

## Hidden Dangers and Solutions in the Installation of Electromechanical Equipment

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**Keywords:** Mechanical and Electrical Equipment; Installation; Hidden Danger; Measures

**Abstract:** At present, China's socialism is in a period of rapid development of the market economy. The promotion of the economic level has a positive impact on the development of all walks of life. The most prominent role is to greatly promote the rapid progress of science and technology, and the mechanical and electrical automation industry has been popularized in a large area. With the promotion of electric automation facilities in various industries, it is of great significance to promote the efficiency of equipment utilization. At present, the application of various mechanical and electrical devices has been improved. However, there are still many problems in the specific operation. The professional staff must improve the safety level of the operation of mechanical and electrical equipment and improve the practical use value of the mechanical and electrical equipment. This paper discusses the hidden dangers in the installation of mechanical and electrical equipment, and puts forward the corresponding solutions and strategic plans for development, in order to improve and improve the installation level of mechanical and electrical equipment, and improve the application performance of mechanical and electrical equipment to a new level.

### 1. Introduction

At present, the level of science and technology in China has been improved unprecedentedly, promoting the further improvement of the level of mechanical and electrical automation, increasing the coverage of the mechanical and electrical facilities, and deepening the concern of the relevant departments and professionals. At present, if we have to realize the construction significance and installation operation of mechanical and electrical equipment, the emphasis is on the implementation of the mechanical and electrical equipment installation work before the implementation of the concrete construction project, and the completion of the completion of the completion of the work, the short period of work, the quality of the completion of the process is very high. According to the current situation of the installation of mechanical and electrical facilities in China, the installation of mechanical and electrical facilities presents special features, and the types of mechanical and electrical facilities are complex, so the professional and technical members should fully understand the different requirements of the customer in the installation of the equipment. Moreover, there are many fine steps in the installation operation, resulting in the relative complexity of the installation process. There are still a lot of uncertain factors in the installation process of this kind of equipment, which can easily cause the safety hidden danger of the equipment and seriously affect the operating efficiency of the mechanical and electrical equipment. Therefore, the relevant technical personnel must combine the corresponding operation experience to analyze the hidden danger of installation, and put forward the corresponding treatment case.

### 2. Various existing problems in the installation of mechanical and electrical equipment

Nowadays, the installation method of mechanical and electrical equipment is classified according to the difference of the elements contained, divided into special type, general type and non standard equipment according to the different types of equipment. If the installation method is classified, it can be divided into the whole installation and the separate installation. Under normal circumstances, no matter what the installation of mechanical and electrical installations, its

operation process and implementation steps are not very different. All kinds of coordination personnel must be prepared before the implementation of the project, study the design and construction drawings of the related equipment in detail, check the equipment instructions repeatedly, analyze the composition of the equipment in detail, and prepare the relevant facilities according to the specific installation operation guide. Next, large area inspection should be carried out at the same time, and records should be made conscientiously, and timely maintenance of the main components of the equipment should be carried out. In this process, the service life of the parts should be guaranteed. The maintenance personnel should apply lubricants evenly to each part of the components, which can effectively prevent the corrosion problem. At the same time, the small assembly of the simple parts should be implemented, which can obviously reduce the later installation time. In the specific installation process, the importance of the debugging work must be put in the first place. It is necessary to debug and jointly debug with the different functions of each component in order to achieve the normal and stable operation of the equipment.

### **3. Analysis of the hidden dangers in the installation of electromechanical equipment.**

#### **3.1 The firmness of the foundation determines the mechanical stability of the equipment.**

In mechanical and electrical systems, if the equipment does not have a stable basis, it will not guarantee the safety and stability of the installation work, and the possibility of the installation of the equipment can be greatly reduced. By using a stable foundation, the vibration generated in the operation of the large equipment can be eliminated, and then the vibration of the underground can be transmitted to the deep underground, so as to prevent the occurrence of the failure of the resonance. In the case of the current installation of mechanical and electrical equipment, once the related problems occur on the basis of the mechanical and electrical equipment, the problems of the related equipment failure will be buried, and more will cause the occurrence of the equipment offset and overturn, which hinders the development of normal production activities. Therefore, all relevant personnel must carefully analyze the working conditions of the equipment and carefully inspect them, so as to make adequate preparations for the installation and commissioning of electromechanical equipment.

