Research on Building Design Coping Strategies Based on Low Carbon Concept

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Abstract: As people's life continues to improve, people are gradually aware of the importance of low-carbon environmental protection and good health, and gradually integrate the concept of low-carbon into the architectural design. In the current engineering construction, more energy is consumed, and the carbon emissions are also gradually increasing, which has a great impact on the environment. Therefore, the architectural design must be improved in the direction of low-carbon energy saving. This paper introduces the low-carbon concept and analyzes the design concept under the architectural design coping strategies.

1. Introduction

With the gradual enhancement of environmental awareness and environmental issues are gradually highlighted, the concept of low-carbon applications in building design more and more, the impact of low-carbon concepts on architectural design and the requirements are getting higher and higher. Under the current low-carbon concept, Chinese low-carbon building design is relatively low, poor low-carbon building design ineffective, architectural design and green philosophy has not yet fully integrated, therefore, in the current low-carbon awareness gradually increased Under the social environment, exploring the architectural design under the concept of low-carbon in our country actively and exploring the countermeasures of architectural design under the concept of low-carbon are very important to the green development of architectural design [1].

2. Analysis of the Current Situation of Architectural Design in China under the Concept of Low Carbon

When designing low-carbon buildings, people are involved in a very wide range of contents, including a comfortable and healthy environment, energy conservation and environmental protection, cost control, use of natural materials, energy optimization, etc. (1) Comfortable and Healthy Environment: In order to create a healthy, Comfortable living environment available to people, in the design of the building must be strictly required within the building's temperature, humidity and structural quality. (2) choose natural materials: people in the design of low-carbon building internal structure of the time as possible to choose some natural decorative materials and construction materials, construction workers in the use of these materials should also carefully check the quality of the material to prevent the harmful substances Exist in the material, thus affecting people's health. (3) energy conservation: the use of building energy-saving materials and technologies in low-carbon building design is of great significance, in addition to being able to optimize the building structure, while also enabling resource utilization can be improved. (4) Energy-saving: The application of energy-saving equipment and technology in the process of building design can effectively control the energy consumption of buildings, and the close integration of natural conditions and science and technology can make the requirements of natural lighting, ventilation and energy saving of low-carbon buildings be sufficient Satisfaction. (5) Optimize the energy mix [2]. The so-called optimized energy mix mainly utilizes some emerging energy sources reasonably and minimizes the consumption of mineral resources so as to effectively control the emission of air pollution gases.

At present, although the concept of low-carbon has been initially constructed in Chinese architectural design process, the specific application process of low-carbon concept in architectural

design is not yet perfect, and the low-carbon concept application system in architectural design is not mature enough. At present, the application cost of low-carbon concept in China is relatively high. Many of the building design processes adopt the traditional method of building design in order to reduce the cost of construction. The concept of low-carbon building design and the implementation of energy-saving building are also limited. Second, the full application of low carbon concept in architectural design in China lacks advanced technology and materials as support, and the application of low carbon concept in architectural design is relatively difficult. Second, even when low-carbon design is adopted in the course of building design, people rarely make use of low-carbon design in the actual use of buildings. For example, low-carbon designed green belts are used to irrigate water storage facilities. In practice, green belts of water storage devices that are rarely designed with low-carbon concepts. Therefore, the low utilization efficiency of low-carbon design facilities in buildings is also a major issue in the current deepening of low-carbon concepts in Chinese architectural design [3].

3. The Response Strategy Analysis of the Architectural Design under the Low-Carbon Concept

The architectural design under the concept of low carbon should be based on the two principles of reducing the energy consumption in the construction process and reducing the energy consumption in the process of using the building. First of all, in the construction process, low-carbon concept infiltration in architectural design should focus on reducing the consumption of building materials. Building materials are an important part of energy consumption in our country. Most of the building materials are produced at the expense of natural resources, reducing the consumption of building materials in construction, increasing the energy consumption in the production of building materials and enhancing the utilization of building materials Efficiency, low carbonization in the process of production and utilization of building materials is the main way of applying low-carbon concept in architectural design. Second, the low carbon construction process is also very important. In addition, to enhance the energy consumption of the building process and actively utilize the energy-saving design in the building is also the main ways to realize the low-carbon construction design.

4. The Specific Application Description of Low-Carbon Concept in the Architectural Design

Low-carbon materials applications In building design, the rational use of building materials for building design of low-carbon green building very effective. Actively apply low-carbon concept in building design select building materials mainly from two aspects. With the increasing emphasis on environmental issues in modern society, the research and production of low-carbon building materials have become the main trends in the current building materials market. The performance of many building materials is gradually improving. Low-carbon concept, the low-carbon building materials and greening has made some achievements, at present, China has more types of low-carbon green building materials, building materials of good quality and nature, therefore, under the concept of low-carbon building design process These low-carbon green building materials should be actively used to achieve the low-carbon development of architectural design. Second, in the process of building design, the maximization and utilization of the performance of building materials and their functions are also effective ways to realize the low-carbon development of architectural design. In the construction process, building materials consumption is huge, and many building materials are wood, the production of such building materials for resource consumption is also very large, therefore, in the building design process, as much as possible to enhance the building material utilization efficiency, according to the characteristics of construction and specific requirements, select the appropriate building materials to maximize the role of building materials, building materials can reduce the consumption of construction materials and reduce the impact of the construction process on the environment. In addition, in the process of building design, designers should pay attention to the design of building materials management and recycling links

so as to realize the scientific management and utilization of building materials in the whole process of procurement, storage, utilization and recovery of building materials so as to reduce the waste of building materials but also reduce the cost of construction.

