Research on High-rise Green Building Design

Nan Zhang, He Jin

Institute of Architecture and Engineering, Kunming University, Kunming, Yunnan 650214, China

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Abstract: Green energy-saving is a hot spot in the current social and economic development, especially in the construction industry as a basic industry to promote the sustainable development of our national economy, which needs to meet the social value needs of green development. In the design process of high-rise buildings, green energy-saving consciousness and building should be combined with design, which plays an important role in reducing energy consumption and improving the comfort of living environment. Firstly, this paper expounds the design concept of green high-rise building, and analyses the application of green high-rise building design in green building design with examples. It shows the significance and necessity of green strategy in the design of higher-rise building, and elaborates in detail the design points and structure of high-rise building, and points out that the application of green strategy in the design of green high-rise building is of great significance and necessity. Diversification of green strategy in high-rise building design is of long-term significance to society.

1. Introduction

In the process of human development, a lot of activities have been done to transform nature, most of which have brought great damage to ecological nature. Today, environmental problems have become an important issue in human development[1]. Protecting the environment and advocating green environmental protection have become an important indicator of current social development. In the development of construction industry, green architectural design and ecological architectural design have gradually become the development direction of architectural design. Especially in recent years, the number of high-rise buildings has been increasing, which has become the main part of urban buildings[2]. Improving the green design level of high-rise buildings is of great significance for achieving green city construction.

With the shortage of resources in urban central areas and the development of social economy, the development of high-rise buildings has become the focus of urban planning progress. The development of high-rise office buildings is an important part of promoting the development of high-rise buildings, but due to the complexity of architectural design and the diversity of use, the demand for resources and energy has a profound impact on the comprehensive energy utilization of social buildings[3]. Building energy-saving high-rise office buildings, ensuring efficient use of energy, efficient use of water resources, optimum use of materials, good indoor air quality and integrated operational management system, has become the inevitable development direction of green high-rise buildings.

Green economy and sustainable development have become the focus of modern social construction and development. Under this background, green buildings have also become the main development trend of modern architecture. High-rise buildings are the main forms of building to improve resource utilization and achieve visibility. High-rise building design is the primary link in the construction of high-rise buildings[4]. Integrating green building design concepts in this link can better meet the requirements of green ecological development. In the process of high-rise building design, it is necessary to start with the site selection, planning and technical application of building design, explore new ways for energy-saving technology to be applied to high-rise building design, and further promote the design of high-rise buildings towards sustainable and scientific. The direction of modernization[5]. This paper discusses the green strategy in high-rise building design, highlights the application of green strategy in high-rise buildings and design features, and draws

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relevant conclusions for reference.

2. Design concept of green high-rise building

2.1. Improve self-regulation

With the continuous improvement of people's living standards, higher requirements are put forward for the use function and comfort design of high-rise buildings. Therefore, in the process of high-rise building design, it is necessary to introduce comfortable design concepts, and do a good job in space layout, choose non-toxic materials and other design methods to reduce the emission of volatile substances[6]. To prevent the harm caused by radio radiation, avoid the problems of inter-building and indoor communication, create a good and comfortable visual and acoustic environment, and improve the level of air quality inside the building.

