

Retraction

Retracted: Application of Lightweight Thermal Insulation Building Materials for Green Building Design

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] L. Liu and Y. Zhai, "Application of Lightweight Thermal Insulation Building Materials for Green Building Design," *Journal of Chemistry*, vol. 2022, Article ID 7044427, 7 pages, 2022.

Research Article

Application of Lightweight Thermal Insulation Building Materials for Green Building Design

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In order to focus on the application of green environmental protection lightweight thermal insulation materials, an in-depth study is carried out on the basis of joint architectural design. The application of green environmental protection materials in the construction industry was successfully analyzed through methods such as layout design method, optimization design method, and scientific optimization of material selection. In the process of urbanization development in our country, the number of urban population has increased sharply, and the demand for buildings has also increased. Therefore, it is necessary to rapidly promote green building design while the construction industry is developing rapidly and complete the upgrading and transformation of the building in terms of form design. We pay attention to the needs of buildings in terms of shading and lighting, and improve the conditions of building shading and lighting through green building technology. As a result, on the basis of maintaining the residual heat of the building, the diffuse radiation of the ultraviolet rays of the sun is realized, which effectively improves the utilization efficiency of natural energy and reduces the consumption of internal energy. Architectural design under the concept of green building design not only can it meet the current functional requirements of people for architecture but also imperceptibly promote the stable development of our country's construction industry. After the research on the application of green environmental protection materials, the integration and application of green building design concepts in architectural design is of great significance not only to meet people's health and ecological needs of buildings but also to promote social stability and sustainable development.

1. Introduction

The green development strategy has become one of the main strategies of our country's current social development. With the rapid development of urbanization in our country, the society vigorously carries out engineering construction. The energy used in urban building construction is generally nonrenewable resources, and excessive use will lead to environmental damage problems, resulting in many problems such as resource depletion. The energy consumption of construction projects is relatively large; according to the survey, the total energy consumption of buildings in our country accounts for about 20.7% of the social terminal energy consumption, the energy consumption or carbon emission of the whole building process includes three

aspects, and they are the production energy consumption or carbon emission of building materials, the national construction energy consumption or carbon emission, and the national stock building operation energy consumption or carbon emission. In order to meet the goals of energy conservation, emission reduction, and environmental sustainable development in the construction field, we should fully implement the concept of green building design and do a good job in the management and control of all aspects of architectural engineering design, maximize resource utilization efficiency, and save energy and reduce emissions. Driven by the economy, the construction industry has been greatly developed, and the construction technology and materials have also been further optimized. However, in the development process of the construction industry, in order

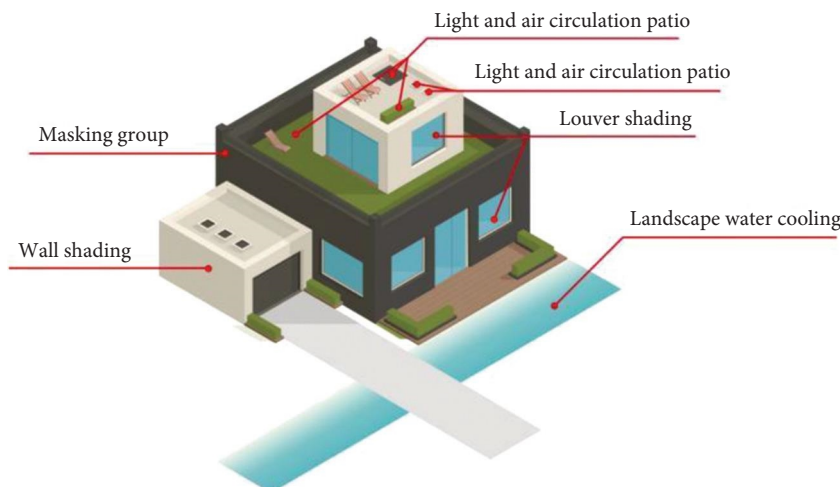


FIGURE 1: Sketch map of green technology application.

