Analysis on Energy Saving and Environmental Protection Technology in Civil Engineering Construction

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Abstract: Today, the scale and the number of projects in the civil engineering field of our country are increasing with the expansion of urban area, but the problems of resource waste and environmental pollution are constantly appearing, which not only seriously affect people's daily living environment, but also affect the further development of civil engineering in our country. Therefore, in order to meet the needs of its own development, the civil engineering industry of our country needs to make great efforts in the whole construction process of energy saving and environmental protection, and it is required to be able to apply the energy saving and environmental protection technology more scientifically and reasonably. Therefore, this paper will focus on the concrete analysis and exploration of energy saving and environmental protection technology in civil engineering construction in China.

1. Introduction

It is very necessary to apply the technology of energy saving and environmental protection scientifically and reasonably in the construction stage of civil engineering in our country at present, but the complexity and systematicness of its concrete application process are also very high, and its scope is also very wide. Therefore, further improvement of environmental protection and energy-saving technology in the process of practical application cannot only make the economic benefits obtained by construction enterprises more substantial, but also ensure that the ecological benefits created by construction enterprises are always maintained at a higher level, while realizing the conservation of resources and the protection of the environment. Based on this, it is also necessary for the construction enterprises in the field of civil engineering in our country to make clear the specific application status of energy-saving and environmental-friendly technology, and then on this basis, to analyze and scientifically plan the selection of various types of environmental protection materials and the practical application of various energy-saving technologies, so as to further improve the level of energy-saving and environmental-friendly technology in the field of civil engineering in our country.

2. Analysis on the Application Significance of Energy Saving and Environmental Protection Technology in Civil Engineering Construction in China

China's civil engineering field in order to better adapt to the current low-carbon environmental protection development goals, but also in the actual construction phase of the process of the full application of energy-saving and environmental protection technology, while protecting the ecological environment around the construction site, but also effectively save resources. At the same time, under the background of declining ecological environment quality and increasing resource gap, people pay more and more attention to environmental protection and energy saving. Therefore, it is the general trend to fully infiltrate the environmental protection and energy-saving technology in all aspects of civil engineering construction, and its concrete significance is reflected in the following points[1].

2.1. Energy Savings

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In order to save china's coal, crude oil and other one-time non-renewable energy, such as solar energy, biomass energy, water and other new renewable energy can be used instead, and the amount of energy in the civil construction stage is reasonably controlled to avoid all the phenomenon of energy waste. At the same time, it is also necessary to use energy-saving machinery and equipment in the process of construction to reduce its energy consumption to a certain extent, and at the same time, it is necessary for civil engineering construction enterprises to improve the planning measures of energy saving and environmental protection according to the actual situation of construction projects, so as to help the concrete application of environmental protection and energy saving technology in the construction stage to advance towards the goal of standardization [2].

2.2. Guarantee of Civil Engineering Construction Quality

To guarantee the construction quality of civil engineering is not only the premise of the effective application of energy saving and environmental protection technology, but also the embodiment of its function after the effective application of energy saving and environmental protection technology. Therefore, in the course of the formal construction stage, the backward construction materials and their technology can be abandoned in the past, and the modern energy-saving and environmental-friendly materials and their technology can be fully utilized to meet the needs of green construction development in the present stage, and the quality of their own construction can be effectively improved at the same time[3].

3. Application of Energy Saving and Environmental Protection Technology in Civil Engineering Construction in China

3.1. Specific Applications of Modern Energy-Saving Materials

Modern energy-saving materials in our country, on the basis of increasing science and technology, have gradually become more diverse varieties, and are also widely used in the concrete construction stage of civil engineering in our country at the present stage. At present, the most common modern energy-saving and environmental-friendly materials include energy-saving doors and windows and glass curtain walls, lightweight partition walls and energy-saving functional materials. First of all, the doors and windows, as the most important part of the civil engineering energy-saving materials, in the current research and development of many new environmental protection and energy-saving doors and windows with strong insulation ability, such as figure 1 aluminum alloy material energy-saving doors and windows are the most commonly used nowadays; also widely used in civil engineering construction of glass materials, insulating glass and joint coated glass, such as strong energy-saving glass materials. Secondly, the choice of energy-saving materials in the wall should be based on whether it can meet the standard of indoor fire-proof grade, plus the conditions of good appearance can be used light partition energy-saving wall, and in order to make the light partition energy-saving wall can have a strong insulation, but also need to add insulation materials. Finally, for the functional materials with energy-saving characteristics, it is common in the construction stage of waterproof, heat insulation and decoration, and the types are very diverse.

