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Review of the Application of Green Building and Energy Saving Technology

Zhineng Tong

Jiangxi Normal University of science and technology, China

Abstract. The use of energy-saving technologies in green buildings should run through the entire process of building design, construction and use, enabling green energy-saving technologies to maximize their effectiveness in construction. Realize the sustainable development of green building, reduce energy consumption, reduce people's interference with the natural environment, suitable for people living in "green" building.

1. Introduction

In the face of deteriorating soil and water issues, white rubbish, resource shortages and air pollution and other issues, people are aware of the importance of ecological construction and began to use their own energy, environmental protection technology and equipment for their own, family and others' health. The construction industry also follows the technical trend, satisfies the people to the green idea request, when constructs the massive integration in the green idea, has implemented a series of energy conservation environmental protection technical measures in the green construction.

2. Preface

Green building refers to the green concept of environmental protection applied to the design, construction and use of the building, through the combination with the actual situation in the construction of reasonable use of green technologies and equipment to achieve green building energy conservation, and ultimately to achieve people and Natural coordination and sustainable development. In the green building in order to achieve sustainable development, as much as possible for building energy saving and environmental protection technology for architectural design, construction and use of demand, reduce energy consumption, reduce people's natural disturbance, the final construction suitable for people living in the building.

Green building conceptually contains the following points:

- (1) Energy saving, here is mainly stressed that we need to reduce a variety of waste of resources;
- (2) To protect the environment, where the main emphasis is to reduce environmental pollution and reduce the amount of carbon dioxide emissions;
- (3) To meet the requirements of people to use, to provide people with the use of space to be "applicable", "healthy", "efficient." Green building from the design, construction, use, maintenance to the demolition of each link has a variety of energy saving and environmental requirements. This means that in the design phase it is necessary to focus on the use of environmental factors, but also to minimize the adverse effects of the construction process on the environment, and to ensure that the building in the operational phase to provide people with low consumption, comfort, health and space Reduce the degree of damage to the environment caused by demolition.



3. Application of Green Building Energy Saving Technology

3.1. Reasonable building layout can significantly reduce the energy consumption during construction use

After the size, function, and area of a building are determined, the building shape and orientation will have a significant impact on building energy consumption. It is generally believed that the building shape coefficient is proportional to the size of the surface area corresponding to the unit building area. Reasonable building layout can reduce the power consumption of the heating and air conditioning system. From the perspective of thermodynamics and aerodynamics, the smaller body shape is proportional to the smaller external load. And the use of residential buildings for external load instability of its energy consumption accounted for the main factors. And for sports venues, cinemas and other large public use of the building, the internal heat is much higher than the external heat, so the design of the larger body shape more conducive to heat. In other words, ordinary residential and large public buildings because of the use of different, the heat of the factors are not the same, from the energy point of view, the design of its body shape requirements are the opposite.

3.2. Building exterior wall insulation can significantly reduce the energy consumption of the building during use

The external wall insulation of the building is a green energy-saving project that can greatly improve the thermal performance. The thickness of its external wall insulation material and its insulation effect is proportional to the relationship. The wide application of the external wall insulation technology not only in the cold winter to effectively avoid the rapid loss of indoor temperature, but also in the hot summer can also be effectively avoided due to solar radiation caused by the external wall temperature and then promote the indoor temperature rise, thereby reducing the air conditioning and other refrigeration equipment working load. In this way, through the laying of building exterior insulation layer not only to enhance the thermal insulation performance in summer also makes the winter insulation performance can be strengthened. This reduces the winter heating pressure and the summer cooling power load, so that the building's energy consumption is reduced. Therefore, from the point of view of reducing energy consumption, we should vigorously promote the building exterior wall insulation technology and technology for a wide range of implementation.

3.3. The indoor environment for system control to achieve the purpose of a comprehensive system of energy conservation

One of the major features of green building is the comprehensive utilization of air treatment, as much as possible the use of natural light, optimization and improvement, natural ventilation design, and many other integrated systems, integrated, multi-faceted optimization and system integration. The integration and optimization of various functions are carried out organically, and the energy consumption of buildings is reduced systematically and scientifically. HVAC system plays a very important role in the overall integrated control, because the HVAC system accounts for more than 50% of the total energy consumption in the general buildings. It is of great importance to optimize and integrate the HVAC system of the building scientifically and reasonably. To reduce the energy consumption of HVAC system, the first step is to start with the optimization of HVAC system design, and the key factor of its success or failure is the automatic control of HVAC system. From the current HVAC design of air conditioning system implementation effect, the highest energy efficiency basically is the green building system based on Distributed Control Technology in general, the HVAC system energy efficiency up to 30%.

