

# *Research on the Key Points of Green Building Construction Technology under the Low-Carbon Vision*

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**Abstract:** Based on the background of urbanization construction, the construction industry in the development of new opportunities and new challenges, but influenced by the previous production mode and thinking concept, in the construction will consume a lot of energy, cause certain pollution to the environment, according to the relevant survey statistics show that by the end of 2021, the construction industry energy consumption ranked first in all industries. Therefore, based on the low-carbon vision, construction enterprises should attach great importance to green construction, adopt scientific construction technology to reduce energy consumption, avoid pollution, and promote the construction industry to become an intensive and ecological transformation. This paper mainly analyzes and explores the green building construction technology under the background of low carbon, hoping to give the construction industry some reference and reference.

## 1. Introduction

At present, China is in a critical stage of social and economic transformation. Under the guidance of the concept of building an ecological society, residents' environmental awareness and ecological awareness are constantly improving, paying more attention to environmental protection and energy utilization, and low-carbon theory came into being. With the acceleration of the urbanization process, the volume of modern buildings is larger, which requires a lot of resources and energy in the construction. At the same time, it will also cause a certain degree of pollution to the surrounding environment, which does not conform to the concept of low carbon, and also affects the economic benefits of enterprises. Based on the vision of low carbon, green environmental protection has become an inevitable development trend of the construction industry. Construction enterprises should also actively cater to the development of The Times, explore and apply new green construction technology, and realize the transformation and development of the industry.

## 2. Low-carbon concept and green construction technology

### 2.1 Low-carbon concept

The concept of low carbon mainly refers to the use of new energy development, industrial transformation, institutional innovation and technological innovation, to reduce the dependence on natural gas, oil, coal and other energy sources, reduce the carbon emissions of energy utilization to the environment, and play a role in controlling the greenhouse effect. The current low carbon concept has been widely used in various industries and fields, thus derived the low carbon economy this new economic development form, low carbon concept can not only play the role of environmental protection and energy conservation, also help people to form a new form of life and consumption concept, contribute to the sustainable development of human society.

## **2.2 Green construction technology**

Construction technology is all the technologies applied in the construction stage of the construction project. Green construction technology refers to a new technology based on the concept of energy saving and consumption reduction, clean production, to save energy, avoid environmental pollution, improve resource utilization efficiency, and reduce the environmental damage caused by construction behavior. Green construction technology belongs to a new concept, which involves a wide range, including all energy-saving and environmental protection technologies in the construction stage. In the project construction process, construction enterprises and construction units should reasonably apply the green construction technology based on the actual situation of the project, to ensure that the application of the technology can meet the construction needs<sup>[1]</sup>.

## **3. Application value of green building construction technology under low-carbon vision**

### **3.1 Control the overall cost of the project**

Modern construction engineering has a large volume and involves a large number of human resources in the construction. Material resources and capital resources, construction enterprises want to maximize the economic benefits, then to control the overall cost of the project. Based on the concept of low carbon, the application of green construction technology can reduce the energy consumption, resource consumption and material consumption of construction, reduce the cost of environmental governance, and help enterprises to control the overall cost of the project.

### **3.2 Avoid polluting the surrounding environment**

Under the guidance of the concept of building an ecological society, residents' environmental awareness and ecological awareness are constantly strengthened, and more attention is paid to environmental protection. Construction projects will cause certain pollution to the surrounding environment, such as dust pollution, water pollution and solid waste pollution. The application of green construction technology can reduce the degree of environmental pollution, and realize the ecological transformation of the construction industry. At the same time, the application of green construction technology can also reduce building energy consumption, play a role in consuming coal resources, and indirectly protect the ecological environment<sup>[2]</sup>.

### **3.3 Promote construction technology innovation**

Construction technology is the basis and premise to ensure the orderly development of construction activities. With the rapid development of China's construction industry, the construction technology is also changing with each passing day. A large number of emerging

technologies are applied in the engineering construction, promoting the rapid development of the construction industry. Based on the concept of low carbon and ecological concept, the application of green construction technology is conducive to the innovation of construction technology in the construction field, prompting the construction enterprises to continuously develop and apply new technologies, and play a role in the role of energy consumption control and environmental protection.

