Analysis of Key Technologies for Green Treatment of Wood Construction Waste

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Abstract: Adopting green construction methods during the construction process can effectively reduce the use of natural resources, but the discharge of construction waste is inevitable. If targeted measures are not taken, scientific and reasonable treatment of construction waste can effectively reduce the emission of carbides, which will cause serious pollution to the surrounding environment and atmosphere. Therefore, relevant staff should attach importance to atmospheric environmental protection, and continuously research low-carbon treatment technologies based on this. According to the environmental conditions of the construction area, appropriate green construction methods should be selected to catalyze and purify the burned exhaust gas, remove carbides and harmful impurities from the exhaust gas, and avoid serious pollution to the atmosphere caused by exhaust emissions.

Keywords: green building; Construction waste; Low carbon treatment; application

1 Introduction

Under the concept of green environmental protection, China's green building construction projects are also in a state of development. In order to better improve the efficiency of waste treatment in green building construction, it is particularly important to scientifically select low-carbon treatment technologies. Based on the development situation in recent years, the scale of green building construction in China is gradually expanding, and its requirements for low-carbon waste treatment are also constantly increasing. So in the application of low-carbon treatment technology for green building construction waste, it can effectively protect the surrounding ecological environment, promote the development of the green building industry, and provide good help and reference for relevant personnel.

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2 Add circular processing technology for building support formwork

See Figure 1 below. The Agodo Exhibition Center is an example.The principle of circular processing technology for adding building support templates is:

(1) Collect abandoned building templates from the construction site

(2) By pulling nails, cleaning concrete, cutting and other supply and demand methods, it is processed into semi-finished products

(3) Splice the semi-finished products in a staggered manner and enter the polymer thermosetting extrusion production equipment for polymer material coating

(4) Through the composite reaction of materials such as fiberglass yarn, UPR resin, and polyester surface felt, the outer layer of the building template is formed into a strong fiberglass surface, providing excellent physical and chemical properties. Specifically, it has bending strength of 60MPa, shear strength of 70MPa, elastic modulus of 15000MPa, excellent performance such as waterproofing, anti-corrosion, fire prevention, and pest prevention, and can be customized and lightweight, making it a very high-quality material for building support systems

(5) New materials can be reused, reducing wood logging and significantly increasing forest carbon sequestration. For example, the physiological and mental effects of wood and its main active substances in Table 1

(6) New materials have great economic benefits and can save material costs by 60% for the general contracting unit construction company. [1]

Fig. 1. Agodo Exhibition Center

Table 1. Physiological and spiritual effects of some wood and the main active substances contained in them

Wood Name	physiological function	Spiritual efficacy	Main active substances
fir	Antibacterial and pain relieving	Warm feeling	borneol
cedarwood	Antibacterial and analgesic effects	Sedation and relaxation of nerves	Cedrol

Camphor wood	Antibacterial and spasmodic properties	Excitatory effect	camphor
Eucalyptus wood	Antibacterial and anti-inflammatory	Motivational spirit	Eucalyptus brain
sandalwood	Antibacterial and anti-inflammatory	Sedative, antidepressant	Sandalwood alcohol

3 Problems in the application of wood

(1) The utilization rate of wood in China is relatively low. The importance of wood corrosion prevention and other issues during transportation in China is not high enough, and corresponding protective measures have not been taken. Wood is damaged during transportation or storage, resulting in a shortened lifespan of wood and related materials not being fully utilized. Also, the leftover wood scraps have not been fully utilized and properly disposed of.