to meet people's material and spiritual needs, it has resulted in a large waste of resources and energy, and environmental pollution has become increasingly serious, which is not conducive to the implementation of sustainable development in our country. To this end, the integration of green concepts should be strengthened to achieve synergistic progress among people, architecture, and ecology. Green building mainly means that the concept of green environmental protection must be followed from the construction preparation, design and construction, and construction stage, including final maintenance work, to minimize the consumption of energy, building materials, costs, and environmental pollution, and to provide people with a healthy and environmentally friendly living space. Figure 1 is a schematic diagram of the application of green technology. The core of green building design is to save various resources, which mainly refers to the rational design of the entire building process with the goal of environmental protection and conservation under the premise of complying with relevant design regulations, including the adoption of advanced green design concepts and the use of green buildings, materials, and the application of renewable nonpolluting energy, and ultimately achieve the purpose of environmental protection, energy saving, and high efficiency.

2. Literature Review

Sabari et al. stated that the core of green building is based on the local natural environment, use professional knowledge to rationally organize the relationship between the building and other factors, integrate the building with the surrounding environment, and on this basis optimize the building's self-regulation, energy saving, and environmental protection performance, and prolong the service life of the building [1]. Yah and others believe that at this stage, the development of the construction industry has caused a certain degree of damage to the surrounding environment; therefore, when designing green buildings, we should fully respect the ecological principles, and implement energy

conservation and environmental protection into architectural design. Before carrying out the design work, the surrounding environment of the building should be surveyed on the spot, and the architectural design should be carried out on the premise of not destroying the original environment, and attention should be paid to the protection of the ecological environment in the later construction stage and building maintenance stage [2]. Eze and others believe that the thermal insulation materials in the construction industry are developing in the direction of light weight, high strength, and energy saving, and various new building thermal insulation materials are constantly emerging. However, it is accompanied by the problem of how to use various thermal insulation materials, so that they can be reasonably applied in the construction industry, so as to achieve the purpose of low cost, good thermal insulation performance, and waterproof and moisture-proof [3]. Liu et al. stated that for a long period of time, our country has been committed to economic development, but to a certain extent ignored the harm caused by economic development to the ecological environment, making social contradictions increasingly prominent [4]. Therefore, Jexembayeva and others believe that the construction of buildings should meet people's living and work requirements. Therefore, in the design process, in addition to scientific planning of the design content, optimizing and adjusting the overall content according to the actual situation is also an important link that cannot be ignored [5]. Sounthararajan and others believe that construction companies need to understand the future development direction of the industry in the context of the implementation of sustainable development strategies, and need to adjust construction technology and construction management methods; in this way, the ecological environment and the natural society are in a harmonious state [6]. Therefore, when Kumar et al. accumulated teaching experience, green building technology has become a key element for construction companies to achieve improvement goals, but many construction companies use green building technology inappropriately, which has a negative impact on environmental protection strategies [7]. Jena

Saubha and others said that traditional building materials need to consume a lot of natural energy, while environmentally friendly building materials only consume a small amount of resources, make full use of industrial and agricultural production and urban waste, and carry out secondary recycling to produce environmentally friendly building materials, and these building materials do not pose any hazard to human health; in a certain sense, it can be said that environmentally friendly building materials are building materials made of recycled garbage [8]. Sohel and others believe that green building is to maximize resources in the whole life cycle of construction projects, and achieve the goals of saving energy consumption, saving land, saving water, and saving building materials [9]. Xia and others believe that the rapid economic development and the wide application of Internet technology have promoted the technological innovation and reform of the construction industry, and a variety of advanced science and technology have been fully used in architectural design, construction, and other links. In the green building design, we must pay attention to scientific design principles to ensure that the building meets people's requirements for intelligent and environmentally friendly buildings in the later use process. In the specific design process, it is necessary to abandon the traditional design concept, actively introduce environmental protection science and technology, ensure the advanced science of building construction, and realize the effective combination of intelligence and green living environment [10].

