

Building Energy Conservation and Building Noise Control Technology

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Abstract: Building energy conservation and noise control technologies are key technologies in construction engineering under the background of the new era, which are of great significance to the modernization of urban construction and the sustainable development of the construction industry. With the progress of social economy and the improvement of people's living standards, urban noise pollution and energy issues have attracted increasing attention. Based on the analysis of the demands for building energy conservation and noise control, this paper proposes targeted application strategies for energy conservation and noise control technologies, providing references for construction engineering.

Keywords: Building energy conservation technology; Building noise control technology

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1. Introduction

In the context of the new era, the construction concepts of green buildings and energy-efficient buildings have become key research directions for engineering enterprises. Within the construction industry, green buildings emphasize the implementation of concepts such as ecological environmental protection, resource conservation, pollution prevention, and sustainable development throughout the entire construction process. Building energy efficiency and noise control, as vital components of green buildings, help fully realize their green value, provide support for resource conservation and environmental protection, promote harmonious coexistence between the construction industry and nature, and ensure the improvement of people's quality of life. Simultaneously, green buildings focus on optimizing aspects of the construction process that negatively impact the ecological environment. During the implementation of building energy efficiency and noise control, the application of noise control construction techniques and new energy sources can effectively address the severe issues of resource waste and prominent noise pollution prevalent in traditional construction. Green buildings serve as a crucial guarantee for achieving harmony between humans and nature under the current social and economic environment, playing a positive role in advancing urban modernization. Therefore, construction enterprises should attach great importance

to building energy efficiency and noise control technologies, closely integrate them with the practical needs of housing construction projects, and scientifically promote engineering design and construction.

2. Application significance of building energy efficiency and noise control technology

In the construction process, utilizing building energy efficiency and noise control technologies can alleviate the developmental issue of energy scarcity, enhance the living standards of the people, ensure environmental protection and development, promote the sustainable development of enterprises, and play a positive role in the common development of cities and construction enterprises.

2.1. Ability to alleviate the developmental issue of energy scarcity

With socio-economic progress and the continuous improvement of technological levels, the energy demand for people's life and work is gradually increasing, making the energy issue increasingly severe. Utilizing building energy efficiency technology can reduce the consumption of energy resources during the construction and operational phases of housing buildings, scientifically and reasonably accomplishing energy-saving tasks, which plays a positive role in alleviating energy scarcity. Moreover, in the design and construction of housing, energy-saving technologies do not compromise people's quality of life and sense of well-being; they still fulfill the basic functions of buildings, providing a comfortable living environment based on conserving resources and energy. Therefore, during the construction process, it is essential to emphasize the understanding and integration of energy-saving technologies, standardize their application according to the specific functions of the building, optimize construction content, and upgrade construction methods to ensure the energy-saving effectiveness of the project. This contributes to resource conservation and the protection of the environment and ecology, thereby promoting the implementation of China's sustainable development strategy (Figure 1).

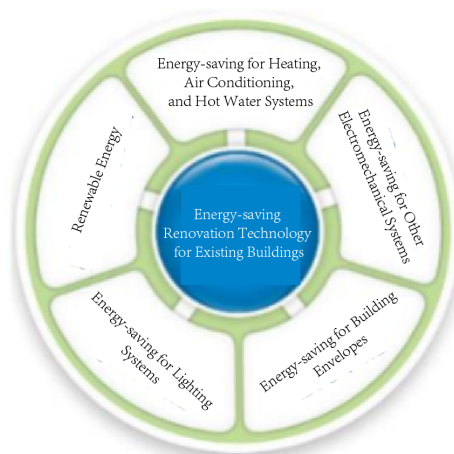


Figure 1. Building energy efficiency technology.