#### **3.2 The stability of the bolt installation of the mechanical and electrical equipment**

In the normal installation process, the specific installation of bolts and nuts must be designed before the installation of the equipment. In the specific operation process, there will be some deviations between the design location and the reality. For example, the hole position of the drawing is not accurate, and the embedded position and the actual deviation are too large. These seemingly individual events will accumulate a lot of problems if they are not corrected in time, and will have a great negative effect on the implementation of all subsequent processes. If the vibration is larger in specific circumstances, and under this powerful action, if the bearing range of the bolt is surpassed, breakage or fatigue events such as fracture or bending can occur, and the failure of bolts and nuts will eventually lead to various types of engineering quality or safety accidents.

#### **3.3 Analysis on the hidden danger of vibration of mechanical and electrical equipment**

Because of the complexity of the mechanical and electrical equipment, the steps of each process in the installation are very complicated. In addition, the installation work of the mechanical and electrical equipment is more complicated, so the work of commissioning and running must be done after the installation work is completed. In the specific operation of mechanical and electrical equipment, because of the combined effect of various factors, the resultant force will cause the equipment to vibrate, and its amplitude is generally larger. All professional operators must pay attention to the commissioning, maintenance and repair of the equipment during the operation phase. For example, in the operation of the pump, there will often be the friction between the stator and rotor, the balance between the rotor and the bearing. In practice, the gap between stator and rotor is often uneven and the rotor is unbalanced. Moreover, in the actual operation of the pump, the

specific values of various parameters set ahead of time differ significantly from their own rated limits, resulting in their inability to operate normally. Therefore, the specific operators of the equipment must be combined with the rated parameters of the equipment to carry out fault analysis to ensure the normal operation of the mechanical and electrical equipment.

### **3.4 The hidden danger of current exceeding the standard**

According to the specific installation operation of mechanical and electrical equipment, the implementation of the installation work should be combined with a type of motor drive device, which will form a certain current in the specific operation, which often appears the condition of excessive current. Nowadays, there are many reasons that lead to more than limit of electric current in motor equipment. It has been found in the following categories: the working power of the motor exceeds the rated power; the electrical resistance of the motor working system is large; the number of power supply is not enough, and so on. The reason for the overcurrent is that the friction between the rotor and the protective cover is too large. And the pump is mixed with debris in operation, resulting in a great discrepancy between the actual running state and the ideal state. In addition, there is also a problem of bearing wear and damage, and also a great destructive effect. In addition, mechanical and electrical equipment due to their own induced current can also cause equipment failure. The specific operation of specific operators in the specific operation of the violation can also cause overflow problem, which has produced a great obstacle to the installation process in the future, and deepened the hidden danger of equipment installation.

### **3.5 Related hidden dangers of mechanical and electrical equipment products**

The quality of the product is not high mainly in the following: the problem of mechanical and electrical equipment is easy to switch off in the process of use. The reason is that the pressure of the switch joint is too high and the effective contact surface is not enough. In addition, if the switch of the mechanical and electrical equipment can not be installed according to the specification and process, it will cause the danger of burning at the temperature of the switch over the ignition point, and even cause the line fire. In the operation, there may be the problem that the contact is not installed according to the standard. The reason of this kind of problem is: the contact pressure and the opening speed of the brake, if the operation is improper, the circuit breaker will overheat for a long time, and eventually the combustion and the barrier will occur. After installation, the quality of the wire is an important factor that can not be ignored if the equipment wants to reach the state of smooth operation. There are many disadvantages in the wire installation. The problem of wire breakage and wire head will impede the safety and stability of the equipment operation. The quality of the capacitor operation determines whether the equipment can run smoothly. The actual operation personnel should control the specific installation effect of the capacitor. However, there are still leakage and electrode corrosion in reality. Therefore, we should pay attention to the maintenance and maintenance of the capacitor.

## **4. Analysis of the hidden trouble handling methods of mechanical and electrical equipment installation**

### **4.1 Optimize the installation of the equipment in order**

It is one of the root causes of hidden trouble in the installation of electromechanical equipment to put aside the relevant technology and specifications for mechanical and electrical equipment installation. If we want to reduce or avoid all kinds of hidden dangers in equipment installation, to further improve the quality and accuracy of the installation process, we must strictly operate according to the relevant specifications and construction technology. This puts forward higher requirements for the qualification and operation level of the project manager, the construction unit, the specific operator and the whole process of installation and implementation of the whole equipment system. In the implementation of specific supervision, the installation personnel must be urged to install the equipment according to the construction plan and specification, and the