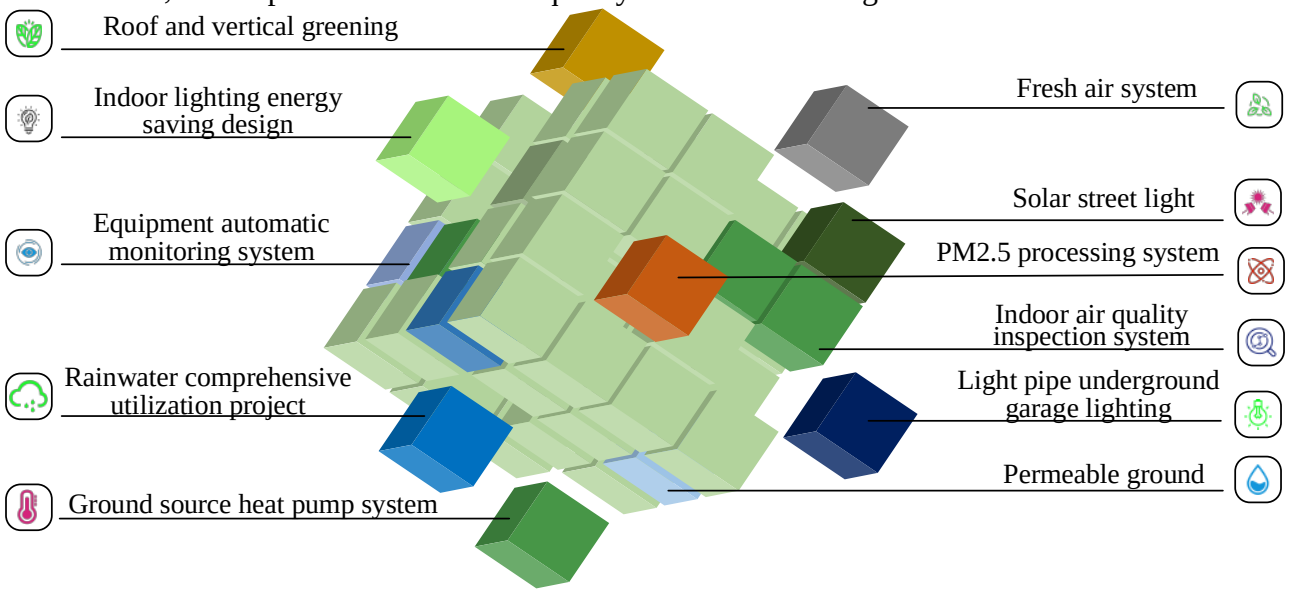

Figure. 1 Design ideology of green high-rise buildings

2.2. Comfortable design concept

With the continuous improvement of people's living standards, higher requirements are put forward for the use function and comfort design of high-rise buildings. Therefore, in the design process of high-rise buildings, it is necessary to introduce a comfortable design concept and to make a spatial layout. Choose to use non-toxic materials and other design methods to reduce the emission of volatile substances, prevent the harm caused by radio wave radiation, avoid the problems of visual and indoor viewing between buildings, create a comfortable and comfortable visual environment, acoustic environment, and improve the level of air quality inside the building[7].