(2) China is not timely in the reconstruction of timber resources. People often do not care about compensating for the loss of wood after obtaining and using it. It is precisely because of this that wood resources are scarce, hindering their application and development in the construction industry. Any resource is limited. People's demand for resources is continuous, and for non renewable resources, they can only save resources by limiting their utilization. Wood is a renewable resource, and measures can be taken to meet its demand.[2]

(3) Due to the constraints of traditional concepts, the use and development of wood in architecture are limited. In people's traditional beliefs, wood is considered a building material that is too expensive and not in line with environmental protection concepts. It is not as sturdy and durable as brick and concrete structures due to indiscriminate logging of trees and harm to nature. In people's minds, wood is positioned as a material that is difficult to handle, not affordable, and not in line with environmental protection concepts.[3]

4 Analysis of low-carbon waste treatment technology

4.1 Structural characteristics of incinerators

Select appropriate incinerators for different types of construction waste, optimize the internal structure, and improve the stability of incineration work. On the basis of classifying waste, low-carbon treatment is carried out to improve the stability of the internal structure of the incinerator and achieve a good low-carbon effect. Generally speaking, during the construction process, the oxidation fluidized bed reactor inside the incinerator used is 0.001cm5m3, with a height of 110cm, a length of 150cm, and an upper radius of 4cm. Only an incinerator that conforms to the above structure can effectively complete the incineration treatment of construction waste and improve the treatment rate of waste on a low-carbon basis. The lower part of the incinerator is

equipped with a dedicated combustion gas pipeline, which flows into the internal interlayer of the incinerator after passing through the pipeline. Due to the strong following of gas particles during the combustion process of waste, the combustion gas will exhibit a spiral upward movement with the increase of airflow. The vast majority of waste gas particles generated during the combustion process of construction waste will accumulate at the top and bottom of the incinerator, and the particles will continuously extend the oxidation reaction time during the movement process. The oxidation reaction process continuously expands the contact area between construction waste and combustion gas, Thus increasing the intensity of contact reaction and achieving the effect of improving combustion rate. The specialized construction waste incinerator contains high-strength and heat-resistant solid substances inside. During the incineration process, professional staff strictly control the internal temperature of the incinerator, generally controlling the temperature inside the incinerator at around 80 ℃ to reduce the friction of construction waste. In addition, during the process of temperature control, it is necessary to discharge the dust generated by the incinerator appropriately. Due to the strong adaptability of the incinerator, the temperature control and dust discharge operation process is relatively simple, and there is no need to spend a lot of manpower, material resources, and financial resources on subsequent maintenance of the incinerator equipment. Under different temperature conditions, the amount of carbon deposition inside the incinerator varies, as shown in Table 2.[4]

Table 2. Comparison parameter analysis of incinerator temperature

temperature （℃）	Oxidized ash residue	Carbon accumulation inside the furnace chamber	Initial total mass	Total mass after oxidation	High temperature ignition loss rate
500	A small amount of powder Terminal structure	many	1.0578	0,9847	8．6
550	A small amount of powder Terminal structure	few	1,5478	1,1547	6.6
600	A small amount of powder Terminal structure	not have	0.9547	0,9514	3.2
650	Adhesive state	not have	1.2578	1,1257	2.5
700	Adhesive state	not have	1.0689	1.0018	2.8

4.2 Low carbon treatment technology for waste gas purification

When treating exhaust emissions, appropriate catalysts should be selected based on the type of exhaust, and the chemical temperature of the catalytic process should be strictly controlled. Generally, in the catalytic reaction process, the temperature of the reaction bed is controlled at around 150 ℃, and the selection of appropriate catalysts can continuously improve the tail gas treatment rate of incineration waste. The author adopts catalytic reactions, controls the temperature within a reasonable range, reduces CO2 concentration, controls the proportion of CO emissions within a reasonable range, selects scientific catalysts, fully utilizes the role of catalysts, reduces the content of carbon compounds, and controls them within the conceptual requirements before emission.[5]

5 Conclusion

From the above discussion, it can be seen that through a reasonable analysis of the key points of low-carbon treatment technology for green building construction waste, the structural characteristics of the incinerator, the rational selection of combustion supporting gases, and the improvement of low-carbon treatment technology for waste tail gas purification are determined for reasonable analysis. This can significantly improve the overall quality of low-carbon treatment technology for construction waste, while also protecting the surrounding ecological environment, thereby truly promoting the sustainable development of China's green building industry.

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