Application Research of Green Building in Civil Building Design

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Abstract. From the perspective of the current development of the construction industry, China's sustainable development has promoted the healthy development of the construction industry as well as the combination of green energy saving concept and construction. The industry background of the construction industry is relatively complex and the loss of building materials and resources is relatively large. In recent years, the demand for urbanization in China has increased. Therefore, in order to reduce the consumption of resources and the destruction of the ecosystem, green building design should be done well. From the perspective of the practical needs of civil construction, the implementation of green building concept is also a necessary work. It can be seen that the unique concept of green building conforms to the one of sustainable development advocated by modern society. This paper analyzes and studies the practical application of green building in civil building design and puts forward the application status and design characteristics to realize the application value of green building in civil building design.

Keywords: Green Building, Civil Buildings, Design, Application Research

1. Introduction
Construction industry is our country's national foundation industry, in other words, is the foundation of the national economy. At the same time, it is also the main consuming force of ecological environment and national resources. At present, the concept of sustainable development is crucial to the future development of the construction industry. At present, the balance between ecological protection and economic interests has been an important task for the construction industry. In recent years, people have gradually realized the importance of green building industry, so a wave of environmental protection upsurge has been set off in the society. In the process of civil building design, construction enterprises have introduced the concept of green building in order to realize the double benefits of economy and environmental protection and ensure themselves to stand in the fierce market competition[1]. In this way, the application of the green building concept, to a large extent, has provided a progressive impetus for the design of civil buildings, realized the ecological protection efficiency of building projects and laid a solid foundation for the subsequent construction work.

2. Design overview of green buildings
2.1. Specific meaning
Specific meaning of the concept of green building is the organic combination of construction projects and the ecological environment. In the architectural design, we should try to avoid to add some of the impact of pollution design concept and lay emphasis on the importance of resource protection to reduce unnecessary resource consumption and achieve functions of the green building, including environmental protection and energy saving. In fact, it is to reduce environmental damage and energy consumption as much as possible on the premise of realizing the basic role of construction engineering.

2.2. Main principles of green building design
From the current situation, there are four main design principles of green building concept. First, it is people-oriented. The fundamental service object of green building is people, so its direct use is to put people's needs in the first place. In other words, people's living needs also include green and environmental protection. At the same time, we should try to meet the needs of the aesthetic performance of the building to realize the residential value of the building;

The second point is the principle of reducing resource consumption. From the name of green building, its green environmental protection performance can be seen. Therefore, compared with traditional buildings, energy conservation and environmental protection should be considered first in the process of architectural design, which requires reducing unnecessary energy consumption.

Thirdly, the principle of overall planning matters more. Generally speaking, the energy saving of green buildings should be carried out from an overall perspective so that the environmental protection efficiency of architectural design can be fully reflected. In the process of work, overall planning should be carried out first while energy saving arrangements should be made for specific work details and connection should be made among all work links to realize the integrity and standardization of green buildings and avoid unnecessary contradictions.

Fourthly, theory should be combined with practice. This is a fundamental principle, because the realization of the role of energy conservation is based on the actual environment fundamentally. In the process of green building design, the local climate factors, as well as the conditions of light energy and wind energy should be considered. These sustainable renewable resources can be comprehensively utilized to realize the energy-saving function of green design. The general principles are shown in Figure 1.

![Figure 1. Main principles of green building design](image)

3. Practical application of green building in civil building design

3.1. Application of building address selection
Before the construction of any construction project, it is very important to choose the appropriate
building address, which is directly related to the subsequent architectural design and actual construction work. From the perspective of civil building design, the site selection of a building project should first consider whether the surrounding environment has good living conditions and the surrounding facilities are suitable for green building construction[4]. Generally speaking, in the process of integrating green building concept with actual construction, the following points should be noted:

First, to do a good job in the construction environment investigation and understand the greening level of the surrounding environment and the construction budget will be really important. We should also have a better understanding of whether the surrounding environmental bearing capacity meets the basic requirements of green construction;

Secondly, we should understand the current climate factors and geological environment, analyze the specific degree of influencing factors, select the area that can avoid the actual defects as the building location and finally realize the energy-saving effect of green building.

Thirdly, the basic needs and construction standards of civil building projects should be planned and combined with local lighting conditions and wind directions so as to realize the environmental protection effect of utilizing natural resources, reduce the impact on the surrounding environment and implement the concept of scientific development.

3.2. Specific application of energy-saving design

In the design of civil buildings, the first thing is to understand the way of energy consumption in the construction process according to these actual conditions and optimize the work of energy saving, which will do good to achieve the goal of reducing unnecessary resource consumption. Generally speaking, the work focuses on the following aspects:

One is to do a good job in insulation design. This is because in the process of building construction, the building itself will generate energy consumption, which will also lead to its own heat dissipation. So doing a good job in thermal insulation design has become the first task of civil building design[5]. Advanced building insulation technology is used to decorate the exterior and interior of the building with high-efficiency insulation materials to slow down the heat diffusion speed and realize the role of insulation and energy saving.

Secondly, we must do a good job in the design of green energy conservation and environmental protection. This part of the content is mainly reflected in the architectural design of the balcony. Because the balcony is the component of the building, scientific balcony building design can accomplish energy-saving effect greatly. Looking from integral point of view, the balcony design should realize the importance of its light combination while we should also make the actual use of balcony area in the following. No matter the size of the balcony area is, it can become the pen with the dot eyeball of architectural design. For example, some flowers and plants can be planted on the balcony to increase photosynthesis and form a natural oxygen bar. At the same time, the green area of buildings should be improved to save energy and protect the environment, reduce environmental pollution and achieve environmental benefits.

Thirdly, we will make rational use of resources. One of the basic principles of green building concept is to make rational use of building resources and natural energy to realize efficient utilization of resources. Therefore, in the design of civil buildings, the first thing to do is plan the utilization of resources, actively use natural resources such as light energy and wind energy and use building materials with environmental protection functions[6]. Under the condition of meeting the basic requirements of buildings, the virtuous circle of resource utilization can be realized so as to realize the application significance of green building concept. The total applications are shown in Figure 2 below.
4. Conclusion
According to the current situation, China's construction industry consumes a large amount of construction resources, so relevant technical planners should realize the importance of this problem. In civil building design planning work, first of all, we should notice the application of green environmental protection idea to achieve environmental performance of construction projects. From the perspective of building itself, we should understand the actual situation of construction projects and technical arrangements, using the concept of green building construction arrangement to do a good job of environmental protection design basis and meet the demand of civil construction of green building.

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References
[1] Feng Mengmeng. The application of green building in real estate architectural design [J]. Intelligent City, 2019, 5(18):38-39.
[2] Yi Wenyuan. Application analysis of green building design in high-rise civil building design [J]. Intelligent City, 2019, 5(17):67-68.
[3] Zhou Wenjie. A brief analysis of the application of "green building" in modern architectural design [J]. Building Materials and Decoration, 2019(23):138-139.
[4] Luo Weiwei. Application research of green building design in high-rise civil building design [J]. Jiangxi Building Materials, 2019(07):79+81.
[5] Cai Xuxing. Application of Green Building Design in High-rise Civil Building Design[J]. Decoration World, 2016, 000(006):145-146.
[6] Hou Yaya. Application of green building design in high-rise civil building design[J]. Civil Engineering Technology and Design, 2015, 000(033):438.