

Discussion on the Application of New Energy Photovoltaic Power Generation System

Qian Yang

Leshan Vocational&Technical College, Leshan, 614013, Sichuan, China

ABSTRACT. *water energy, wind energy and solar energy have the advantages of good power generation effect and strong environmental protection, and they are more convenient to use. Solar energy, as a kind of renewable resources, can be transformed into power resources. With the continuous development of science and technology, all countries in the world are vigorously developing and using photovoltaic power generation system, which not only realizes the rational use of resources, but also creates a huge Great economic value. This paper starts with the composition, classification and application of solar photovoltaic power generation, and analyzes how to use new energy photovoltaic power generation system, hoping to further promote social development.*

KEYWORDS: *New energy, Photovoltaic power generation system, Application*

1. Introduction

Solar energy is a kind of renewable environmental protection energy. At present, the most remarkable achievement of its utilization is the solar photovoltaic power generation system. The system converts solar energy into electric energy under the light, and then outputs stable voltage under the support of relevant technology and equipment. It can also store the light energy and electric energy with the help of charging and discharging controller, so as to realize the supply of power resources. Solar photovoltaic power generation is the embodiment of the utilization of solar energy power generation technology, which promotes the development of many fields in our country, and forms a good industrial chain, with great potential for industry development.

2. Composition, Classification and Application of Solar Photovoltaic Power Generation

2.1 Composition of Solar Photovoltaic

From the perspective of operation mode, solar photovoltaic is mainly composed

of inverter, controller and solar cell array. The solar controller can control and protect the photovoltaic power generation system and compensate the temperature in case of large outdoor temperature difference. The inverter can change DC power into AC power, which is an independent power generation system and uses DC power. There are solar cells, batteries, inverters are used to provide independent load power, more for parallel light-emitting system.

As a key component of solar photovoltaic, the solar cell array can absorb the light energy under the condition of illumination, and then convert the light energy into electrical energy, so that the energy can be stored in the exchanger [1].

2.2 Classification of Solar Photovoltaic System

Solar photovoltaic power generation system is divided into off grid power generation system, grid connected power generation system and distributed power generation system. It can not only be used for small capacity users in remote areas without electricity, but also for decentralized solar roof photovoltaic power generation or large centralized solar photovoltaic power station. Off grid power generation system is composed of solar cell components, batteries and controllers. For example, the output power is converted to 110 V or 220 V, which needs to be supported by reverse current. Grid connected power generation system has the characteristics of long construction period, large investment and large floor area. Users need to get the unified allocation of power grid when using power resources. The decentralized small grid connected power generation system has the characteristics of small floor area, small investment and fast construction, which is the main power of grid connected power generation at present. With the support of solar photovoltaic power generation system, redundant power resources can be stored, and then used in overcast days and at night. In addition, because the load voltage will fluctuate, the controller can be used to adjust the voltage to meet the power demand [2].

2.3 Utilization of Solar Photovoltaic Power Generation System

The independent photovoltaic power generation system in the photovoltaic power generation system can output electric energy when it is connected to the power grid. Grid connected photovoltaic power generation mainly distributes electric power resources through the national grid, and does not need electric energy reserve, that is, does not rely on battery, so as to effectively reduce the cost of power generation. Therefore, the power provided by photovoltaic array can effectively save the energy consumption and cost of national grid, but the transmission time will also be increased in the transmission, but generally speaking, the application way is more extensive.

3. How to Use New Energy Photovoltaic Power Generation System

3.1 Exterior Wall Application

The exterior wall of the building can fully absorb the light with its large area advantage, and the high-rise building can better absorb the light. On the premise of ensuring the heat preservation and sound insulation, the building also pursues the beautiful effect, so the glass curtain wall has been widely used at present. The combination of photovoltaic power generation system and green building exterior wall can play an energy-saving role on the original basis. Specifically, it is to display the solar panels in the form of glass, and then absorb a lot of solar energy, which plays a role in reducing energy consumption. After using photovoltaic power generation system, the outer wall of green building can improve the transparency and thermal insulation, as well as the indoor lighting capacity to a certain extent. In the process of use, it is necessary to control the angle reasonably, so as to improve the effect of solar energy absorption [3].

3.2 Roof Applications

At present, many buildings fail to make full use of solar energy on the roof, while green buildings can make full use of solar energy resources. For example, if photovoltaic power generation system is used on the roof, the utilization effect of solar energy can be improved. The installation of solar panels on the roof of the building can reduce the difficulty of design and installation without considering the angle, and will not affect the installation of ventilation ducts and sunshades, so it shows a good cost performance [4]. It should be noted that the installation of solar panels on the roof of a building should consider the impact of the natural environment, such as hail, lightning, rain and snow, which will affect the absorption and utilization of solar energy, or even damage the solar panels. When determining the inclination angle of the roof, we need to consider both the ornamental and practical aspects, so that we can reduce the impact of snow accumulation on the aesthetic degree. In addition, the solar panel mainly uses high-strength materials such as metal, which needs to be designed to prevent lightning and avoid damage to the solar panel [5].

3.3 Skylight Application

In large-scale green buildings, the function of skylight can not only be reflected in good lighting effect, but also avoid being directly exposed to the sun. In the process of green building design, the use of photovoltaic solar power system can make the skylight get reasonable use, mainly according to the needs of indoor lighting and sunshade, and the use of skylight can generate electricity, ultimately meet the needs of many aspects. In the skylight, photovoltaic power generation system mainly uses solar panels to ensure the indoor lighting effect. Therefore, in recent years, the design of skylight is mostly well lattice type, and the inclination angle should be considered, so as to fully absorb the light energy, so that the three-dimensional daylighting can be realized by the light refraction principle.

3.4 Utilization in Monomer Users

Most areas of China are rich in solar energy resources. From the perspective of individual users, small-scale power photovoltaic power generation is between 10 watts and 100 watts, which can be used in remote areas with inadequate power grid construction, such as plateau areas or islands. After the photovoltaic water pump technology has been fully developed, it can solve the demand for deep well water in some areas to a certain extent. The R & D and utilization of solar water purifier mainly rely on photovoltaic technology. As early as 2012, Guangxi Province proposed the design concept of small-scale solar photovoltaic power generation system, so as to meet the power demand of individual users [6].

3.5 Application in Power System

On the whole, China's power system is still in a state of tension. In China's urban areas, there is still a huge demand for the use of electric energy in the peak period. Through the use of grid connected photovoltaic power generation, it can meet the power needs of household lamps and avoid the stability of the film used in the peak period for public use, such as in China's traffic field (navigation lights, traffic / railway signal lights, traffic lights Warning / sign light), photovoltaic power generation technology can also keep the transportation capacity in a state of power at all times. In addition, in the future research, the development of communication field also needs the support of solar photovoltaic technology, and the power supply of communication power system needs to be realized by human operation. After the establishment of photovoltaic power station, it can effectively solve the problem of large-scale power consumption in urban areas of China, and then improve the urban power supply system of China.

4. Conclusion

To sum up, under the background of the gradual depletion of traditional resources, human society in order to meet their own development needs to effectively develop a variety of renewable energy, and then replace the traditional energy through the use of new energy, which is also convenient for people to obtain such resources. At present, in order to reduce the use of renewable resources, the use of solar energy has become a key issue in the world. With the progress of solar photovoltaic technology, this technology has been used in more fields. In the future, large-scale buildings will realize self-sufficiency in power, while satellites, spacecraft, space solar power stations, etc. will also be developed. In the future, China needs to strengthen the research on this technology, provide financial and policy support, and then improve people's quality of life and promote social development.

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