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Research Article

Thoughts on the Promotion and Application of Green Buildings in the Ecological Environment of Colleges and Universities

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Abstract: With the establishment of environmental protection system, protecting the ecological environment and reducing the use of energy consumption have become the mainstream idea in the development structure of green buildings. In the university construction projects, we must also uphold the principle of improving the ecosystem of colleges and universities, and strengthen the level of energy conservation and consumption reduction, to achieve a win-win situation in ecological civilization and university building management. This paper analyzes the value of green building in the ecological environment of colleges and universities and discusses the specific application and application path, for reference only.

Keywords: *green building; university ecological environment; promotion and application; value; path*

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0. Introduction

University buildings are not independent building combinations, but the building complexes are to be completed under planning. Therefore, it is necessary to pay attention to its construction scale and building energy management work, and actively establish a complete energy-saving and consumption reducing production regulation to ensure that the implementation of green building structure is implemented.

1. The value of green buildings in the promotion and application of colleges and universities

Within the important ideological system of the 19th National Congress of the Communist Party of China, it is indicated that the whole society should practice the overall layout from the perspective of historical development and social strategy, truly increase the emphasis on ecological civilization construction, and work together to achieve the China dream[1]. Based on this, it is a great significance and value to improve the ecological environment construction and the green development mechanism. We must ensure that we can carry out measures to protect nature and maintain the level of ecological development while respecting nature and adapting to nature. In the actual management work, the construction of ecological environment in colleges and universities should actively promote and develop green technology, effectively maintain the foundation of civilized construction, and use high-efficiency and energy-saving technologies and renewable resources development technologies in green building mechanisms to construct a scientific system in which resources can be recycled. Keeping pace with the times, achieve the sustainable development goals of colleges and universities, and provide guarantees for the overall progress of colleges and universities[2].

2. The path of green building in the ecological environment of colleges and universities

After the green building is promoted and applied in the university's ecological environment, it is necessary to

actively implement the specific promotion mechanism to ensure a clearer understanding of the specific work, thus maintaining the basic needs of the management project.

2.1 Promotion of the project life cycle cost concept

In the operation process of the construction project, the engineering planning mechanism, design process, construction process, and operation system should be paid attention as a unified whole. In addition to reasonable constraints on the design cost and construction cost in the construction process, the project operation and maintenance costs are discussed in depth so that the whole process supervision and management mechanism are truly constructed, the overall cost of the project is reduced, and the fundamental quality of the construction project is effectively maintained[3]. Based on this, the promotion of green buildings in the ecological environment of colleges and universities, through the project life cycle cost concept, can systematically deal with the planning process, the design process, and the relationship between the both.

It should be noted that in the life cycle cost system, non-construction costs, construction costs, operating costs, and maintenance costs all have important application values. The core part is to comprehensively determine the project planning process. Rationalize investment and distribution management of various project costs to ensure the maximum use of resources while ensuring the timeliness of life cycle cost management effects [4]. Calculate specific information by means of the total cost of the system life cycle as shown in Table 1.

2.2 Integration planning priorities

To further promote the development of green building projects, we must actively establish a sound and complete basic supervision and management plan, and pay attention to the key content in the planning stage, so as to truly promote the development of green buildings in the ecological environment of colleges and universities[5].

First, we must pay attention to the practical application value of green buildings, optimize the overall operation management mechanism and design layout structure, and ensure that the rationality of the planning management process can be improved on the basis of overall management planning and step-by-step implementation. On the one hand, the construction department should fully understand the climate characteristics and microclimate protection factors within the regional scope of the university, effectively integrate the current situation of space management, and on the basis of systematic and comprehensive consideration of the site selection of the building, it is necessary to ensure functional positioning and architectural shape, scientific between basic information such as layout and spacing[6]. Like say, only through systematic configuration, a complete and effective building thermal environment management structure can be established. When the climate protection unit is integrated, the interface should be managed uniformly, and the recycling resources such as solar energy and geothermal energy should be fully utilized to enhance the value of building environmental protection[7]. On the other hand, it is necessary to actively manage the application concept of the management and control system and pay attention to the design work of indoor quality environment. The basic indoor environment mainly involves the light environment, the thermal environment, and the acoustic environment. It is necessary to judge the day lighting in combination with the law of sunshine, to ensure that the patio and the atrium in the layout of the building