3. Research Methods

3.1. Layout Design Method. In the green building design, the layout design is the most important part, which requires the designers to do a comprehensive inspection of the site resources, and increase the utilization rate of site resources and reduce the traces of artificial construction in a reasonable way, and reduce excessive consumption of nonrenewable energy. At the same time, in the building layout design, it is necessary to reduce the heat absorption of the building and control the indoor temperature. For green building design, the key points are as follows: first, while ensuring building functions, we optimize and adjust the internal space layout of the building, increase resource and energy utilization, and reduce energy loss caused by air conditioning, lighting, and other facilities [11]. Figure 2 shows the total output value of the construction industry and the analysis of building energy consumption in Figure 3. Second, we understand and master the characteristics of the surrounding environment, make full use of the existing terrain advantages, and complete the integration and utilization of resources. Third, we clarify the architectural design requirements, implement scientific planning for the building layout and orientation according to the characteristics of the area, make full use of natural light to enhance the indoor lighting effect, and reduce the waste of nonrenewable resources. Finally, we plan the building spacing reasonably to avoid damaging the lighting effect of the building due to excessive density, thereby reducing the

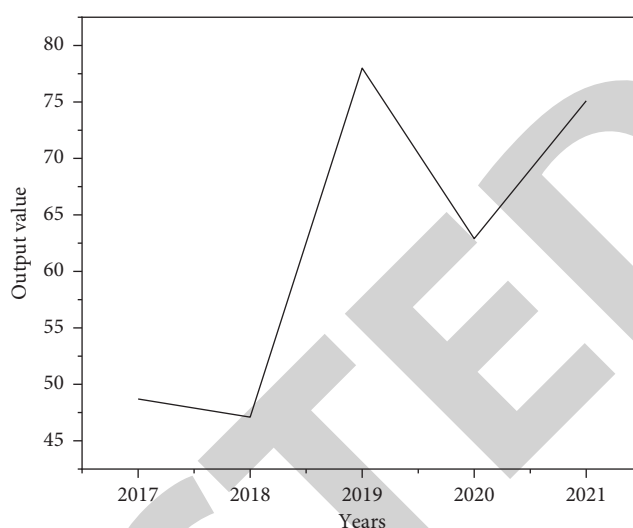


FIGURE 2: Gross output value of the construction industry.

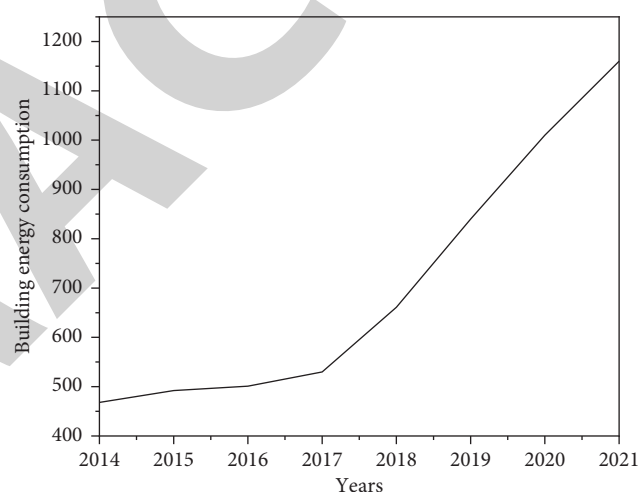


FIGURE 3: Analysis of building energy consumption.

lighting quality of the building space and improving the energy utilization rate. Combined with the current urban planning situation in our country, the process of urbanization is deepening day by day, and urban land resources are becoming more and more tense. At present, many buildings occupy a large area, but the space that can really be used by people's lives is relatively limited, which directly causes the problem of waste of land resources, and seriously compresses the urban greening area, which directly hinders the construction of urban greening [12]. In the concept of green building design, the most critical content is saving land. Therefore, in the process of building design, it is necessary to do a good job of saving land resources. In the early stage of green building design, consideration can be given to building cost, saving land resources as much as possible, reducing land area, using more land for greening, and incorporating more green elements. In the process of green building design, the designer should analyze and understand the local climate environment, geographical topography, environmental conditions, and economic development

