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Original Paper

Research on Intelligent Building and Green Building

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Abstract

With the rapid development of our country's social economy, the pace of urbanization is getting faster and faster, and more and more people are integrating into the city, which has brought greater pressure to the tight land resources. The limited resources cannot be used very quickly. To properly meet the serious consumption of modern construction projects, it is necessary to fully apply intelligent systems to achieve economical utilization of resources, and at the same time create a faster, greener and smarter living environment for people. So more intelligent systems should be used. More science and technology are applied to green buildings and intelligent buildings. The article mainly discusses the concept of intelligent green building, intelligent building system structure, and the specific application of intelligent technology in green building.

Keywords

building intelligence, green buildings, application

Intelligent buildings are actually based on construction engineering as a platform, combining modern information technology, services, and management concepts to provide people with a more convenient, safe, and energy-saving living environment. With the strong promotion of low-carbon and environmental protection concepts by the country, the entire construction industry is now vigorously promoting green and intelligent buildings, which is also the main development trend of the construction industry in the future.

1. The Concept of Green and Intelligent Buildings

In the past, traditional construction processes consumed a lot of energy, water resources, and various raw materials on Earth, and the construction industry also caused a very serious greenhouse effect. The entire construction process not only generated a large amount of construction waste, but also seriously polluted water resources. It will also produce some harmful polluting gases to the human body. Green buildings can effectively alleviate this situation. Green buildings fully integrate green concepts into the

construction process, using various low-carbon and environmentally friendly construction materials to continuously reduce energy consumption. Intelligent building is the process of fully utilizing modern information technology in engineering project construction, continuously improving the level of construction technology, and achieving the sustainable development strategic goals of the construction industry. In order to achieve sustainable development of the construction industry and cities, as well as harmonious development between humans and nature, intelligence will be used as a construction method and support point. Green concepts will always be integrated throughout the entire construction process, ensuring safety and achieving system automation, thereby effectively improving people's living environment.

2. The Important Development Significance of Intelligent Application in Green Buildings

The main development concept of intelligent green buildings is to better achieve energy conservation and emission reduction, effectively improve people's quality of life and living environment. In the development process of intelligent green buildings, while improving people's living environment, it is also emphasized to fully reflect the concept of green development. While meeting people's material and spiritual needs, a more civilized way of life should also be created. The function of architecture is no longer as simple as traditional residences in the past. On top of it, it is necessary to fully reflect artistic beauty, integrate ancient wisdom, and achieve the unified development of nature, architecture, and people. In the actual construction process of modern building engineering, while ensuring construction quality, it is also necessary to fully combine the local actual natural conditions, select the most appropriate construction technology to effectively achieve energy conservation and emission reduction, and minimize energy consumption as much as possible. On the premise of meeting the high-end and atmospheric appearance of buildings, certain considerations should also be given to physical and mental health and natural environment. Nowadays, construction engineering is gradually moving towards a more scientific and rational direction, which requires the rational use of intelligent scientific and technological means. The progress of the times has created intelligent technological means, bringing new development vitality to green buildings.

3. The Structure of Green Intelligent Building System

3.1 The Combination of Art and Architecture

Only buildings with artistic beauty in appearance can bring people a sense of beauty and experience, thereby making people more physically and mentally happy. But just the appearance beauty is far from enough, and artistic beauty is not only reflected in the appearance of buildings. The artistic beauty of buildings has a certain degree of abstraction, and can also reflect social life well, but it cannot be very specific. Like other forms of consciousness, they have various modes such as decadence, comics, tragedy, and comedy. And it is usually ordinary, ordinary, without too much emotion, just standing quietly there

giving people a beautiful experience. For example, the Great Wall is a cultural heritage of our Chinese nation and a product of long-term wars. Each building has a certain symbolic value.

3.2 Integration of Green Design Concepts and Architecture

In the process of intelligent building construction, it is necessary to fully apply the green concept to the internal and external structure of the building, and the utilization of land resources should also have good planning. Do not blindly expand or use land resources without restraint, because land resources are a non renewable resource. If they need to be used for other purposes in the later stage, the original building needs to be destroyed. Therefore, before the development and utilization of building land, We must make scientific and reasonable plans to avoid repeated demolition and construction. From the current situation in our country, many construction projects use harmful construction materials or gases that are harmful to human health during the construction process. This requires us to cultivate green plants or flowers indoors when using buildings, which can have a certain purifying effect on the air and also regulate the indoor air humidity. Nowadays, global temperatures are rising, weather is gradually warming, sea levels are rising, and land area is gradually decreasing. This makes it even more urgent to conserve and utilize land resources. Nowadays, many developers are using green buildings to continuously raise building prices, making it difficult for many ordinary people to afford. However, this is actually a misconception. Green buildings are a very broad concept and not a reflection of price.

4. The Application of Intelligent Technology in Green Buildings

4.1 The Application of Building Automation System in Green Buildings

Building automation fully utilizes various technologies such as sensors, computers, and automatic control to better manage and control building equipment, thereby making various building facilities operate more stably, safely, and efficiently. The building automation system mainly includes effective management and monitoring of building water supply and drainage, air conditioning systems, power supply and distribution, elevators, lighting, and ventilation systems. The building automation system can not only automatically start and operate building mechanical and electrical equipment, but also automatically detect various equipment faults and issue alarm signals, thereby better ensuring the normal operation of various facilities inside the building. In addition, the building automation system can also achieve remote control and automatically generate corresponding system reports. The application of frequency conversion energy-saving technology in building automation systems has greatly improved the operational efficiency of equipment and achieved the goal of energy conservation and consumption reduction.

4.2 The Application of Intelligent Lighting Systems in Green Buildings

Intelligent lighting mainly refers to sensors and lighting contactors, as well as various energy-saving lamps installed in the internal and external structures of buildings. In actual installation, the most scientifically reasonable lighting fixtures should be fully selected based on the building's own structure and actual lighting needs. This not only meets the lighting needs of the building well, but also effectively

achieves the goal of energy conservation and consumption reduction, At the same time, it also extends the service life of the lighting fixtures to a certain extent, which has very important application significance.

4.3 The Application of Intelligent Sunshade Control System in Green Buildings

Intelligent sunshades are actually fully utilizing brightness sensors to automate the control of sunshade motors. Applying the intelligent sunshade system to construction projects can effectively control the start, rotation, and stop of the sunshade according to the angle and intensity of sunlight, which can better avoid direct sunlight on residents and buildings.

4.4 The Application of Information Integration System in Green Buildings

In order to establish a relatively complete information integration system in modern green buildings, it is necessary to make reasonable use of various technologies such as intelligent control, comprehensive analysis, and centralized collection, and maximize the role of each subsystem. In general, intelligent building information integration systems include network systems, fire automatic alarm systems, building automation systems, geothermal systems, etc. The effective collaboration between various subsystems enables real-time monitoring and effective management of various equipment within the entire building.

5. Conclusion

In summary, the application of intelligent technology in green building engineering can achieve more scientific and reasonable design and planning of green buildings, and has a great positive effect on the later construction and operation process. Nowadays, with the strong promotion of low-carbon environmental protection concepts in China, the application scope of intelligent technology in buildings is also constantly expanding. The effective combination of energy-saving technology and intelligent technology is the main research direction in the future.

Reference

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