Study on the Quality Management of Building Electricity Engineering Construction in the Whole Process

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Abstract. With the progress of science and technology, people use more and more types of electrical equipment and the functions are more and more complicated, which put forward higher requirements on the construction quality of electrical construction. If you ignore some of the necessary quality requirements and violate the specification of operation in the process of building electrical construction, that will bring great security risks and resulting in huge economic losses, even endanger personal safety. Manage and control construction quality of building electrical construction must be carried out throughout the whole process of construction. According to the construction characteristics of building electrical construction, this article analyze the construction details that are easy to be ignored but very important in the construction, based on management theory and put forward the methods of quality management in the whole process of building electrical construction. This template explains and demonstrates how to prepare your camera-ready paper for Trans Tech Publications. The best is to read these instructions and follow the outline of this text.

1. Introduction
Building electricity equipments are closely related to people's lives the use of function and quality is directly related to the safety of people's lives and property. Therefore it is particularly important to control and manage the construction of building electricity construction quality. In accordance with the requirements of management theory, each building electricity engineering is a project, to manage its quality, must implement the whole process of management, construction of electrical engineering in the process of the formation of high-quality, high performance and high quality management. In the management process using P-D-C-A circular management way, P is the plan, D is the doing, C is the checking, A is the action

According to this method of quality management, the P-D-C-A circular management mode must be continuously carried out throughout the construction of the building electricity construction, that is, during the construction of each branch and sub-project. Only by adopting such a method of quality management can construction electrical engineering be certified to the highest quality standards to meet the latest needs of households.

In the construction of electrical engineering construction quality management process should also pay attention to the use of new products, new technologies control. Because of new products, new technologies if used improperly, will also affect the quality of building electricity construction. In this paper, the author studies the whole process quality management of building electrical engineering, and discusses the methods of control and management of building electrical engineering construction quality from several aspects, such as "new technology and new material"
2. Implement P-D-C-A circular management mode in the whole process of building electrical construction

According to the project management theory, the quality is formed in the process of project implementation. The construction quality of the building electricity engineering is also formed in the whole process of its implementation. Specifically, it is in the construction preparation stage, the installation and construction phase, the completion and acceptance phase and operation and maintenance phase of the formation of the process, the implementation of quality management operations, according to the P-D-C-A circular management mode shown in Figure 1 circular mode. Only by adopting such a circular method can the specific construction of the building electricity project be ensured in accordance with the construction plan. Through the supervision and inspection during the construction process, it found the functions that did not meet the planned construction and did not meet the new requirements of households, and then adjust, revis and formulate new plans in time, which eventually led to the continuous improvement of construction quality of building electricity.

![Figure 1 P-D-C-A circular management mode](image)

During the construction of building electricity, it should be managed according to the following P-D-C-A circular management mode, and the following details should be noted:

1) The first P of P-D-C-A circular management mode is "Plan". That is a process of collecting information, making analyzes, setting goal, this plan is based on the owner's intentions and the actual situation of each stage, to develop a detailed construction plan in the short term. The characteristics of this program are as follows: first, short-term rather than long-term, second, changes are as customers' needs changing and construction conditions changing, that is, the plan is not fixed and can be adjusted and changed at any time, third, to meet the needs of owners and customers. The most important basis for planning is the construction drawings, because the construction drawings itself is based on the needs of owners and customers, which is the bridge connecting the owners’ ideas and construction programs, with complete and accurate drawings in order to develop a detailed and thoughtful plan. Therefore, drawing plan is a very important link in planning. According to the characteristics of building electricity construction, the construction of the building electricity construction drawings in addition to require the construction unit, construction unit, design unit, supervision unit and reconnaissance units to review together. More importantly, the need to send a full set of building electrical construction drawings to the local building electrical industry, the competent department carries on the examination and the building electrical construction drawings can only be constructed in accordance with the examination and approval drawings only if the drawings of the building electrical construction meet the industry specifications and requirements of the local electricity sector or they will be reworked if they do not meet the requirements of the building electricity industry and thus cause great economic losses. These are the links that can not be ignored in the process of drawing approval. Only after the correct drawing approval can we make a complete construction plan.
2) The second D of P-D-C-A circular management mode is “do”, it can also said "implementation", that is, construction is carried out according to plan. Before construction, quality inspection of all kinds of construction materials used in construction must be carried out by using construction materials meeting the specifications and quality standards; otherwise, it is forbidden to enter the construction site; all materials must be "3C" certified, must be "three cards" completely, all plastic materials must be fire-retardant materials, steel pipe must be hot dip galvanized steel. When materials entering the construction site, the construction unit to provide all kinds of documents, by the construction unit and supervision on the spot acceptance, if necessary for testing of materials, construction units, supervision units, construction units tripartite common site sampling, together with the detection qualified units testing, the detection report also needs to be retrieved by the three parties, Second, to control the quality of building electrical materials, to ensure the procurement of regular manufacturers of products that can be directly identifiable from the appearance of the material, the product should be directly identified to eliminate bad products into the construction site. Figure 2 showsthe appearance of qualified and unqualified socket.