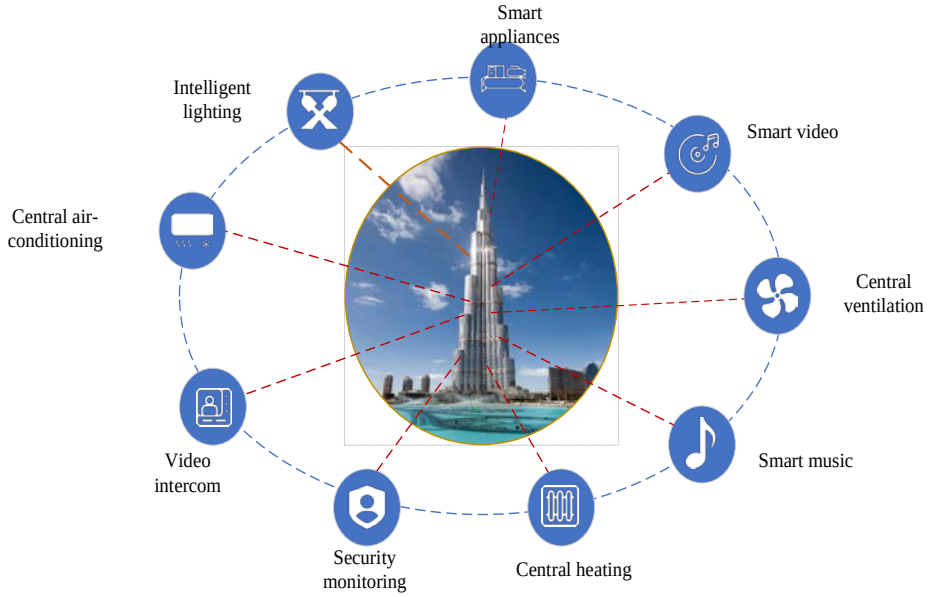

Figure.2 Comfortable design concept of high-rise green buildings

2.3. Design concept that blends with the natural system

At present, the design concept integrated with the natural system has been widely used in the construction of ecological high-rise buildings. By increasing the lighting area and increasing the ventilation rate, the natural environment factors are fully utilized to create a comfortable and low-carbon living environment[8]. In the design of traditional high-rise buildings, natural factors such as air, sunlight and wind are replaced by lighting systems and air-conditioning systems, which greatly improves people's lifestyles and improves the quality of life. However, in this process, artificially shaped environments are for people. The effects of health have gradually emerged, including sub-health problems such as fatigue headaches and dry skin[9]. Under this circumstance, the natural system has become more and more important in ecological high-rise buildings. It is extremely important to improve the lighting and ventilation design level of buildings based on making full use of advanced technology.

3. Analysis on the key points of green high-rise building design

Due to the continuous improvement of science and technology level, the development of high-rise buildings is accelerating. Up to now, many cities in China have built more than 200 meters of buildings. Under this development trend, it is urgent for people and enterprises to ensure that building pollution is small and energy consumption is low[3]. However, in the construction of high-rise buildings, people and enterprises need to solve the problem urgently. The application of green strategy in planning is obviously different from the green design of common buildings, which is mainly reflected in the following aspects.

3.1. Top design requirements

The top design of the unique high-rise building can complement the space organization design. It also serves as an important part of the city's skyline and plays a definitive role in distinguishing between different buildings. In the design process of the top of the high-rise building, you can make full use of the combination of the delicate roof, translucent building materials and the parapet wall to conceal the functional room on the top floor, thus giving people a visually different experience. The beautiful penthouse design can be used as a lighthouse at night, and against the blue sky during the day. On the other hand, due to the interaction between the building materials of the top floor and the floors and colors, the top design forms a triangle under the mapping of the trimmed triangle and the unequal hexagon of the main building plane, which brings good results[6]. For the equipment storage room on the top floor, you can make full use of its unique advantages, to create an air club

or sky garden for people to use for entertainment, leisure, etc. This unique design concept can be a good saving land. Cooling, heat insulation, etc. and provide more people with an opportunity to overlook the city[4].

3.2. Spatial organization

In the course of urban development, the number of high-rise buildings is also an important basis to measure the economic, cultural and political development of a city. Therefore, it is particularly important to strengthen the space layout and shape of high-rise building design. In the process of building high-rise buildings, tower design, as the main part of the whole building, fully reflects the aesthetic and overall shape of the building design. Therefore, it is necessary to strengthen the high standard design of the tower. In addition, in the design of high-rise buildings, designers should follow the concept of green and environmental protection and try to reduce the use of polluting materials, such as reducing the use of glass materials, to reduce the impact of light pollution[7]. On the other hand, architects should also pay attention to the style of buildings and local customs to match each other to ensure that the buildings are full of artistic and rhythmic sense. As a very important part of tower design, skirt design plays a supplementary role in tower design. For skirt design, glass material can be used as curtain wall and the combination of stone wall and billboard can further alleviate urban congestion visually and increase the view of urban space distance. The entrance of skirt house design is designed as a square and connected with underground shopping mall. This design concept can give full play to the advantages of skirt house design. But in the process of skirt design, designers should pay attention to the harmony between nature and human beings and establish an independent, large square space, to provide residents with a better living space.

Figure.3 Design of curtain wall and spatial organization of mobile office building

4. Conclusion

In summary, with the development of society and the acceleration of urbanization, it has become an inevitable trend to build taller buildings, which is also the direction and goal of development in the field of architecture. It reflects the level of economic and cultural development of a city. In the design of high-rise buildings, green strategies should be taken as guidance to promote the green environmental protection and sustainable development of the city. Therefore, in the process of green

high-rise building design, low consumption, high energy-saving and other factors must be account to carry out scientific and rational design. Through the diversified development of building energy-saving, let our country's high-rise building cause promote the development of urbanization in our country, provide people with a green energy-saving, sustainable development of modern building complex. Through the implementation of environmental protection and energy-saving technical measures in the aspects of space organization and structure system, the diversified development of building energy-saving is strengthened. Make the high-rise building a modern urban building with energy saving, environmental protection, green quality, landscape characteristics and practical value.

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