Discussion on the Application of Green Building Materials in Civil Engineering Construction

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Abstract: The rapid development of the construction industry has naturally led to the development of the building materials industry, and new materials and new technologies will inevitably follow. In recent years, the civil engineering industry has also faced enormous problems, such as reduced resources and poor innovation capabilities. To solve this problem, we must start with building materials. Green, environmentally friendly and energy-saving new building materials have become the first choice. Moreover, in the long run, China's construction industry must always adhere to the concept of green environmental protection, and actively improve and develop decorative materials.

1. Introduction

The world faces energy, material shortages and shortages. China has a large population and resource shortages are even more serious. In order to maintain the sustainable development of mankind, it is necessary to adhere to the development of sustainable use, reuse of resources in various fields, and reduce the impact of materials on the environment[1]. The research and development of low-energy, low-pollution and non-polluting materials is the core of the concept of green environmental protection and energy conservation. In the perennial development of the civil construction industry, a large amount of resources have been occupied and consumed. This is an industry that requires a large number of types of raw materials. It is even more important to implement the concept of environmental protection and energy conservation in this industry. For enterprises and designers, it is necessary to adjust the traditional design scheme based on environmental protection and energy saving technology, reduce environmental pollution in building decoration, and guide the decoration personnel to adopt reasonable technology to ensure the safety and efficiency of internal environment construction and Low energy consumption. [2]

2. Application advantages of green building materials in civil engineering

2.1 Saving resources and energy

Resources such as oil and coal are non-renewable resources that can be formed after tens of thousands of years of underground burial. Although renewable resources such as wind, solar and hydropower are abundant, they need to meet certain conditions before they can be converted and applied by humans. . Therefore, for human beings, no energy or resources can be applied to human beings anytime, anywhere. Therefore, in the process of using them, human beings must always adhere to the concept of saving, and also need to inherit a grateful heart. For example, in the process of civil engineering construction, relevant personnel should consider the actual situation of the area where the construction project is located, including: climate, hydrology, geographical location, etc., and consider energy-saving and environmentally-friendly buildings. More use of natural conditions to adjust the functionality of the entire building, thereby reducing resource consumption, low carbon and environmental protection.

2.2 Reduce energy consumption during production and transportation

The integration of the green concept in the actual construction field can present a strong advantage, embodied in the energy consumption control during production and transportation. In addition, when

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the actual raw materials are transported, people can better display the effect of the green material concept according to the actual route planning and personnel arrangement. First of all, the relevant staff needs to set up the corresponding procurement plan according to the actual quantity and scale of raw materials, so that the quantity and cost of procurement can be fully controlled. Secondly, the staff must also ensure the overall planning and operation of the transportation route according to the actual procurement plan, including the transportation tools, transportation and loading control. Finally, the relevant units will also present the relationship between the production unit and the engineering and construction environment to improve their transportation route planning operations. In general, this type of transportation principle is the nearest transportation. If the transportation distance is long, the surface of the raw material is prone to breakage, which will have a great impact on the overall quality of the project.

2.3 Improve the rationality of building structural materials

From the perspective of building materials, structural materials are particularly important. Each staff member needs to strengthen the rational use of green building materials. Only in this way can the environmental performance of the overall structure of the building be improved and the building functions become more optimized. With the continuous penetration of the green concept, the stability of the construction engineering structure is more advantageous. In addition, with the strengthening of the green building concept, the stability of the internal structure of the high-rise building can be more obvious, and the service life of the building can be extended to meet the people's living needs.

3. Application points of green building materials in civil engineering construction

3.1 Application of material recycling technology

Green construction technology can recycle the material resources in the project. Many construction wastes will appear in the construction of the project. A new building material will be formed by sorting, centralizing and reprocessing the garbage. For example, material recycling technology, waste iron wire, steel bars and electric wires in civil engineering construction, various new building materials can be formed after recycling. The construction sludge in the project can be used as aggregate for preparing concrete, and concrete material can be used as engineering construction, subgrade materials and filling materials. The technology can make full use of the garbage generated in the construction of the project and realize the recycling of the entire construction materials. In civil engineering construction, the waste materials generated are mainly from the construction site, including construction waste, abandoned stone and earth and household garbage. Material recycling can reduce construction costs and reduce pollutant emissions. According to the relevant international standards, the use of waste materials in green construction needs to be more than 50%, and the application value of materials in engineering will be fully exerted. [3]

3.2 Low carbon concept design of building materials

Building materials can be said to be the most important part of construction engineering. It directly determines the application of building design and determines the quality of the entire building project. In the process of architectural design, if the building materials suitable for the regional characteristics can be reasonably selected, the energy consumption of the whole building project can be directly reduced, and the concept of low-carbon environmental protection is clearly reflected in it, satisfying the current human Standards and ecological requirements for the use of construction works. This requires the relevant architectural designers to conduct a detailed inspection of the area where the construction is carried out, and personally visit the building materials market to find high-performance, low-pollution construction materials that meet the requirements of local residents. In addition, architects can use innovative new energy and new materials for engineering design in an effort to maximize the performance benefits of construction materials. It should be noted that some construction materials will cause harm to human health. For this part of the material, it is necessary to resolutely put an end to it. [6]

3.3 Application of Photocatalyst Decorative Materials

Photocatalyst decorative materials are mainly new environmentally-friendly decorative materials based on titanium dioxide, which is based on photocatalytic technology to reduce energy consumption. It is based on the photocatalysis of photo-semiconductors and light to eliminate and treat harmful gases. Therefore, the harmful gas in the building can be purified by the photocatalyst material to improve the air. The use of photocatalyst decorative materials has become a trend that can well purify the pollution caused by other materials, the light touch is completely pollution-free and low energy consumption. And it can effectively remove the odor generated by the surrounding substances, kill bacteria and viruses, make the occupants healthier and have the effect of improving the environment. Of course, the use of photocatalyst decorative materials requires further improvement and innovation, and attention should be paid to its safety. But overall, the prospects for the use of this material are still very broad.