Table 1: ** University air energy heat pump system decision analysis list

Serial number	Basic project	Air energy heat pump system I		Air energy heat pump system II	
		Solar energy	Electrical assistance	Solar energy	Electrical assistance
1	Initial investment of the project	532000 Yuan	9000 Yuan	532000 Yuan	282000 Yuan
2	Project life (year)	20	10	20	10
3	Building thermal efficiency	-	90%	-	400%
4	Annual operating cost of the building	-	51000 Yuan	-	11000 Yuan
5	Equipment cost (20 years)	530000 Yuan	18000 Yuan	532000 Yuan	282000 Yuan
6	Operating expenses (20 years)	-	620000 Yuan	-	130000 Yuan

Combined with the total cost measurement, the Scheme II is selected

can take advantage of the lighting, so as to ensure the complete implementation of the natural light source. The management mechanism ensures the rationality of the thermal environment design process and lays a foundation for the subsequent optimization of the thermal insulation efficiency of the building exterior wall. In the sound environment management work, it is necessary to combine the noise decibel management requirements combined with the function static and dynamic partition principle to ensure that the basic advantages of sound insulation and sound insulation can be exerted, and the corresponding plane structure can be reasonably set. In addition, the location of the tuyere should be uniformly divided and processed, and the indoor airflow should be effectively organized to ensure that the shortage caused by the cross gas is reduced, and the recycling of pollution control is avoided to some extent. Only by comprehensively considering the specific factors, we can effectively improve the green value of the overall building structure.

In the construction project, we must uphold the concept of environmental protection, rationally improve the management efficiency and management level of the building structure application system, and ensure that material items more suitable for actual needs can be selected from many energy-saving materials to maintain economic and social protection. Coordination can also improve the treatment effect of energy saving and emission reduction to a certain extent, and reduce the carbon intensity in the environment. The most important thing is that in the process of selecting green building materials, we must comprehensively consider the building performance and requirements, maintain economic conditions, and ensure that the material management mechanism can be fully implemented, and the fundamental level of green building materials management projects is upgraded in an orderly manner[8]. At present, in the process of selecting autoclaved aerated concrete blocks and slats, it is necessary to comprehensively consider the material quality, texture, thermal insulation effect, heat insulation effect, etc., and effectively improve the building performance, and maintain the foundation of structural materials and strength. Especially for the application of high-strength steel, fiber-reinforced concrete, and polymer-impregnated concrete, it is necessary to meet the characteristics requirements on the basis of maintaining the material management mechanism, thereby improving the performance application effect, comprehensively selecting the best quality building materials, and ensuring the material and value, and role in the green building development system[9] can be utilized.

2.3 Integrating energy-saving control system

In promoting the green building in the ecological environment of colleges and universities, it is necessary to fully combine the characteristics of the university itself because the university itself is a public place where crowd activities gather. Therefore, the water and electricity consumption are large. To meet the environmental protection requirements, the energy-saving control mechanism must be judged. Effectively analyze the corresponding data and actively promote the conservation and energy-saving campus management mechanism. At present, the solar heat pump is mainly used to replace the traditional gas boiler, and the heat is directly transmitted to the water supply system by means of absorbing solar energy to ensure the heating effect, and the overall environmental benefit and economic benefit can be improved on the basis of reducing the power loss. Only by actively establishing a sound and complete systemized management mechanism can we maintain the rationality of the management and control work, ensure a good balance between the application structure and the management and control system, laid a foundation for the implementation of energy conservation management in universities, and achieve comprehensive economic benefits and optimization. The most important thing is to coordinate the management of lighting power, mainly by means of light-emitting diode energy efficient, etc., the node effect is more obvious, as shown in Figure 1.

