characteristics of the users, the demand of electricity and the nature of the load. At present, the problem of power supply enterprises for customers to connect the circuit, the user will often be based on their own use of random extension lines, making power lines cross, resulting in a security risk. The formulation of the power supply scheme mainly includes two parts, the power grid load formulation and the power supply region. The formulation of power grid load must be combined with the distribution of the whole power system load, mainly including two aspects. First, the research and development of the user's electricity program, must be combined with the power distribution network load capacity, from the point of view of the safety of electricity to carry out a unified management. Second, to combine the overall situation of the power supply region, from a long-term point of view, the planning and development of the region's electricity load. Fittings, switch and line conditions should accord with the power supply load capacity. So, before electrify, electricity inspector must carry on the strict planning, it can ensure the subsequent normal electricity.

### **Periodic Inspection of Electrical Equipment for Users.**

With the aging problems such as electrical wiring and electrical components, electrical supervision and management departments should strictly according to the corresponding safe operation requirements for management.

In the spring time, to check the electrical equipment. Electrical equipment in the process of the use of the whole winter will accumulate dust, so as to provide conditions for pollution flashover accident. In July 15, 2016, the electrical equipment has a pollution flashover accident, accident direct economic losses of 90 thousand yuan, the accident photos as shown in figure 1 and figure 2. The electricity inspector does not seriously guide and urge the customer outage cleaning equipment.

In the inspection process, should pay attention to the aging of the circuit, the temperature problem, the working state of the component. Once the equipment is damaged, it should be repaired in time. In the summer season, air conditioning and other cooling equipment is used more, the use of electricity is relatively tight, increase the power supply equipment operating load. In the late autumn and early winter season, electrical equipment through the spring and summer quarter running, the winter heating work will be carried out, the user heating equipment will be used on a

large scale. Therefore, in the above period, focusing on the electrical equipment overload capacity inspection. Electricity inspector should guide electricity unit, using infrared detection method to check the electrical equipment, promptly eliminate equipment overheating defect. Whether the relay protection and switch can be accurate in the condition of overload of electric equipment. To protect the safe operation of the transformer, the equipment should be temperature measurement. In addition, it should be aimed at different regions, different users, different time period to develop specific inspection strategies.



Fig. 1 Switch cabinet pollution flashover  
**Preventive Test.**

Fig. 2 Cable ring network cabinet pollution flashover

The health status of electrical circuits can be diagnosed in time through scientific experiments. Preventive test test, the use of scientific testing equipment, in DC, AC and other conditions to detect the insulation level of electrical equipment. Preventive test (routine test) is a method of electrical equipment to check the power and electricity in the process. Need to be detected a lot of electrical equipment, such as line support insulators, switches, transformers, voltage transformers, current transformers, cables, relay protection, etc.. Mainly to check the status of their operation, and compared with the operation of the previous few years, through scientific and reasonable evaluation system to make a reasonable assessment of its security situation. This can provide protection for the safety of the electrical equipment throughout the year. Therefore, it is very important to strengthen the preventive test management of electrical equipment. An electrical equipment, in 7 years has not been a preventive test test, until the occurrence of cable insulation damage, resulting in a short circuit accident, as shown in figure 3 and figure 4. Later learned that the electricity inspector never urge electricity unit for electrical equipment preventive testing.



Fig. 3 accident cable root burn situation



Fig. 4 accident cable head burns situation

### **Safety Supervision Management.**

Customer electrical equipment safety operation and maintenance work must be carried out in different stages. This requires the operation of electrical equipment must be in accordance with the procedures to manage, we can be divided into three stages.

The first part, the spring security inspection. In winter, electrical equipment has been running for some time, and there is dust. So, in the spring, we have to carry out a careful inspection and equipment cleaning, the electrical equipment so parts for inspection and cleaning. The electric equipment is in a safe state, and the grounding resistance of the grounding system is in accordance with the relevant requirements. Under the condition of large current, whether the working condition of high voltage is normal or not, whether the double power supply device is complete or not. These are the items that should be checked. Electrical equipment is cleaned up, equipment defects can be found in time, so as to improve the quality and integrity of the user's electrical equipment. The

electricity inspector in the thunderstorm season before, urging users to carry out tests on insulating gloves, boots, insulation rod, lightning arrester.

In the second part, the key parts of electrical equipment are examined. Focus on inspection of electrical equipment with high temperature heating capacity. Focus on checking whether the tower foundation is loose. In the rain soaked condition, will not lead to occurrence of tower collapse or inclined inclined pull wire loose situation. Focus on inspection of the transformer room windows and doors, and cable channel, to prevent the entry of small animals. For example, the insulated cable head (oil type), the key parts of easy oil leakage needs to be checked.

The third part, anti freeze agent inspection. After autumn and summer long time operation, electrical equipment will usher in heavy load run during the winter, the antifreeze must be checked. Focus on the overload capacity of electrical equipment to carry out inspection. Under the overload condition, whether the relay switch and the electric equipment can be operated accurately, so as to protect the safe operation of the transformer. Electrical equipment, in the heavy snow and heavy rain this extreme weather conditions are able to operate safely, depending on the inspection work. Therefore, in the above three parts, we must assign the relevant personnel to carry out the maintenance and cleaning of electrical equipment. At the same time to determine the inspection time, electrical equipment in the operation of the process of defects can be effectively avoided. In addition, according to the actual situation of customer power use, electrical equipment inspection staff must determine the annual and monthly inspection service plan. And, according to the importance of customers, with the corresponding electric load level to carry out the frequency of inspection. To determine the safety requirements of the operation of electrical equipment and equipment maintenance conditions. In the daily work, the need to do a good job related to the safety and organizational measures.

In order to maintain the power system and customers for the safe use of electricity, electricity inspectors must be familiar with the technical specification, electrical industry standard.

(1) The electricity inspector should be familiar with the electrical technology, regulations and industry standards. Whether the customer is safe or not is directly related to the economic benefit of the customer's quality of life or production, which is more related to the economic benefit of the power supply company. In order to ensure the safety of electrical equipment for customers, electricity inspector must be familiar with the electrical technology, regulations and industry standards. Customer electrical equipment problems can be found, and then supervise and guide the customer to eliminate security risks, to achieve the safe use of electricity.

(2) Because of differences in customer groups, the electricity inspector should be familiar with the electrical technology, regulations and industry standards. Power supply enterprises should bear the responsibility of the enterprise and social responsibility, pay attention to social benefits. Power supply enterprise customer groups include all walks of life. Customer quality is different, the investment cost of understanding is different, security awareness is also different, so the customer's understanding of electrical equipment technology and investment is also different, the safety of production management has produced a difference. Therefore, the electricity inspector according to these differences, in accordance with the electrical technology, regulations, industry standards, guide customers for electrical equipment improved technology, supervision and management of production safety work.

## **Conclusions**

A qualified electrical inspector must master the basic knowledge of electrical equipment, but also have the ability to solve problems, management and organization. Only with the above knowledge ability, can be effective in the safety of the operation of electrical equipment, to ensure that the user's electrical equipment safe operation. The supervision and management of electricity is an important part of power supply electricity standard management. It is an important link between power enterprises and users. To strengthen the power supervision, can give the power enterprise economic benefits, but also can improve the power quality of the user.

## **References**

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