2.2. Ability to enhance the living standards of the people

Against the backdrop of urban modernization, the fundamental purpose of housing construction projects is to meet people's living and usage needs. The application of building energy efficiency and noise control technologies is

a key measure to enhance the living standards of the people, helping to create a healthy and harmonious living atmosphere for residents. Integrating energy efficiency and noise control technologies into building design can effectively mitigate noise issues arising during construction and daily use, improving the quality of life for occupants and nearby residents. This not only aids in the smooth achievement of construction project goals but also reduces noise interference in the urban environment. Simultaneously, relying on these technologies, construction will place greater emphasis on the living experience, effectively suppressing noise and resource waste to provide people with a more comfortable living environment and more comprehensive building functions. Therefore, construction enterprises should highly value energy efficiency and noise control technologies, accurately grasp the intrinsic connection between green concepts and residents' quality of life, focus on solving noise and energy consumption issues during the design phase, improve construction quality, and promote the steady implementation of urban modernization ^[1].

2.3. Ability to ensure environmental protection and development

Environmental protection and pollution control are issues that the current construction industry must prioritize. The application of building energy efficiency and noise control technologies can significantly reduce the impact of engineering construction on the surrounding environment, effectively address pollution problems, and create a more livable environment. In traditional construction, common materials easily generate pollutants, lack noise control functions, and cause ongoing damage to the ecological environment. By adopting green materials, clean energy, and noise control technologies, it is possible to substantially reduce energy consumption, decrease pollution emissions, suppress noise propagation, standardize project implementation while lessening the environmental burden. Furthermore, the promotion of these technologies helps raise public environmental awareness, foster a green development atmosphere, promote the research, development, and application of new energy sources and materials, and drive the synergistic progress of the construction industry and environmental protection. Additionally, these technologies can better adapt to the characteristics of the surrounding environment and residents' usage needs, providing support for building harmonious communities and urban environments. Therefore, construction enterprises should emphasize the integrated application of energy efficiency and noise control technologies, incorporating them throughout the engineering design plan and contributing to urban modernization with practical actions ^[2].

2.4. Ability to promote sustainable development of enterprises

The application of building energy efficiency and noise control technologies helps improve the quality of housing, enhance the living experience, and shape a positive brand image for enterprises. In the construction industry, brand building is crucial for the sustainable development of enterprises. The integration of these technologies can not only enhance the ecological and environmental attributes of buildings, reduce energy consumption and noise pollution but also enrich building functions, meet diverse user needs, and thereby elevate the corporate brand image. At the same time, such technologies also help promote the concept of green buildings, increase corporate visibility, and inject momentum into sustainable development ^[3].

Under the current backdrop of the construction industry, energy efficiency and noise control technologies have a significant impact on enterprise operations and market expansion. By standardizing the application of new materials and energy resources, greener, more environmentally friendly, and efficient engineering construction can be achieved, significantly reducing negative impacts on the ecological environment. Therefore, construction

enterprises should actively promote the application of new technologies, ensure that projects meet sustainable development requirements, and lay the foundation for urban modernization and ecological protection ^[4].

3. Problems in building energy efficiency and noise control

During the application of building energy efficiency and noise control technologies, there is a lack of an effective supervision system, and the environmental protection concepts of some construction enterprises are outdated, hindering the standardized application of technologies. Simultaneously, issues such as insufficient proficiency in energy efficiency and noise control technologies and inadequate treatment of engineering pollutants and environmental protection also affect construction project execution.

3.1. Lack of an effective supervision system

At the current stage of development in the construction industry, the state has not formulated relevant laws and regulations. When constructing houses, builders face no relevant constraints, leading to the misuse of energy. A supervision system is the foundation for promoting the application of building energy efficiency and noise control technologies. However, in most regions, problems exist in the establishment and improvement of supervision systems. The regulations within supervision systems regarding the application of these technologies are unscientific, and standardization issues persist in engineering project construction, preventing the effective role of building energy efficiency and noise control technologies and hindering construction project execution ^[5].

3.2. Outdated environmental protection concepts of construction enterprises

Scientific environmental protection concepts are the foundation affecting the application of building energy efficiency and noise control technologies. However, within some construction enterprises, publicity regarding these technologies is inadequate, leading to insufficient awareness and understanding among the workforce. Simultaneously, enterprises have not created a new corporate culture in line with the application requirements of these technologies, resulting in difficulties in their proper implementation and affecting the progress of construction projects ^[6].