![Figure 2](image)

Figure 2 Contrast diagram of qualified and unqualified socket.

The appearance of the product can not be directly judged, the product should be disassembled spot checks, stop inferior products to be inferior, because many products from the appearance of difficult to identify, but the internal is very different. Figure 3 two pictures are two identical appearance, completely different internal structure of the socket picture, the left picture is a poor quality socket, the contact welding is not strong, meat is not full, do not use copper terminal, the right picture is qualified socket, if you do not disassemble, you will unrecognizable.

![Figure 3](image)

Figure 3 qualified and unqualified outlet internal comparison chart
Figure 4 for the three wire anatomy, through the "anatomy", in order to identify the poor quality of the left side of the wire. Therefore, in the control of building electrical materials, product quality, in addition to check a variety of documents, the materials and products for scientific testing is very necessary to check the quality of the material from the nuances of the dismantling of the sample material check

3) The third C of P-D-C-A circular management mode is "check", that is, testing the construction situation, inspecting the construction results and planning requirements of the building electric appliances by means of spot check, inspection, side-by-side and other measures and measurement, commissioning and commissioning is consistent with the construction norms of the requirements are consistent with the needs of owners and customers are the same. In case of any problems, rectify, replace and rework immediately. This check link should be carried out simultaneously with the construction link to ensure that the first time to find the problem to solve the problem. At the same time, the results of the inspection should be feedback to facilitate the development of a better plan. In the inspection, it is easy to ignore the grounding resistance test and insulation resistance test, the construction unit often overlooked these two tests, or no test equipment can not be tested, thus causing potential accidents, in the event of phase short circuit, ranging from burning electrical equipment, while causing fire caused heavy casualties. Therefore, the inspection must be conducted in accordance with the requirements of the construction specification.

4) The fourth A of P-D-C-A circular management mode is "action", that is, summing up the experience, revising the target, according to the inspection and operation and maintenance phase feedback information, readjust the construction goals, re-develop the construction plan to ensure the final result of the construction of building electricity can best meet the needs of owners and customers. Thus it can be seen, not only P-D-C-A circular management mode in the whole process of building electrical engineering construction cycle continuously, but also in each stage of the construction also have P-D-C-A circular management mode process, so that you can do in each stage of construction, each process can carry out quality inspection, and feedback information, so as to adjust the construction objectives and plans in the first time, to ensure that the construction of building electricity quality to meet the requirements.

3. The applications of new technologies and new materials
With the improvement of people's living standard, the owners have higher and higher requirements on the function of building electricity, which requires the use of new technologies, new materials, new processes and new equipment in the construction of building electricity to meet the owners' demand. In order to ensure the construction quality of building electricity and at the same time meet the new demands of the owners, we should not blindly choose new materials, we should use the forming technologies and materials that have been verified to meet the quality requirements. In addition, constructors, supervisors and electrical engineers should also keep abreast of new technologies, new materials, installation and use of knowledge.
At present, mobile phones have become daily necessities for people's lives, and it is also a daily necessity for people to charge mobile phones. Ordinary five-hole sockets can not meet the new needs of people. What they need is a new type of socket with more functions, namely an integrated socket and smart socket. These two kinds of sockets not only suitable for the traditional electrical equipment, can also be used for charging the mobile phone directly, namely can no longer connect the charger, but also can realize the long-range control of the mobile phone, can save energy, safe and fast.

**Integrated socket**

**Smart socket**

Figure 5 integrated socket and smart socket diagram

Two kinds of sockets in Fig. 5 have already popularized at present, can offer the function of safe energy-conserving while offering people convenient life. However, there are still many problems with these two kinds of sockets, which will directly affect the quality of the building electricity. First of all, these two kinds of sockets can not have the comprehensive grid parameter measurement and load control function at the same time. Second, the integrated sockets and smart sockets are all centralized in one socket, and there will be the problem of increased heat. Therefore, in order to avoid overheating socket appeared burned phenomenon, the need to strictly control the issue of increased heat. There have both advantages and disadvantages in the use of new products and new materials. It is necessary to make scientific choices and rational use so as to satisfy both the needs of the owners and the construction quality.

### 4. Conclusion

In the rapid development of science and technology, all kinds of electrical products are widely used in people's daily life and work, people are more and more demanding on the quality and function of electrical construction. How to strengthen the management of construction quality in the whole process of construction of building electrical engineering has become an important issue of building construction. From the perspective of management science, the construction quality of building electrical engineering must be the whole process of management and control. P-D-C-A circular management mode control is throughout the whole implementation, with timely detection and quality problems, and timely adjustments to make the building electrical engineering into high-quality projects.

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