conditions; determine the specific use of the target building; and combine the functional requirements of the building and select suitable locations within the city's jurisdiction for further development design. In architectural design, we pay attention to the envelope structure; for construction projects, we pay attention to the wall insulation design, improve the thermal insulation and confidentiality of the wall through green building technology, select materials with excellent thermal insulation performance, and complete the wall construction [13]. In addition, if there are cracks in special parts of the building, it will not only reduce the reliability of the building structure but also cause the problem of heat loss. Therefore, it is necessary to pay attention to the selection of materials for special parts and the application of technology. In terms of roof energy-saving design, you can choose to lay the thermal insulation pavement upside down, and use the waterproof membrane to improve the waterproof effect of the roof; we choose the method of laying the thermal insulation roof, and the thermal insulation material applied in this method can resist the attack of the wind and snow weather on the roof, and can also improve the effect of the roof in terms of temperature control. Except for a few rooms, preventing condensation on the inner surface of the building envelope is the minimum requirement for thermal design, and the formula for the lower limit thermal resistance is as follows:

$$q = \frac{1}{R_n} \cdot (t_n - t_{n0}). \quad (1)$$

The total thermal resistance of the envelope is as follows:

$$R_0 = \frac{t_n - t_w}{\Delta t} \cdot R_n. \quad (2)$$

The minimum thermal resistance of the building envelope is as follows:

$$R_{\min} = \frac{t_n - t_w}{\Delta t} \cdot R_n \cdot n, \quad (3)$$

where t_n is the calculated temperature of indoor air in winter, t_w is the calculated temperature of outdoor in winter, Δt is the allowable temperature difference, R_n is the heat transfer resistance of the inner surface of the enclosure, and n is the temperature correction value.

With the improvement of people's awareness of environmental protection and the development of science and technology, environmentally friendly green building materials have been widely used in the construction industry. The research and development, promotion, and application of new building materials such as foam concrete blocks and fireproof color steel plates not only ensure the quality of construction projects but also greatly reduce the energy consumption of building materials. Therefore, designers should pay attention to the use of environmentally friendly building materials in the design process and strictly control the quality of building materials [14]. It is necessary to conduct on-site inspections of manufacturers of environmentally friendly building materials, check whether the production standards are met, and conduct relevant inspections on the building materials it produces. It is

necessary to use more green building materials, such as environmentally friendly wall materials and pipes, and reduce the use of nonrenewable resources, such as replacing metal pipes with environmentally friendly plastic pipes. In addition, attention should be paid to the reuse of building materials to improve the environmental protection of the building; for example, the covering materials of the exterior walls can be reused during renovation, and clean and pollution-free solar energy and wind energy should be used more.

3.2. Optimal Design Method. Before designing a green building, a large number of materials related to the project are collected, and the designer must have a sufficient understanding of the project to design the building construction plan according to the requirements and actual conditions. Therefore, designers need to survey the site before construction, record the construction geological information at the same time, know the temperature and climate characteristics of the project work stage, have a sufficient understanding of the project, and have a purposeful and targeted approach according to the construction requirements and the project's environmental protection and green needs. Purposeful and targeted analysis and design are carried out to improve the rationality of the content of the construction plan, so that it can become a guarantee for the efficient construction of the staff. During the architectural design, it is necessary to promote the coordination between the environment and the building, increase the lighting area of the building, and ensure that the temperature in the building is suitable and the sunlight is abundant, and the purpose of controlling and reducing energy consumption can be achieved. With the rapid development of the times, green design has been widely used in current industrial buildings, and it will also attract more and more people's attention, this is due to the green design, which can not only promote the optimization of industrial structure but also prolong the service life of factory buildings [15]. Figure 4 is the application of green building materials, and Figure 5 is the usage curve of common building materials and green materials. From the economic analysis, it can be found that with the emergence of a large number of industrial buildings, new economic models will inevitably appear; therefore, we must recognize the importance of the green building solutions proposed by the design department. In the process of producing industrial products, a certain amount of substances will inevitably be consumed, and if they cannot be used in time or cannot be used correctly, certain pollutants will be produced. If these corrosive substances cannot be properly handled, it will further affect industrial production areas; at the same time, it will pollute the water source and air of the production plant. Because these phenomena will inevitably pollute the industrial production environment, the anticorrosion design must be placed in an important position in the green building design [16]. To carry out architectural design under the concept of green building design, we must follow the laws of nature, carry out architectural design in a targeted and planned way, and realize the green development of the city. At the content

