

The Application of Green Energy-saving Technology in the Electrical Design of Building Engineering

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Abstract: With the continuous development and progress of society, the scale of building construction is expanding and the functions are more diversified. Therefore, in the building construction stage as well as the building application stage, a large amount of energy is consumed, which includes a large amount of electrical resources. In order to promote the green development of buildings, green energy-saving technologies can be integrated into the electrical design of construction projects. It is necessary to understand the basic development status and application principles of green energy-saving technologies. According to the application principles, reasonable technical application measures should be selected. Based on this, this paper discusses in order to provide reference and reference for relevant workers.

Keywords: Green energy-saving technology, Building engineering electrical design, Application strategy.

1. Introduction

The large demand of electric power resources has made the electric power enterprises in all regions face the pressure of electric power supply. At present, the power resources in many regions are still mainly thermal power generation, which means that the power generation will continue to produce pollution emissions, affecting the environmental conditions in the region. In order to save power resources, the total amount of power applied needs to be reduced and the efficiency of the application needs to be improved. The design of electrical energy saving in building engineering needs to integrate the construction goals of the building, natural environmental characteristics and other factors for comprehensive consideration, and to promote the development of green building at the same time, but also to ensure that the normal functions of the building.

2. The Basic Development of Green Energy-Saving Technology in The Electrical Design of Building Engineering

In the process of urbanization and urban renewal, construction engineering plays an important role. The number and scale of engineering construction are increasing day by day. In order to achieve sustainable development of the construction industry, the concept of green building and related technology research has become a key concern within the industry. Discussions on the concept and technology have been widely carried out in the industry. However, in the actual electrical engineering design, the integration and application of green energy-saving technology is still in a state of pending development. This is linked to the concepts and habits of some designers as well as the level of green energy-saving technologies. In order to promote the development of green building technology, the concept of green needs to be integrated into the details of building construction, and through reasonable design and optimized functions, to bring a positive impact on the lives of building applicants and enhance people's awareness of environmental protection.

3. The Application Principles of Green Energy-saving Technology in The Electrical Design of Building Engineering

In architectural electrical design, the design is influenced by the state of electrical technology, the internal space structure of the building and the application goals of the building construction. In order to coordinate the relationship between various influencing factors, the application principles of green energy-saving technology need to be followed. First, the principle of economy should be emphasized. The application of green energy-saving technology can improve the rationality of electrical design, which means that in the construction and application stages of the building, the overall consumption of electrical resources will be reduced, which will help to improve the revenue of the construction of the building. For this reason, the integration of green energy-saving technology needs to be combined with the building construction stage and the power resource application needs of the building application, respectively. Second, the electrical design needs to follow the principle of practicality. In different types and sizes of buildings, the requirements of electrical design are different. For example, in high-rise buildings and large buildings, elevators, heating, and lighting consume electrical resources, and the normal function of the building should be ensured along with the green energy-saving design. Therefore, attention needs to be paid to the selection of equipment and the influence of environmental factors, preferably selecting energy-saving equipment and integrating the advantages of the environment to reduce the consumption of electrical resources in buildings [1].

4. The Application of Green Energy-saving Technology in The Electrical Design of Building Engineering Strategy

4.1. Energy-saving technology for electric motors

Among electrical equipment, electric motor equipment has special application value, and the performance, operating efficiency and actual working condition of electric motor will affect the comprehensive effect of building electrical operation. Under the influence of green energy-saving technology, people pay more attention to the choice of electric motor equipment in building electrical design, such as through the upgrade of electric motor equipment, to promote the improvement of equipment performance and adapt to the application of green energy-saving requirements. It is also possible to start from the problem of motor loss and integrate green energy-saving technology for the transformation of electric motors to promote the improvement of motor application efficiency. In large-scale construction projects, several electric motors are often used, which means that several devices need to be renovated and managed. For this reason, it is important to determine the energy saving standard of electric motor equipment and select the applicable equipment. The operation of electric motors can be optimized by means of equipment control and adjustment, and the overall energy consumption can be reduced by means of power feedback technology. For example, in the operation of building elevator equipment, this technology can be selected for application.

