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Exploration on effective application of new energy generation technology in power system

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Abstract

In recent years, China's social and economic development has been rapid, the development of science and technology has also reached a higher level, the development of various industries because of the progress of science and technology, the demand for electricity resources in human production and life has been increasing. In modern society, the power demand is not enough to be satisfied by traditional power generation technology, and it is difficult to avoid the serious environmental pollution and large energy consumption, which has a serious impact on the development of the power industry. This paper explores the effective application of new energy generation technology in power system for reference.

Keywords

New energy; Power generation technology; Power system; application.

1. Introduction

Since China's reform and opening up, social and economic development has promoted people's living standards, and China has officially entered the era of industrial development. People's demand for electric energy in the process of production and life has been constantly increasing. In the face of this social situation, if the traditional power generation technology is still adopted, it is difficult to meet the demand for power energy in modern society, and the impact of traditional power generation technology on the environment and the huge consumption of energy are difficult to change. The development of science and technology to carry out the work of electricity power sector in the process of starting the application of various new techniques, new technologies, and new energy power generation technology is one of important technology, in contrast to previous power generation technology, new energy power generation technology cleanliness higher, for less environmental pollution, low energy consumption, This has also provided sufficient impetus for the healthy development of the power industry.

2. New energy generation technology

2.1 Solar

Solar energy is very common in people's life and is a very important situational energy. The application of solar power generation technology in the power system can minimize the loss of energy on the earth and reduce environmental pollution. Unlike other energy sources, solar energy is easily accessible and can be converted directly into electricity.Solar panels, for example, are one of the common solar technologies. However, for the utilization of solar energy, after all, the utilization rate is limited. In the future work process, relevant researchers still need to constantly increase research efforts to ensure that the utilization rate of solar energy can be fully improved.

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2.2 Wind Energy

At present, the application of wind power generation can be seen all over China. In the process of specific application, the wind energy can be fully converted into electrical energy and mechanical energy with the help of relevant technologies. Compared with other western countries, wind power generation technology in China is still in the initial stage of exploration, we can predict that wind energy will inevitably become one of the important power generation technologies in China's power system.

2.3 Geothermal Energy

The so-called geothermal energy is a kind of heat generated by the earth's rotation process, which requires very complicated technical processes in practical applications. The earth's interior is relatively hot, making it difficult to convert this heat directly into electricity. Future research on geothermal energy is mainly to convert thermal energy into electric energy to ensure that the utilization efficiency of geothermal energy can be fully improved.

3. Practical application of new energy generation technologies

3.1 Wind Power Technology

As one of the most important resources in nature, wind energy has a very rich storage capacity, which is why it has a wide range of applications. Based on the wind power technology, this natural energy can be effectively transformed into mechanical energy, and then with the help of this mechanical energy, wind turbines can also operate normally, and with the help of wind turbines, wind energy can be finally transformed into electricity.

Wind turbines, as one of the most important equipment in wind power generation technology, are usually divided into large, medium and small wind turbines according to their capacity. In the process of selecting a wind turbine, the wind turbine should be selected based on the requirements of wind power generation. Secondly, the capacity of a wind turbine depends on the length of its blades. If the generator is divided with reference to the speed, the wind turbine can be divided into polymorphic constant speed, constant speed and variable speed, etc. If the analysis is done from the perspective of wind power drive, the wind turbine can be divided into low speed, high speed, downwind and upwind.

In the process of power generation, the power sector has high requirements for the application of wind power generation technology, usually for the grid connection. Usually, the reactive power compensation voltage has the same stability as the wind power grid connection point, so this can be used as the basis for a more effective control of the reactive power voltage in combination with the relevant equipment, while guaranteeing the dynamic performance of this control means.

3.2 Photovoltaic power generation technology

The photovoltaic effect is the most fundamental, central and important aspect of the application of photovoltaic technology in the power sector. The principle is: a substance is exposed to electromagnetic waves for a long time, in this case, the substance will react internally due to the irradiation and excite its own electrons, which in turn triggers the emergence of the photovoltaic effect in the PN structure. However, for such electrons, the potential is formed in the case of constant movement due to the limitation of their stability. The photovoltaic effect is the basic core of this technology, which converts solar energy into electricity.

At this stage, China's application of solar cells are: composite thin film, thin film, crystalline silicon, semiconductor organic, concentrator solar cells. For crystalline silicon cells can be subdivided into polycrystalline and monocrystalline; and thin film solar cells are not efficient enough; composite thin film solar cells are less polluting to the environment but more harmful to humans; organic semiconductor solar cells are still in a state of development, and there is no practical use case in China. At this stage, the highest efficiency of concentrating solar power in all solar cells, but the actual application of the process in the power sector also requires training in the corresponding involved pen, the cost of investment is large. Therefore, in order to effectively ensure that the cost of

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photovoltaic generating sets in the process of practical application can reap the benefits of reliable power generation, it is also necessary for the relevant staff to make unremitting efforts to effectively realize the commercialization of concentrator solar cells.

In the process of PV panel selection, three methods are usually included: three-axis, dual-axis and single-axis. The use of single-axis screening can ensure that the screening efficiency is increased by 20%, the use of dual-axis screening can be increased by 25%, high-precision dual-axis screening can improve the efficiency of 30%. In the process of solar module selection, the design method of the solar module should be fully considered. Different design methods have different support maintenance, floor space, cost increase and power generation revenue. Therefore, it is important to choose a reasonable method for the actual needs.

3.3 Geothermal energy generation technology

Geothermal energy is at the heart of electric power generation technology. The basic principle of the application of this technology is to generate internal thermal energy from the rotation of the earth, and to convert this thermal energy into electrical energy by using relevant technology, thus achieving the basic goal of electricity generation. However, at this stage of technology, it is not possible to apply this geothermal energy directly, but we can make full use of the heat emitted by geothermal energy. In the process of practical application, geothermal energy needs to be converted into mechanical energy, which is processed by technical means and finally transformed into electric energy. For example, in life people use electric heat energy for heating.

4. Future development of new energy generation technology

4.1 Clarify the responsibilities of all parties to achieve all-round development

At the present stage, as people's demand for electric energy continues to rise, the environmental problems caused by people's past destruction of the environment and use of natural resources are gradually exposed, which makes the application of new energy generation technology urgent and brings the advantages of new energy generation technology into full play at the same time. However, in the process of practical application, many departments are involved, and only the responsibilities of all parties are fully defined to fully guarantee that the current demand for electric energy can be met, to ensure the comprehensiveness of management and supervision, and to improve the current electric network structure in China.

4.2 Emphasis on the integration of new energy generation

In the process of carrying out practical work, the relevant departments should do a good job of overall planning. First, governments at all levels should take the structure and demand growth of the power system in the region as the basis, effectively guarantee the perfection and scientificity of the overall planning of new energy power generation, effectively guarantee the supply of power resources to meet the real needs of modern social development. Secondly, in view of the current situation in the region, relevant departments should set reasonable power generation targets, complete the task of power grid construction according to the design, and effectively optimize the power system.

5. Conclusion

In conclusion, as one of the most core technologies in the electric power system, new energy generation technology can make more efficient use of new energy sources such as wind and solar energy, which can effectively alleviate the energy crisis in China, effectively guarantee the social development of China's demand for electric energy can be fully met, guarantee the normal development of social production and living activities, and form greater economic and social benefits. Therefore, the electric power sector should pay high attention to the application of new energy generation technology to show the way for the healthy development of China's electric power industry.

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