

Discussion on the Application of New Photovoltaic Energy in Building Electrical Energy Saving

Qian Yang*

Leshan Vocational & Technical College, Sichuan, China. E-mail: 459427905@qq.com

Abstract: With the rapid development of social economy, the demand for new energy is also increasing, and then the problem of large consumption also has a negative impact on the development of the construction industry. Under the concept of green building, the design and construction units pay more attention to energy conservation and environmental protection, so they actively use photovoltaic new energy in the field of electrical energy conservation of construction projects, so as to improve people's quality of life. Starting from the principles and characteristics of building electrical energy conservation, this paper discusses the methods of building electrical energy conservation, and analyzes how to use photovoltaic new energy in the field of building electrical energy conservation, hoping to better practice the concept of energy conservation.

Keywords: Building; Electrical Energy Saving; Photovoltaic New Energy; Application

In recent years, China's construction industry has made rapid development, not only reflected in the increase in the number of buildings, but also significantly improved the quality of construction. At the same time, a lot of energy and resources are consumed, which makes the energy utilization of our country highly concerned by the society. At present, electrical loss is a major energy consumption of buildings, so it is necessary to pay attention to the use of energy conservation and emission reduction concepts in design and construction. Photovoltaic energy is a kind of renewable energy. Through the use of technology, solar energy can be converted into the power resources needed by people's daily life, which is inseparable from the use of photoelectric effect. Specifically, it is the use of inverter to convert direct current into direct current Alternating current, finally meet the needs of social development.

1. Principles and characteristics of building electrical energy saving

1.1 Principles of building electrical energy saving

First, pay attention to the principle of economic benefits. Energy conservation and emission reduction is an important part of the current social concern, but the traditional methods will cost a certain amount of money, so we need to take into account the economic benefits, that is, on the basis of energy conservation and emission reduction, to reduce costs, and ultimately obtain greater economic benefits, such as recycling construction waste or providing power and resources to make up for costs. Secondly, the principle of meeting the electricity demand. In the process of energy conservation and emission reduction of building electricity, the materials used need to meet the basic requirements, such as lighting and electricity demand during construction^[1].

1.2 Characteristics of building electrical energy saving

First, practical features. In the background of the increasing number and scale of construction projects, the use of electrical system is more extensive. For the design of building electrical energy saving, it is necessary to ensure that the scheme has good implementation according to the actual situation of the project. In the design of building electrical

energy-saving, it is mainly based on scientific theory, then comprehensive consideration of building characteristics, careful analysis of the operation of electrical system, and finally combined with the concept of energy-saving design of scientific energy-saving technology. In the later stage, through the reduction of energy consumption, it can effectively compensate for the large amount of investment in technology and equipment in the early stage. In the context of the continuous development of battery technology in China, it can effectively reduce the investment in construction costs, so that the construction project can get more profits; secondly, the applicability characteristics. Before the construction of electrical engineering, it is necessary to design scientifically according to the actual situation of the construction, mainly considering the characteristics of electrical system and power supply system itself, and then plan the design scheme scientifically to ensure that the content involved is reasonable and avoid the normal operation of part of electrical engineering in order to save energy consumption and affect the normal operation of the system. In the process of the construction of electrical energy-saving design, it is always necessary to Power supply system as the theoretical basis, and then continue to optimize the design of the scheme, which can not only reduce the loss, but also achieve the normal operation of the electrical system; finally, the optimization characteristics. In order to ensure the implementation of building electrical energy-saving design scheme, it is necessary to fully consider various factors affecting the operation of building electrical equipment in the early stage, including the commonly used electricity, rated power, maximum load, etc. In addition, the data should be compared with the previous experience to determine the construction method scientifically. For example, an automatic temperature sensing system can be designed in the construction project. When the ambient temperature exceeds the limit value, the electrical system will stop working, so as to ensure the safety of the system operation^[2].