Under the concept of low-carbon building design process should pay more attention to the integration of buildings and the surrounding environment. In the aspect of architectural design, the organic integration of buildings and the surrounding environment can not only effectively improve the livability of the buildings, but also optimize the environment around the buildings and bring more cordial and harmonious enjoyment to residents [3]. It can also reduce the construction cost Process for the destruction of the surrounding environment, to achieve green construction. In the course of building design, the organic integration of building and surrounding environment should be first fully understood about the environment around the construction site, and the greening structure of the building should be based on the original ecological environment of the construction site. In addition, the work in architectural design should take full consideration of the ecological environment and climate environment around the construction project, formulate a greening mode suitable for the environment and plants so as to effectively integrate the building with the surrounding environment and ensure the building and natural environment Harmonious, to promote sustainable development in architectural design and deepen the concept of low carbon.

In the planning and design of buildings, we must pay full attention to the following aspects: First of all, we should pay adequate attention to the surrounding environment and make concrete analysis based on the actual situation in the area so as to ensure that the building can and the harmony between the surrounding environments. For example, the concept of low-carbon design should be applied to effectively protect the surrounding environment or to adopt low-carbon design through utilization of the surrounding environment to ensure the realization of low-carbon construction design. Secondly, in the course of building design, the design of building green area must be conscientiously done so that the density of green plants in the environment can be increased. Finally, in the urban planning and design, it is necessary to carry out scientific planning on roads and the like and make reasonable adjustments to the urban environmental layout so as to enable the artificial environment to effectively integrate the natural environment so as to ensure the sustainable development of the building environment.

In order to realize the architectural design under the concept of low carbon, designers must fully consider the form of the building. First, to make full use of solar energy to design the form of wall structure, the energy-saving index of the building will be affected by the building wall Insulation performance of the great impact, so many countries now in the development of building energy efficiency will be wall insulation performance as a key project. Such as the wall structure, wall materials, wall color and so will make the building's energy consumption will be varying degrees of impact; second, we must build three-dimensional green network system, and energy-saving design for the roof. As an effective design method of roof thermal insulation, the overhead storage roof can effectively combine the vertical greening of the wall and the green roof, in addition to making the building more beautiful, at the same time, rainwater full use of the east-west sun for effective shelter in the process of evaporation of water can also play the role of air purification, indoor and roof temperature, humidity and other reasonable regulation, so that you can make the city The heat island effect has been eased. In addition, the windows in the external envelope are the weak points of thermal insulation [4]. The large number of glass curtain walls used in public buildings can reduce the number of opening of the sash but cause a lot of light pollution to the building. To this end, the conditions of the building to meet the lighting conditions, as much as possible to control the window-wall ratio, for example, you can choose to use hollow insulating glass aluminum window frame, so that the building can be effectively reduced energy consumption.

Make full use of natural resources. Taking full advantage of natural resources to optimize building forms in the building design process not only incorporates the concept of low carbon into the building, it also reduces construction costs, optimizes the structure and function of the building. In architectural design, the use of natural resources is very extensive. First of all, the full utilization of solar energy is the most embodies the concept of low carbon in architectural design. Active use

of solar energy on the building wall insulation design is the current building energy-saving design of the key projects. Secondly, in the architectural design, many buildings are designed with water storage devices that can store a certain amount of rainwater for the irrigation of the surrounding green belt. In addition, the architecturally oriented scientific design can increase the lighting effect of the house and the improvement of the lighting effect is very effective for reducing the energy consumption of the lighting. In the process of building design under the concept of low carbon, actively using natural resources to reduce the consumption of non-renewable energy in the course of building use will not only bring more convenience to households, but also their application to the scientific application of low-carbon concept in architectural design It is also very important [5].

Applying the low-carbon concept in architectural design, whether it is the selection of construction equipment and decoration materials, or the concrete design and construction links, all have very strict requirements. Many building materials can damage the environment. For example, artificial cabinets or floors can form a certain amount of formaldehyde. Cement is a very important building material in modern architecture, however, fundamentally, cement is a highly polluting and energy-intensive building material that generates a considerable amount of carbon dioxide emissions and when it is demolished later there will also be a series of problems that do not conform to the philosophy of low-carbon buildings. Therefore, we must vigorously research and development of new green low-carbon materials, which can make our country's low-carbon building design needs fully met,

5. Conclusions

Although the awareness of mass environmental protection in our country is getting stronger and stronger, countries are promoting low-carbon life. However, the application of low-carbon concept in architectural design is not yet mature enough. The application of low-carbon concept in architectural design is very limited and the greening of architectural design is very unfavorable. Therefore, actively exploring the coping strategies of architectural design under the concept of low carbon is very important for the long-term development of Chinese construction industry.

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