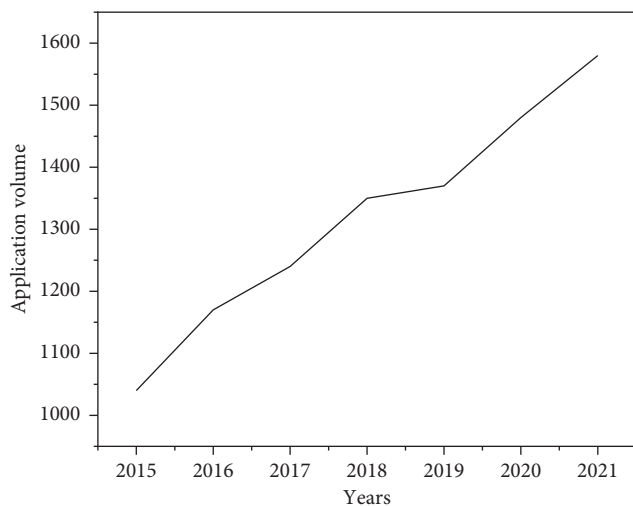


FIGURE 4: Application of green building materials.

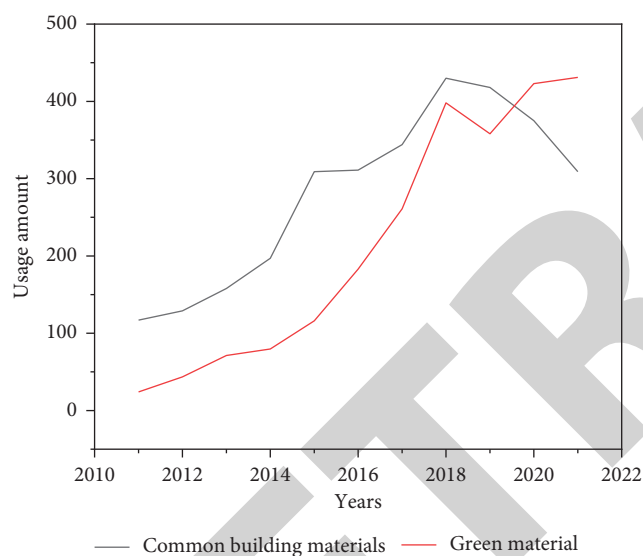


FIGURE 5: The usage curve of common building materials and green materials.

level of architectural design, natural elements and green elements should be added in the process of architectural design, in order to achieve a harmonious development of buildings between practicality and nature. Green building is a characteristic and new method, and rational application of green construction technology and green materials, and the environmental pollution caused by the construction can be controlled to a minimum level. First of all, it is necessary to conduct a comprehensive analysis and research on the building project, and design the overall structure in combination with the future use purpose of the building; second, it is determined that the types of building materials and resources meet the requirements of the building objectives, and the stability and overall applicability of the building structure are determined to meet the requirements of people's green and environmentally friendly living. In addition, in the design process, it is necessary to focus on the building's

ability to resist earthquakes, floods, and other natural disasters to ensure the service life of the building [17].