## **4. The application of green building construction technology in low-carbon vision**

### **4.1 Improve the efficiency of utilization of materials**

Building materials are the hardware support of engineering construction, which requires a lot of materials in construction. If there are material waste or low utilization efficiency, the construction cost and construction energy consumption will be increased. At the same time, the emission of a large number of solid waste materials will also lead to environmental pollution. Therefore, based on the low-carbon vision, construction enterprises should pay attention to improving the utilization efficiency of materials. first, Try to use new low-carbon materials in the wall construction, For example, the ecological nanuli stone, It can not only improve the stability and hope of the wall, It can also extend its service life, The construction is relatively simple and convenient, Compared with the traditional reinforced concrete walls, Can reduce the construction energy consumption, For example, extrusion plates and polystyrene plates, As a new material of heat preservation and waterproof, And is a representative of low-carbon materials, Used in building construction, Can play a good thermal insulation effect, Reduce the thermal insulation energy consumption inside the building, In line with the concept of low carbon; next, The solid waste generated during the construction shall not be discarded immediately, To be divided into recyclable waste and non-recyclable waste, For recycled materials after simple treatment, To improve its utilization efficiency, For example, waste steel bars and metal spare parts, For the unusable waste should be centrally stacked in the designated location for unified treatment; last, Reduce material waste during construction, Formulate a scientific system for receiving and using materials, Strengthen the supervision of the site construction, If the material waste situation is found to give the construction personnel to deal with seriously.

### **4.2 Water resources conservation technology**

The project construction needs a lot of water resources, which is mainly used for the daily life and construction activities of the construction personnel. If the water resources are excessively wasted, it will not only cause environmental pollution, but also does not conform to the low-carbon concept. Therefore, based on the actual construction site, construction enterprises should rationally apply water resource conservation technology. first, Install water resources recycling treatment equipment at the construction site, Purify the waste water generated during the construction, After meeting the emission standards, To discharge into the nearby waters, For water resources that can be directly recycled, Can be used in the construction of the construction; next, Install the rainwater collection device on the construction site, Rainwater is a recyclable water resource, Store the collected rainwater into a water reservoir, Can be used for the daily life of the construction workers, Play a certain role in saving water; last, Regular inspection of the water supply and drainage pipes at the construction site, Avoid water leakage or environmental pollution, at the same time, Water quality detectors can also be installed in the water supply pipes, If the pollution situation is found and it is convenient for timely disposal, Prevent and control the spread of water pollution problems<sup>[3]</sup>.

### 4.3 Land resource conservation technology

Land is a precious resource for modern urban development. Based on the low-carbon vision, construction enterprises should pay attention to saving construction land and improve the utilization efficiency of land resources. First, Based on the construction requirements and under the design drawings, To optimize and adjust the site construction layout, Make full use of the idle land and original facilities, Adhering to the basic principle of "saving materials and making the best use of materials", No major changes to the surrounding land and environment; next, Adjust the layout according to the actual situation of the site, For example, in building a processing shed, According to the location of the material storage and the site layout, Shorten the distance that the materials are transported at the site, Processing shed should be easy to build and dismantle, Do not have a negative impact on the original soil appearance; last, Keep the original greening of the site, and the road, Good maintenance of the facilities, In the construction of green landscapes, Redundant earthwork that can be excavated by foundation pits, Play the role of saving soil resources<sup>[4]</sup>.

### 4.4 Light pollution control technology

Light pollution is a more common form of pollution in on-site construction, which will bring a negative impact on the health of construction personnel and surrounding residents, and even harm the ecological environment. Therefore, construction enterprises should enhance the importance of light pollution, and adopt reasonable technology to strengthen the control. First, the construction schedule should be scientifically designed during the day and not at night, the lighting intensity and location of the lamps on the surrounding residents without impact; Secondly, the construction must be completed in indoor or shed, such as in welding steel bars, strong light shielding measures; finally, welding personnel need to wear goggles to protect their vision and avoid long work and visual damage<sup>[5]</sup>.