3.4. Make full use of clean and rich solar energy natural energy

Currently, solar energy is the most important has been the development of green energy in energy is inexhaustible, widespread natural energy, it has very many advantages such as cheap and clean. At present, solar energy air-conditioning, solar water heaters and solar cells are the main solar energy

utilization in residential buildings. For our country, solar energy resources are still relatively abundant, the average annual sunshine hours is 2100~2500 hours. This provides favorable conditions for the development and utilization of clean solar energy resources in china. Now the biggest factor restricting the use of solar energy is the energy conversion rate is too low, but from the point of view of development, with the progress of science and technology, the scope of the use of solar energy will be more widely, the energy conversion efficiency will be higher.

3.5. The reclaimed water system is introduced to make rational exploitation and use of water resources and avoid waste

The average annual water resources in China is 281 billion 240 million cubic meters. The average annual water resources per capita is only 2200 cubic meters, and the average annual water resources per capita is only 1/4 of the world's average annual water resources. China belongs to the United Nations and is one of the countries with shortage of water resources. In normal life, 95% of the use of washing and sewage is drinking water, causing great waste. Drinking water treatment requirements are very high, but only 5% of the use. Not drinking water 95% water diversion system (water, wash, wash) is no longer used in drinking water, after simple treatment can be recycled, saving potable water waste, reduce the cost of water treatment, so as to achieve the purpose of energy saving.

3.6. Application of daylight lighting technology to reduce lighting energy consumption

In the energy ranking of buildings, building lighting is the number one choice. In some commercial buildings, building lighting consumption sometimes accounts for more than 30% of the total power consumption. Because of the lighting heating factors, some need to reduce the environmental temperature of the regional space, because the lighting heating, resulting in cooling system load is passive. Daylight illumination is the introduction of sunlight into the interior of a building and is assigned in a certain way to provide better quality lighting than man-made light. Daylight lighting reduces the demand for power light sources and reduces power consumption and environmental pollution. Research shows that day-lighting can create healthier and more dynamic environments than artificial lighting systems, which can increase productivity by 15%. Lighting can also change the intensity of light, color and vision, and help to improve work efficiency and learning efficiency. It is widely used in green buildings.

4. Other energy-saving technologies

During the hot months of summer, building sun shading is an economical, effective and effective way to reduce energy consumption and achieve the purpose of building energy efficiency. In the sun shading design, according to the characteristics of the area and the use of the room, as well as sunset made permanent or temporary sun shading device window. Permanently installed in the window, in all forms of sun visor, facilities, according to their components removable or removable, can be divided into fixed or movable type of two. The sun shading activity can vary over the course of the day, the day's change and the darkness of the sky, and any adjustment of the sun visor angle. In the cold season, the flexibility of the sunshade can also be removed to avoid sun blocking and sunlight. Shading measures can also be used in a variety of heat reflective glass, such as coated glass, sunlight control film, Low-E glass, etc., in recent years, widely used in buildings at home and abroad.

Solar energy as pollution-free, unlimited energy, in recent years, more and more widely used in buildings, in general, its application in building energy conservation, including solar thermal applications and photoelectric applications in two areas.

5. Conclusion

Green building is conducive to reduce energy consumption, saving land resources and water use, can reduce the construction of soil and water pollution and air pollution, to meet the requirements of the times, to enhance people's quality of life. In the future of the construction industry, green building will become its main cultural concept, to attract people to buy, for the harmony between man and nature,

and common development conditions. With the economic globalization and technological progress, the world's environmental problems become the biggest obstacle to people's lives, people living environment is getting worse, people's living standards so that they began to have time to focus on events outside the economy, which When people take notice of environmental issues and put forward the idea of green building. Green building is a new architectural concept, as well as the development direction of modern construction industry. It will be the sunrise technology concept of construction industry in recent years. Green building throughout the building design, construction and use, from the whole process to achieve the full range of green building.

Green building concept in the construction industry has an epoch-making significance, can reduce the waste of resources, improve resource utilization, but also can reduce human activities on the destruction of nature, is conducive to improving people's quality of life and promote harmony between man and nature. The use of environmentally friendly energy-saving technologies in green buildings should run through the whole process of building design, construction and use, enabling green energy-saving technologies to maximize their effectiveness in construction.

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