2. Building electrical energy saving method

Motor energy saving mainly relies on compensation capacitors, while motor equipment and water supply and heating equipment are provided by the manufacturer, rather than selecting equipment to achieve the purpose of energy saving. Therefore, energy saving measures need to be taken in the operation of the motor. The use of compensation capacitors can reduce the circuit's advanced transmission of electricity, at the same time, it can reduce the operating load of the motor, and thus play a role in reducing energy consumption. The power distribution system should be configured according to different building types, such as the single-phase load distribution system for office buildings, which can ensure the power distribution efficiency while reducing the energy consumption. The three-phase load can be used for water pumps, elevators and other equipment and facilities to reduce the energy consumption.

3. How to use new photovoltaic energy in the field of building electrical energy saving

At the same time of meeting the development of the times, the use of non renewable resources has also begun to increase, so it is necessary to research and use new energy. In the middle and long-term use of non renewable resources in construction, at the same time, to a certain extent, it damages the ecological environment. Under the concept of energy conservation and emission reduction, people began to strengthen research on new energy, and solar energy, as a renewable and pollution-free resource, has been fully utilized in the field of building electrical energy conservation. The current main path is to convert it into electric energy, and solar photovoltaic power generation technology has gradually matured. This technology is not only a green technology, but also easy to maintain. It can reduce the waste of non renewable resources in the construction field^[3].

Photovoltaic new energy is solar energy resources. Its principle is to convert sunlight into new energy with the help of solar cells, mainly with the help of controllers, inverters and solar panels. In sunny days, the solar panel will generate electric potential energy through continuous sunlight, and then the controller will be used to meet the battery charging needs; at night, the battery will change DC power into AC power through the inverter, and realize power supply through the switch of distribution cabinet. In the field of construction, the use of photovoltaic technology can reduce land occupation, and then let the building give play to the advantages of photovoltaic technology to provide people with a large amount of energy, so as to reduce the emission of carbon dioxide and other exhaust gases to a certain extent^[4].

When installing the solar photovoltaic power generation equipment, in order to ensure the full use of the light

energy, it is necessary to ensure that there is no large building around to block the sun, which is more conducive to the generation of electric energy; a large area of solar photovoltaic equipment can be laid in sufficient ground to avoid damage. At the same time, it is also necessary to adjust the angle reasonably according to the sun's moving track. After the installation of the solar photovoltaic power generation equipment, it is necessary to carry out regular inspection on the equipment, especially in severe weather conditions, it is more necessary to increase the inspection intensity. If any equipment problem is found, it is necessary to take relevant measures for maintenance in time.

Photovoltaic technology can improve the efficiency of resource utilization in building electrical system. In the system design, we need to pay attention to solar panel array, calculate the surface solar radiation and photovoltaic system efficiency. At the same time, it is necessary to master the principle of photovoltaic new energy generation, which is mainly realized by the semiconductor photovoltaic effect, and then the light energy can be transformed into the electrical energy of building electrical through a series of related equipment. Compared with other ways, it can play the advantages of small loss and no pollution, which is the best choice for the current building electrical energy-saving construction. With the maturity of the utilization of new photovoltaic energy technology, there are currently photovoltaic building integration buildings, which mainly install photovoltaic system on the outer wall of the building, and then provide electrical energy for the building, and finally realize the effective combination of photovoltaic energy technology and building technology^[5].

For the optimal design of building electrical energy conservation, first of all, scientific design principles should be followed, which is the premise to ensure the construction quality and efficiency. Designers need to consider the relevant factors that affect the building functions, such as which factors will affect the normal operation of intelligent building lighting function, which factors will affect the operation of various entertainment facilities in the building, and We should also fully integrate economic and social benefits. Secondly, the optimization of power supply system needs to be considered. Personnel need to make a scientific layout of electrical equipment and optimize the design of various electrical equipment, wiring, voltage, etc. in the construction project. As for the setting and selection of transformer, it is mainly to consider how to reduce the power consumption and avoid line overlap in the wiring setting^[6].

4. Conclusion

To sum up, with the continuous development of science and technology, the construction industry has also been supported by many technologies such as electricity. Nowadays, people not only pay attention to the quality of buildings, but also pay attention to how to integrate the concept of energy conservation and emission reduction. Photovoltaic new energy is a kind of resource with low energy consumption and high environmental protection, which can make full use of renewable resources. The use of this technology can create more intelligent and energy-saving buildings, and then accelerate the development process of urbanization in China.

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