3.3. Strengthening the Scientificity of Material Selection.

Building materials are the foundation of construction projects. The scientific selection of building materials can not only reduce capital cost loss and improve building quality, but also reduce energy consumption, achieve energy conservation and emission reduction targets, and protect the ecological environment. To this end, in the design of green buildings, the control of materials should be increased, and the scientific nature of material selection should be paid attention to. The specific measures are as follows: first, we increase the testing of materials of origin to ensure that they meet the current environmental protection standards and reduce the impact on the building environment, so as to maintain human health and improve living standards. Second, combined with its own conditions, we increase the selection rate of green environmental protection materials; on the basis of ensuring the quality of the materials themselves, we optimize the construction level of construction projects and reduce construction problems [18]. Finally, we pay attention to the research and promotion of new green building materials, and strengthen the environmental protection effect. For example, solar energy conversion can be used to reduce power loss during construction and promote the normal operation of indoor lighting and electrical equipment. In the design of architectural design, we consider architectural design methods from the perspective of energy conservation and environmental protection, design architectural forms, combine energy conservation with form design, improve the rationality of green architectural design, select quantitative analysis methods, calculate engineering quantities, simulate design plans, and analyze the energy consumption of buildings. To improve the overall design quality of green buildings in a reasonable way, we need to pay attention to the appearance of the building in architectural design, and we should also organically combine green building technology and form design, and make the building to have a good appearance while improving the energy efficiency of the building. Building construction and architectural design are closely related, so we should pay close attention to the materials of green building projects, select construction materials according to the requirements of green construction, and create green projects. In terms of architectural design, we should be clear about the construction requirements and choose green and environmentally friendly raw materials. When selecting materials, we pay attention to material suppliers, check the other party's qualifications, investigate the other party's reputation in the market, check the material samples provided by the other party, and ensure that the materials have no quality problems, and can meet the quality requirements of construction. The building materials chosen need to have environmentally friendly properties. The application of such materials will not produce toxic and harmful substances during construction [19]. Figure 6 shows the comparison of heat resistance of building

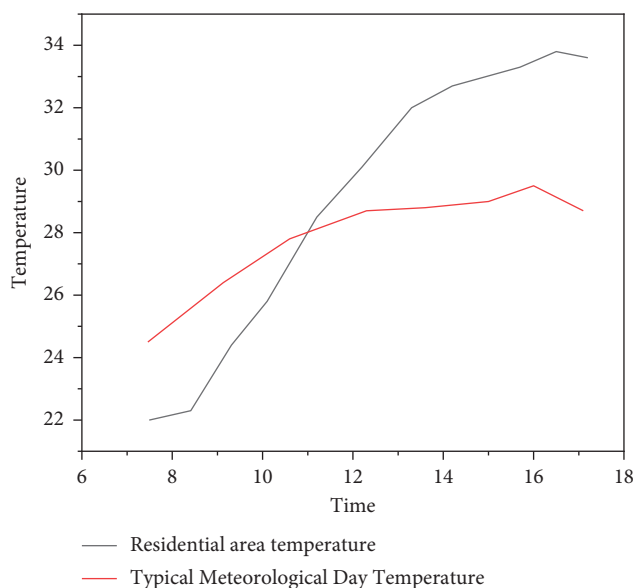


FIGURE 6: Comparison of heat resistance of building materials.

materials. In terms of building material selection, it should be considered from the aspects of material quality characteristics and cost, and through horizontal comparison, we choose the most economical one from a variety of environmentally friendly materials. The materials used in the building perimeter must have the function of automatic temperature regulation, and the use of such materials can control the indoor and outdoor temperatures at a relatively balanced level. When carrying out green building design, it is necessary to know the chemical properties of materials, test the properties of materials before construction, and prohibit the use of toxic building materials in engineering [20].