3.3. Insufficient proficiency in energy efficiency and building noise control technologies

The lack of proficiency in building energy conservation and noise control technologies is also a key issue affecting the implementation of construction projects. In some construction enterprises, due to the failure to build a talent team based on the application requirements of these technologies, the construction teams lack professional qualities. The unfamiliarity with green construction technologies will affect the specific management and construction aspects of the projects, which is detrimental to the long-term development of the enterprises ^[7].

In the context of the new era, building energy efficiency and noise control technologies are key to ecological construction and development. Therefore, enterprises must increase their emphasis, analyze existing problems in technology application, gradually optimize and upgrade technology models, and lay a solid foundation for enterprise development.

4. Application strategies for building energy efficiency and noise control technologies

Construction enterprises should apply green materials and noise control materials, implement energy control

management for construction projects, design resource recycling systems, ensure the steady implementation of building energy efficiency and noise control technologies, and make positive contributions to enterprise development.

4.1. Application of green materials and noise control materials

Based on engineering construction experience, construction enterprises should analyze pollution problems existing in different construction processes. In line with green environmental protection and energy-saving needs, they should apply green materials and noise control materials during construction to reduce environmental pollution and damage, thereby enhancing energy-saving and environmental protection effects. Moreover, through the flexible application of green materials and noise control materials, construction enterprises should control sources of noise within buildings, improve sound insulation effects, and ensure a reduction in the level of building noise pollution. Finally, construction enterprises should scientifically manage material procurement and storage to avoid material quality issues, leverage the advantages of green materials and noise control materials, and achieve goals of resource and energy conservation as well as environmental protection ^[8].

4.2. Energy control management for construction projects

In construction project execution, energy control management methods are key factors affecting the project. Therefore, construction enterprises should emphasize energy control, manage on-site resources properly, treat pollutants, and enhance the scientificity and standardization of construction. Simultaneously, enterprises should focus on controlling pollution levels and resource waste in building design, and combine the application of energy-saving materials to reduce resource consumption during construction ^[9].

4.3. Design of resource recycling systems

In the application process of building energy efficiency technologies, construction enterprises should emphasize the design of resource recycling systems to enhance the resource utilization capabilities of construction projects and achieve energy-saving goals. For example, based on housing resource application and climatic conditions, enterprises can design scientific water resource recycling systems to fully improve water resource utilization efficiency in construction projects. At the same time, enterprises should emphasize the experimental application of other energy-saving methods and technologies to lay a solid foundation and contribute to the overall improvement of construction project standards ^[10].

Building energy efficiency and noise control technologies can reduce building resource and energy consumption and mitigate noise pollution problems. Therefore, construction enterprises should optimize building engineering design schemes to achieve genuine resource conservation and environmental protection. Simultaneously, within the construction industry, promotion and publicity of building energy efficiency and noise control technologies should be conducted to raise public environmental awareness and conservation consciousness, promote the dissemination of green building concepts, and provide impetus for modern urban construction.

5. Conclusion

Building energy efficiency and noise control technologies play a significant role in alleviating energy shortages, improving residents' quality of life, protecting the ecological environment, and promoting the sustainable development of enterprises. They are key supports for realizing the sustainable development strategy. However,

currently, some construction enterprises still face problems during construction, such as imperfect supervision mechanisms, lagging environmental protection concepts, and non-standardized technology application. Simultaneously, deficiencies in areas like insufficient proficiency in energy efficiency and noise control technologies and inadequate pollutant treatment directly affect the overall quality of construction projects. Therefore, enterprises should further emphasize the systematic application of energy efficiency and noise control technologies. Through measures like strengthening energy management and control and establishing resource recycling systems, they should effectively ensure the smooth achievement of construction project goals.

Disclosure statement

The author declares no conflict of interest.

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