Figure 1 Energy-saving doors and windows of aluminum alloy

3.2. Specific Application of Energy Saving and Environmental Protection Technology in Wall

In the process of civil engineering construction in our country at present, the wall energy saving and environmental protection technology, as the most advanced part of the environmental protection and energy saving technology applied in the whole construction stage, not only improves the insulation performance of the wall, but also implements the concept of economic and environmental protection in the real sense. In order to meet the wall insulation requirements, it is usually the wall insulation board and insulation layer and other energy-saving and environmental protection materials, or the use of wall insulation and masonry technology. However, with the development of science and technology, more and more modern wall energy-saving and environmental-friendly materials have been applied by civil engineering construction enterprises, such as composite insulation board and hollow gypsum block as shown in figure 2. At the same time, when it is applied in the actual construction stage, in the selection of energy saving and environmental protection wall materials, it is also necessary for the construction enterprise to refer to the actual situation of its own construction project to complete the selection, so as to further ensure its ability of heat preservation and heat insulation.

Figure 2 Hollow gypsum block

3.3. Application of Energy Saving and Environmental Protection Technology in Curtain Wall

Curtain wall structure is often used in civil engineering construction in China. Nowadays, in

order to make the curtain wall achieve the purpose of energy saving and insulation, it is necessary to fill the gap of the wall with the insulation material to ensure the stability and sealing of the exterior wall of the building. The application of this environmental protection and energy-saving technology can effectively reduce the indoor solar radiation, and also reduce the indoor temperature difference. At the same time, the construction enterprises in the concrete application stage of curtain wall energy saving and environmental protection technology should also accurately measure the actual density and thermal conductivity of their insulation materials, thus further ensuring the final effect of curtain wall energy saving and environmental protection technology.

3.4. Application of Energy Saving and Environmental Protection Technology for Windows and Doors

In the construction stage of civil engineering, the environmental protection and energy saving technology will be used to design the doors and windows for concrete application, which can promote the insulation effect of the building itself and further guarantee its illumination effect, thus effectively reducing the waste of resources. At present, many windows in our country usually use aluminum alloy, glass fiber reinforced plastic and aluminum-plastic composite materials in the process of energy-saving design.

3.5. Specific Application of Solar Energy Environmental Technology

As a modern energy-saving and environmental-friendly technology, solar energy protection technology cannot only save resources to the greatest extent, but also not pollute the ecological environment around the construction site. In addition, the practical operation process of the construction machinery and equipment related to it is also very simple. When it is formally applied in the construction stage of civil engineering, as shown in figure 3, the construction enterprise can install the solar panel in the roof and open space, so that the electric energy needed in the whole construction stage can fulfill its actual demand through the further transformation of solar energy. However, the concrete application of solar energy environmental protection technology in the construction of civil engineering in China has not been improved, and many construction enterprises have not reached a very mature point in the application of this technology, so it is necessary for construction enterprises to pay more attention to such technology[4].

Figure 3 Solar panels installed on the roof

4. Conclusion

In a word, in order to meet the needs of low-carbon economy at present, the civil engineering field of our country should put the protection of environment and the construction of ecological civilization on the agenda as soon as possible. At the same time, through the correct establishment

of the green consciousness of civil engineering and the wide implementation of environmental protection and energy-saving technology in our country at the present stage, it is bound to provide a more positive impact on the improvement of ecological environment in our country, and at the same time, it will further relieve the pressure on the ecological environment in the past, so as to better realize the goal of green engineering construction coordinated with the current ecological society development.

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