4. Results and Analysis

In recent years, our country's environmental pollution and energy problems have become increasingly serious, and various fields have continued to carry out technological innovation and research on new development ways, in order to adapt to the implementation of the national sustainable development strategy. Green building design fundamentally solves the problems of high building energy consumption and serious environmental pollution, and has been widely used in the construction industry. In the specific design process, designers should also follow certain design principles, adopt intelligent building technology, make full use of environmental protection resources and green building materials to improve the environmental protection and comfort of buildings, and then promote the sustainable development of the construction industry. There are many differences between environmentally friendly building materials and traditional building materials; first, the production raw materials are different, and the production of environmentally friendly building materials is usually the use of waste generated in people's production and life or waste generated by urban operations. Second, the production technology is different. The production of

environmentally friendly building materials requires no pollution during production, and, at the same time, no or less consumption of natural resources. Third, the production process is different. In the production of environmentally friendly building materials, catalysts that are unfavorable to the environment cannot be used. At the same time, environmentally friendly building materials are required not to contain heavy metals, and the emissions generated during the entire production process are required to meet the national environmental protection standards. Fourth, the usage is different. The purpose of producing environmentally friendly building materials is to improve people's quality of life, which not only requires environmentally friendly building materials to have a long life but also cannot cause pollution during use. Fifth, discarded is different. When the environmental protection building materials need to be dismantled to complete the historical mission, they can be recycled and reused twice without causing any pollution to the environment. To sum up, during the implementation of the environmental protection strategy, construction companies need to quickly adjust their architectural design ideas, select green building technologies in project construction, innovate building design methods, improve building energy-saving control levels, and reduce project requirements for materials and energy, while meeting the technical needs of the public, it promotes the development of social and economic cycles. Workers in the current construction industry should increase their research on various green building technologies, and organically integrate green building design and architectural design according to engineering design requirements, while optimizing the level of architectural design, in order to achieve the purpose of controlling construction costs.

5. Conclusion

In a word, the development of green design not only needs to be vigorously applied in industrial production but also needs to take into account the reduction of construction investment, in order to achieve energy conservation and emission reduction in the construction process and effectively protect the human living environment. In recent years, with the rapid development of our country's economy, countless industrial plants have emerged, which has brought huge economic benefits to the construction industry, while a large number of construction enterprises have emerged; therefore, architectural design work has also been highly valued by people. Through analysis, the author finds that when constructing a factory building, the category should be considered first, so that designers can design the factory according to the actual situation of industrial production and the different forms of the factory building develop high-quality green engineering solutions. The integration and application of green building design concepts in architectural design is of great significance, not only to meet people's health and ecological needs for buildings but also to promote stable and sustainable development of society and achieve the goal of green building development. As an important part of engineering construction, architectural design must

be scientifically and rationally carried out under the guidance of the concept of green building design, combined with the actual needs of engineering construction, in order to ensure the realization of environmental protection while saving resources, and truly ensure the low energy consumption and high efficiency of engineering construction. In order to effectively protect the human living environment, improve people's quality of life, and maintain the human living environment for a long time, higher requirements are also put forward for green building design; only by achieving sustainable development can we meet the requirements of the times. Environmental protection building materials are an important part of green buildings, which include technical means such as rational development of resources, environmental protection, and pollution-free production; at the same time, it shows the development and technical status of our country's construction industry, which is closely related to the needs of human production and life, and is the direction and requirement of the development of the times.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