### 4.5 Noise pollution control technology

Noise is the most common form of pollution in construction, In the course of the construction activities, Construction enterprises need to strictly follow the established national standards, Control the noise limits on the site, Daytime noise control is within 7,070 d B, Night noise control is within 55dB, The specific control technical measures include: First, High-decibel sound transmission equipment cannot be used on the construction site, Construction personnel should load and unload materials in accordance with the basic principle of "light loading and slow release", Control of the noise of the mechanical equipment, Priority selection of low-noise equipment, Including diamond saw, low noise saw, portable concrete machine, For more noisy equipment can be installed sound insulation barrier or sound insulation cover; next, Scientific arrangement of the construction time, Try to work during the day and off-days, Try not to work at night, Besides emergency rescue operations and welding construction, Other construction tasks cannot be carried out at night; last, Organize the personnel to test the noise decibel on the site regularly, If the data exceed the established standards, Scientific measures are needed to adjust and improve, For example, sound insulation barriers are installed outside the construction site<sup>[6]</sup>.

### 4.6 Dust pollution control technology

Dust is the main form of environmental pollution in construction, If the dust problem is not effectively controlled, Can affect the daily life of the nearby residents, therefore, Based on the concept of low-carbon carbon, The construction unit should conduct scientific control of the dust pollution, Key points of technical application include: First, Waste combustion is strictly prohibited at the construction site, In particular, the wastes that may emit harmful gases, To centralized stacking, unified treatment, Install exhaust gas purification equipment on transport vehicles and machines, For volatile materials such as dilute, release agent and paint, To be stored in a sealed container; second, Regularly organize personnel to clean and sprinkle the construction site, Dust can be avoided, Hardening treatment measures can be taken for the construction site, Can play a certain role in dust control; third, Plant green plants at the construction site, Or transplant turf and sow grass seeds, The use of plants to control the dust effect; fourth, Regularly clean the transport vehicles, Avoid polluting the road environment in transport, For granular materials such as cement and sand, Need to be kept in a closed warehouse; fifth, In the transportation of the construction materials, To do a good job of occlusion work, Avoid polluting the roads during transit, For sand, cement and other materials should be transported at night; sixth, During the backfilling and excavation construction, Keep an eye on the weather changes, Construction is strictly prohibited in strong wind weather<sup>[7]</sup>.

#### 4.7 Construction energy-saving technology

Construction activities need to support a lot of energy as, which is given priority to with electricity, in the application of construction energy saving technology, construction enterprises to adopt reasonable technology to reduce energy consumption, adhering to the low carbon concept to improve energy efficiency, specific technical measures include: first, in terms of mechanical equipment selection, try to choose low energy consumption equipment, mechanical equipment approach work, avoid machinery approach in advance and lead to increased energy consumption. At the same time, the maintenance of mechanical equipment in daily construction is easy to increase energy consumption. Second, active development and application of green energy, such as the most widely used solar energy into electrical energy, solar energy as a clean energy, will not cause pollution to the environment, third, regulate the behavior of the construction personnel, prohibit irregularities in the construction, not only cause energy waste, but also cause safety accidents<sup>[8]</sup>.

#### 5. Conclusion

All in all, based on the guidance of ecological concept, various industries are actively exploring new modes and new ways, construction industry production needs to support a lot of energy, construction and construction operation of energy required is larger, through the application of green construction technology, can significantly reduce building energy consumption, and maintain the harmonious development of production and construction and ecological environment. Therefore, construction enterprises should change their thinking mode, take ecological and environmental protection as an important direction of transformation, reduce the damage and pollution of construction behavior to the environment, and then realize the social value, economic benefits and ecological value of buildings.

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