4.2. Transformer energy-saving technology

The standard application of transformers is the focus of attention in the electrical design of construction projects. Under the requirement of green standards, the application efficiency of transformers is improved, which can promote the reasonable consumption of electrical energy in the electrical system. First of all, need to focus on the loss of transformers. The large scale of the construction project requires a large amount of electrical energy to be used centrally, which will affect the operating condition of the transformer and bring about a large amount of energy consumption, resulting in higher operating costs. For this reason, the operating state of the transformer needs to be integrated and analyzed, and the load capacity of the transformer needs to be reasonably allocated. Secondly, the transformer operation analysis needs to be carried out according to the transformer's usage, use environment and other factors. In the case of conditions permitting, the operating environment of the transformer needs to be adjusted to improve the efficiency of its operation. For example, adjust the temperature environment of transformer operation [2].

4.3. Lighting energy-saving technology

In large-scale buildings, the internal lighting of the building consumes a large amount of electric energy. Building lighting needs are generally divided into two kinds, night lighting is the most important lighting needs, in poorly lit areas also need to be daytime supplemental lighting. Through lighting energy-saving technology, the application rate of natural light sources and the application rate of electric power resources can be improved to achieve the purpose of energy saving.

First of all, the architectural design should take into account the lighting needs of the building space, and reduce the lighting needs inside the building through reasonable lighting design, and fully apply natural light. In the construction phase of the building project, it is necessary to take into account the influence of seasonal factors and other factors on the lighting needs, such as, many winter in the winter natural light time is short, the night construction needs a large number of applications of lighting equipment, need to preferably select the lighting equipment with energy-saving features, adapt to the requirements of energy saving. Switching lights to choose double control mode, to avoid the occurrence of mis-lighting, reduce the waste situation. Secondly, it is necessary to pay attention to the design of weak electricity and strong electricity in the building, to improve the coordination of the design and ensure the integrity of the design scheme.

4.4. Air-conditioning energy-saving technology

In the electrical system air conditioning can play the role of cooling and heating, and can regulate the temperature inside the building. Under the influence of the urban heat island effect, the temperature in urban areas is generally higher than that in the surrounding suburbs. In order to maintain normal production and living activities, air conditioning needs to be continuously applied to regulate the temperature inside the building, which brings about a large amount of electric energy consumption. The design and construction of buildings can be optimized according to green energy-saving requirements. For example, in the design of the internal space of the building need to pay attention to the state of ventilation, through the effective flow of natural air to play a cooling effect, reducing the use of air-conditioning cooling needs. For example, the insulation of the external wall and the top floor can be carried out, and this way can optimize the heating effect and reduce the energy consumption. In addition, in large buildings, priority will be given to central air conditioning need to centralize the control of air conditioning automation equipment, according to the actual operation of different equipment to do a good job of starting and stopping, reducing the consumption of electric power resources [3].

4.5. New energy technology

The application of new energy technology can play the role of energy supplementation, supplementing other energy sources to reduce the consumption of electric power resources. At present, the new energy technology that can be widely used in buildings is mainly solar technology. Through solar panels, solar energy can be stored, accumulate solar energy and convert this energy into electricity, supplying all kinds of electrical equipment in the building applications. In addition, the application of solar appliances can also achieve a direct supply of energy. Due to the constraints of regional natural geography and solar power technology, the application of solar energy in buildings is often used as a supplementary resource, making it difficult to achieve large-scale and sustainable applications. For example, solar power generation is reduced in winter, and the weather can affect solar power conditions. It is necessary to combine the structure of the building to maximize solar energy facilities and increase the use of clean energy. In addition, in some areas, wind and geothermal energy resources can be directly applied in buildings [4].

5. Conclusion

In the electrical design of construction projects, the application of green energy-saving technologies can play a role in saving energy and reducing the cost of building construction and use. For this reason, it is necessary to pay attention to the application of green energy-saving technology and choose a reasonable application method according to the application principles of the technology. At the same time, the research of the technology and the summary of the practical experience of the technology application should be done to promote the further development of the green energy-saving technology. Construction units should comply with the theme of the times of energy conservation and environmental protection, adapt to the green energy-saving development requirements of engineering construction, and promote the orderly development of China's economic construction while

promoting the development of the construction industry.

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