- [1] D. Sabari, "Study on the compaction characteristics of soil and marble dust composite as a potential green building material," *Revista Gestão Inovação e Tecnologias*, vol. 11, no. 4, pp. 1252–1263, 2021.
- [2] N. Yah, H. A. Rahim, J. S. Ping, M. Abdulmalek, and M. Yasin, "Green nanocomposite-based metamaterial electromagnetic absorbers: potential, current developments and future perspectives," *IEEE Access*, vol. 20, 2020.
- [3] E. Eze, U. R. Asibuodu, S. I. Egwunatum, and I. A. Awodele, "Green building materials products and service market in the construction industry," *Journal of Engineering, Project, and Production Management*, vol. 11, no. 2, pp. 89–101, 2021.
- [4] Z. Liu and A. Guo, "Application of green building materials and multi-objective energy-saving optimization design," *International Journal of Heat and Technology*, vol. 39, no. 1, pp. 299–308, 2021.
- [5] A. Jexembayeva, T. Salem, P. Jiao, B. Hou, and R. Niyazbekova, "Blended cement mixed with basic oxygen steelmaking slag (bof) as an alternative green building material," *Materials*, vol. 13, no. 14, pp. 3062–3142, 2020.
- [6] V. M. Sounthararajan, S. Sivasankar, A. Rajarajeswari, and L. P. Sankar, "Sustainable effects of crimped white polypropylene fibre with fly ash and sbr latex to act as green building materials in modified concrete," *Journal of Green Engineering*, vol. 10, no. 2, pp. 327–341, 2020.
- [7] N. Kumar, "Sustainable building material for green building construction, conservation and refurbishing," *MATTER: International Journal of Science and Technology*, vol. 29, no. 10, pp. 5343–5350, 2020.
- [8] S. M. Razavi, H. Nazarpour, and M. Hosseinali Beygi, "Investigation of the efficacy of nano-silica on mechanical properties of green-engineered cementitious composite (gecc) containing high volume natural zeolite," *Construction and Building Materials*, vol. 291, no. 3, pp. 123246–124146, 2021.
- [9] A. I. Fares, K. Sohel, K. S. Al-Jabri, and A. Al-Mamun, "Characteristics of ferrochrome slag aggregate and its uses as a green material in concrete—a review," *Construction and Building Materials*, vol. 294, no. 2, pp. 123552–124152, 2021.
- [10] W. Xia, B. Li, and S. Yin, "A prescription for urban sustainability transitions in China: innovative partner selection management of green building materials industry in an integrated supply chain," *Sustainability*, vol. 12, no. 7, pp. 2581–2631, 2020.
- [11] A. E. Richardson, B. Nagaratnam, K. A. Coventry, D. Brandy, and L. Amess, "Crack healing in cementitious materials including tests methods," *Journal of Green Building*, vol. 15, no. 1, pp. 37–54, 2020.
- [12] M. I. Majid and M. I. Khan, "Techno-economic analysis of green construction regulations plus survey for prototype implementation in karachi," *Pakistan Journal of Scientific & Industrial Research Series A: Physical Sciences*, vol. 64, no. 2, pp. 161–172, 2021.
- [13] A. Morales, J. Labidi, P. Gullón, and G. Astray, "Synthesis of advanced bio-based green materials from renewable biopolymers," *Current Opinion in Green and Sustainable Chemistry*, vol. 29, no. 7–8, pp. 100436–101136, 2021.
- [14] N. Thuc, B. Huyen, and N. Huyen, "Microstructural characteristics and mechanical properties of the green composites reinforced bamboo optimized the treated parameters," *Journal of Polymer & Composites*, vol. 9, no. 1, pp. 28–38, 2021.
- [15] E. M. Hamilton, "Green building, green behavior? an analysis of building characteristics that support environmentally responsible behaviors," *Environment and Behavior*, vol. 53, no. 4, pp. 409–450, 2021.
- [16] A. Sharma, G. Rathee, R. Kumar et al., "A secure, energy- and sla-efficient (sese) e-healthcare framework for quickest data transmission using cyber-physical system," *Sensors*, vol. 19, no. 9, p. 2119, 2019.
- [17] S. Shriram, B. Nagaraj, J. Jaya, S. Shankar, and P. Ajay, "Deep learning-based real-time AI virtual mouse system using computer vision to avoid COVID-19 spread," *Journal of Healthcare Engineering*, vol. 2021, Article ID 8133076, 8 pages, 2021.
- [18] X. Liu, J. Liu, J. Chen, F. Zhong, and C. Ma, "Study on treatment of printing and dyeing waste gas in the atmosphere with Ce-Mn/GF catalyst," *Arabian Journal of Geosciences*, vol. 14, no. 8, pp. 737–746, 2021.
- [19] R. Huang, "Framework for a smart adult education environment," *Engineering with Computers*, vol. 13, no. 4, pp. 637–641, 2015.
- [20] Y. Zhang, X. Kou, Z. Song, Y. Fan, M. Usman, and V. Jagota, "Research on logistics management layout optimization and real-time application based on nonlinear programming," *Nonlinear Engineering*, vol. 10, no. 1, pp. 526–534, 2021.