3.4 Wall environmental protection and energy saving technology

The design of the wall is still dominated by cement white ash. The insulation effect and sound insulation effect depend on the material properties, and usually can only be regarded as sound insulation effect. In the design of the wall, we must adhere to the concept of environmental protection and energy conservation, first of all, in the design, increase the insulation compartment, or replace the material with better insulation effect. Especially in the design of the external wall, it is necessary to select high-performance insulation materials. For indoor walls, it is necessary to reduce the load level of the current building structure to improve the insulation grid effect of the indoor wall. When the wall is painted, choose a good gypsum material to ensure its heat preservation and energy saving. At present, white is still the most important color used in the wall and has been proven to be the best thermal insulation color. In the process of energy saving and emission reduction, it is necessary to reduce the effect of electric energy. With the improvement of science and technology, it is believed that the building decoration will design more energy-saving and emission-reducing materials to maintain the sustainable development of building decoration. [8]

3.5 soft film ceiling application

Solid ceilings are still the mainstream of current home renovations and their service life is recognized. However, the solid ceiling decoration needs to be spliced to complete, the construction amount is large, the construction period is long, and it is prone to errors. Therefore, in the architectural design of the new era, you can try to use the soft film ceiling shape, which greatly shortens the decoration time and increases the space beauty. More importantly, the soft film ceiling is more energy-consuming than the solid ceiling. The uneven surface can improve the brightness of the room and has a high use value, which is also a great Reform. It can reduce resource consumption and have higher safety. The soft film ceiling with PVC as the basic material consumes heat quickly and is not prone to fire and other risks. Compared with the traditional ceiling, it has obvious advantages and is very recommended material.

3.6 Application of Photoelectric Curtain Wall in Civil Engineering

Photoelectric curtain wall is mainly used for solar energy. It is a new energy-saving technology that uses sealed boards and tempered glass to convert solar energy into electrical energy. The advantage of this technology is that it is relatively safe to use, has good sound insulation effect, and has a strong beautification effect. It is also a direct reflection of current intelligent buildings. However, the most critical technology for building photovoltaic curtain walls is the technology of converting light energy into electrical energy and storing it. In the process of using it, it must be implemented in accordance with relevant design standards and design systems, and it must not only have beautiful effects. There is also a need to meet the safety of the building, such as building earthquake resistance and building wind resistance. It also needs to pay attention to air tightness and heat preservation. In the process of design, some wires are effectively hidden to ensure the beauty of the curtain wall, which also enhances the safety of the curtain wall. The photoelectric curtain wall integrates

photoelectric technology and curtain wall technology, and has become a A new type of energy-saving curtain wall.

4. Main points of green building materials management in civil engineering

4.1 Improve the technological level of building materials

In order to effectively improve the technological development level of green building materials, we must first consider the local materials, choose environmentally friendly materials to ensure human personal safety, and also require materials with good thermal insulation and sound insulation to maximize environmental protection. As far as the current architectural design work is concerned, it is generally divided into two types of multi-storey buildings and single-story buildings. The effective use of green building design concepts in different types of architectural design can optimize the architectural design details and control the overall design. Through the use of green building design concepts, it is conducive to effective control of the overall development of the building, fully consider the use of space, focus on indoor lighting and ventilation issues, optimize the building space and use area, and enhance the comfort of human habitation. In addition, China must vigorously develop building materials products based on scientific and technological innovation, which is not only reflected in the fields of raw materials and production processes, but also maximizes the use of industrial waste, consumes as little natural resources as possible, and protects with green building materials. For example, in the production of specific green products, durability can be regarded as one of the design indicators, and then the product is combined with work performance, mechanics specific, etc. to improve the performance of concrete, apply new cement, and eliminate the waterborne production of volatile substances. Paint and so on. [7]

4.2 Pay attention to the construction of the team of building green material management personnel

There are many construction projects in civil engineering, which involve a large amount of construction materials and numerous staff members. In the inspection and management of building materials, the staff also put forward corresponding requirements. First, they must have excellent professional quality and professional ethics. It is an indispensable part of a project. Since there are many human factors in the inspection and management of construction materials on the construction site, it is very important to build a high-quality team. Therefore, before starting the civil engineering construction, experienced employees should be invited to carry out the management of building green materials. Comprehensive training to ensure the quality of its work. In the formal construction process, regular training and assessment should be carried out to promptly remove personnel with poor professionalism and lack of professional ethics. Managers with outstanding performance can be given appropriate rewards to motivate others. Provide the necessary guarantees for the quality of the project.

5. Conclusion

Through the above analysis, it can be seen that the use of green building materials in the civil engineering construction process can improve the overall construction quality of the project and reduce the adverse impact of the construction on the natural environment. This paper conducts scientific and reasonable analysis and research on the application of green construction materials in various details of civil engineering construction to determine the application method and application value of green building materials. This approach can improve environmental protection, low carbon and sustainability in civil engineering.

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