installation plan and installation steps are prohibited. It is necessary to add that, in order to improve the practical and professional quality of the specific installation operators, the construction units should attach importance to the actual operating ability of the operators, so the regular and irregular training and post training should be carried out to promote the effective mastery of the internal capacity and process of the mechanical and electrical equipment by the relevant personnel, with the installation of the equipment. The increasingly standardized technology and the continuous improvement of China's science and technology level are reflected in the installation of electromechanical equipment. The current installation of electromechanical equipment presents a flexible and diversified trend, which puts forward new expectations and requirements for the corresponding professional technology. Due to their different characteristics, various technologies have their own advantages and disadvantages, resulting in different installation sequences. With the continuous progress of society, the disadvantages of the old installation technology in the past are relatively more, and have been unable to adapt to the new requirements of the current equipment installation. Therefore, in today's specific installation operation, we must update the old installation methods, and provide more power support for the technological progress of the industry. The generator and other equipment can be installed in the installation of electromechanical equipment to provide backup power for the installation process. This can maintain the stable operation of the equipment. So the installation of equipment must be prepared in advance, to optimize the installation process effectively, to combine the concrete practice of the project, to ensure the scientific and rational whole process, and to realize the effective application of the equipment and the greater economic benefit. In addition, in the installation process of the pressure fan and substation, the specific work should be carried out according to the planning and design, the plan is made scientifically, then the feasibility study of the plan is carried out, and the optimal scheme is selected. The installation of the equipment should be connected with the actual requirements of the installation of the equipment to do the corresponding scientific adjustment, can achieve the optimal time limit, improve the use of equipment and reduce the risk of hidden dangers.

#### **4.2 Improve the commissioning work after installation of electrical and mechanical equipment.**

The final step of the installation of mechanical and electrical equipment is the corresponding debugging work. The purpose is to detect the normal operation of the related equipment, and whether the parameters of the application can be consistent with the actual conditions, and the monitoring of the operating state of the equipment can be coordinated with the overall operation of the project, which provides a great guarantee for the operation of the equipment in the formal operation. In the process of mechanical and electrical installation, the type, type and quantity of the installed equipment should be combined with the specific requirements, site conditions and specific objects, so in actual debugging, the equipment, function and other factors should be studied in combination, and the installation scheme adapted to it is formulated according to the actual situation, and in the scheme. The specific procedures and methods for debugging are clearly defined. According to the corresponding scheme, the test operation and adjustment activities of the first installed mechanical and electrical equipment are carried out, and the abnormal selection of the equipment in the commissioning and trial operation is in conformity with the design and actual requirements. If it does not meet expectations, it should promptly analyze the causes and formulate implementation measures to achieve the goal of commissioning. After all the equipment is installed, it is very important to carry out the work of debugging and running. The relevant professional personnel should test the specific conditions of the operation to ensure the accuracy of the data. The state and degree of coordination of the equipment are judged to ensure the stable operation of the whole system. In the process of installing the equipment, we should analyze the actual location of the installation and implement the installation according to the specification and process. At present, there are many kinds of mechanical and electrical equipment, so in the installation and commissioning work, we must contact the comprehensive elements to carry out the analysis work, and analyze the scientificity and rationality of the scheme. With the rationality as the guidance, the inspection work in the operation of the equipment is carried out. After the whole adjustment is

completed, we should compare with the reality, find out the problem in time, put forward measures and implement concrete improvements to ensure the safe and stable operation of the equipment.

#### **4.3 Management level of installation process of lifting equipment**

Before equipment installation and other project activities are not fully implemented, the technical training department should organize and implement training activities in time so that relevant technicians can understand the connotation of installation deeply and consolidate it through training to achieve the purpose of installation. Before installation activities are implemented, operators must master the performance and operation methods of the corresponding equipment. Improve the management level of installation process and reduce the probability of problems arising from installation. All departments must do well in the implementation of the work before the operation, and intensify supervision in the implementation process, so as to ensure the compliance of the installation work.

In the installation, the whole process should be inspected, the related problems are rectified and the effect is checked after installation, so that every problem can be improved effectively, and the quality of the installation is improved.

#### **5. Conclusion**

To sum up, with the continuous improvement of China's productivity and the level of science and technology, mechanical and electrical engineering has also been unprecedented development. Mechanical and electrical equipment has a positive effect on the efficiency of our social production efficiency, and its operating standards are continuously improving. Based on this, in order to deepen the development of the industry, we must strengthen the management of the installation of mechanical and electrical equipment, find out the problems and rectify it in time so as to ensure the quality of the installation of the equipment.

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