In 2015 and 2016, colleges and universities used ordinary lighting. In 2017, the lighting system was renovated. The overall saving effect was better, and the electricity expenses were reduced by about 10%. In addition, the water saving project has also undergone a centralized transformation, as shown in Figure 2.

In 2015/2016, the university used a traditional water system, and in 2017, the collected rainwater was treated by the rainwater treatment and flushing system, and it was flushed as a water body after the miscellaneous water standard, whether it was a festival. Water performance or environmental benefits have changed

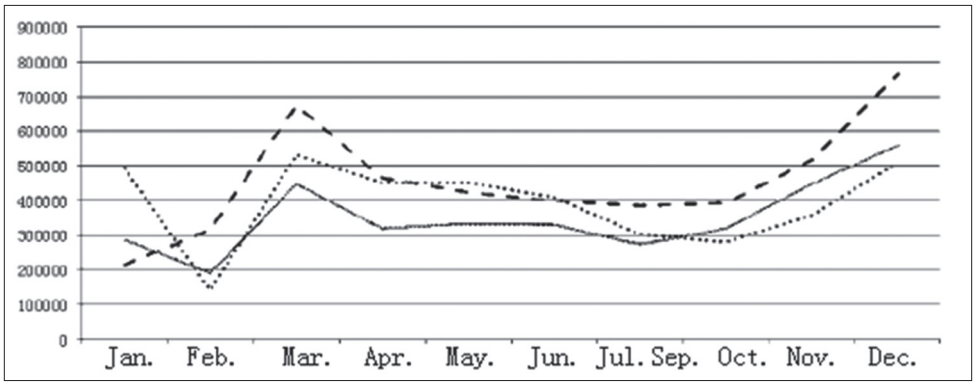

Figure 1. University's 2014–2017 light-emitting diode energy-saving lamp power consumption diagram. (The black line indicates 2015, the black dotted line indicates 2016, and the black line indicates 2017)

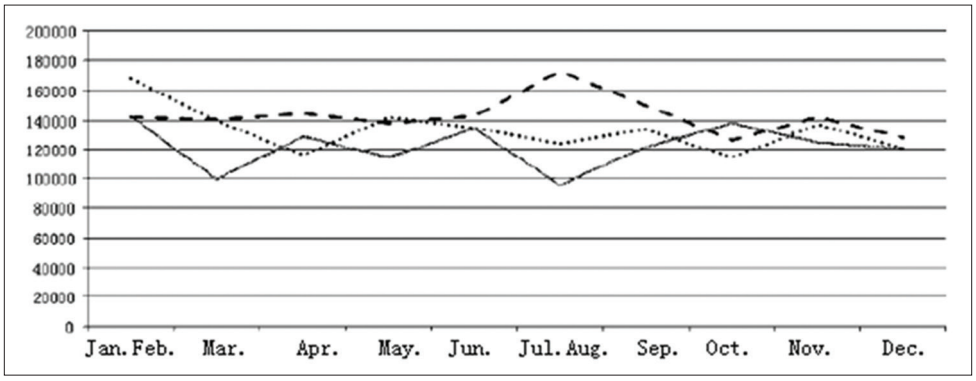

Figure 2. Water saving diagram after the transformation of the university's water balance test system in 2014–2017. (The black line indicates 2015, the black dotted line indicates 2016, and the black line indicates 2017)

significantly. Moreover, the water balance test system has also significantly reduced the water fee of colleges and universities, which has dropped by more than 10.1%, and the overall water saving effect is very prominent[10].

3 Conclusion

Anyhow, in the process of saving resources and protecting the environment, colleges and universities should actively adapt to the needs of the times, combine ecological environment construction with the long-term development goals of colleges and universities, effectively integrate green building plans, and ensure the dynamic needs of colleges and universities. From the perspective of economy, we will integrate basic processes such as power management, environmental management, and water resources management to construct sustainable development plans to provide guarantees for the advancement of ecological environment construction in universities.

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