On Green Environmental Protection Idea in the Application of Minimalist Style Home Design

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Abstract: Guided by the concept of sustainable development, China started to abandon the traditional growth pattern in the 20th century through low-carbon economic model and low-carbon way of life to realize the sustainable development of society. The green environmental protection idea in home design arises at the historic moment and gets more and more praise. This paper takes minimalist style home design as an example to analyze green environmental protection idea in the application and development of minimalist style home design.

Keywords: green environmental protection; low-carbon design; minimalist style; home design

Introduction

In 2003, in the white book “Future of Our Energy: Create a Low-carbon Economy”, the British government proposed the concept of “low-carbon economy” for the first time. Since then, other related new concepts like “carbon footprint”, “low-carbon technology”, “low-carbon lifestyle” etc., have emerged as the times required. Under the guidance of sustainable development, these concepts have created a new path for global ecological civilization. China also began to abandon traditional mode of economic pattern adopted in the 20th century. Moreover, it also applied innovative technology and mechanism, achieved social sustainable development through low-carbon economic patterns and life-styles.

In the general context of promoting low-carbon economic patterns and life-styles, the concept of green environmental interior design has also emerged and become increasingly popular. On one hand, this design concept satisfied basic human needs and their wish to improve life quality. On the other hand, it believes that humans should control their own needs and contain them within the limits of nature, in order to leave adequate living space for future generations. This design concept has three following features: harmless and healthy design environment, environmental, economical and recyclable design materials, as well as energy conservation and

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reduction design in life. They can be combined with most of the current and popular interior design styles to conduct green and environmental style of home design.

Next, minimalist interior design style is taken as an example to analyze application and development of green and environmental design concept in this design style.

1. **Specific characters and combination of minimalist interior design concept, as well as green and environmental design concept**

An important reason for selecting minimalist style as the case analysis is that this style is one of the popular modern home designs.

In modern society, heavy workload and intense competition have brought people more and more pressure. Various social engagements have also taken up leisure time. These factors compel people to need a much simpler context to relax themselves. Defying trivial conventions, freeing from restriction and limitations are primary requirements proposed by many consumers for home designers. Minimalist style of home design concept can meet such requirements. Nowadays, due to high costs of purchasing houses, small-sized houses are in great demand in the market. Limited by small areas of houses, minimalist style of home design can make better use of space usage ratio in small houses than other types of design. Meanwhile, the relatively simple craftsmanship and low prices also attract the attention of the wage-earning class.

Of course, minimalist style of home design is not simplism as we know today. As the opposite and extreme of abstract expressionism, minimalist tends to express the original forms of things to viewers, and eliminate the authors’ compression to viewers. The sense of violence expressed by some design artworks as texts or symbols opens up image space in artistic concepts, and involve viewers in artwork creation. They finally become authors without specific restriction. These elements are the true essence of the minimalist style of home design. Ordinary and simple decorations, white walls and simple furnishings can not be considered as minimalist.

Authentic minimalist style of home design regards aesthetic and high-grade styles as the purpose, and intends to abandon all useless details and retain the most original and pure essence of life. It has the following four features:

1. **Functionalism.** It emphasizes functions instead of formations as the center and purpose of design. It focuses on scientificity of design, as well as convenience of design implementation.

2. **In forms,** it advocates non-decorative simple geometric modeling. Influenced by cubism, it promotes six-facet buildings and curtain wall frameworks. Moreover, it favors the principle of standardization, neutral hue plans and anti-decoration.

3. **In specific designs,** it emphasizes consideration of space. In particular, it focuses on integrated designs. It opposes the idea of designing on drawing boards and rendering. Instead, it favors the design plans centering upon modeling.

4. It emphasizes expenses and costs of design objects, and regards economic
issues as integrates economic issues in designs, and regards them as an important element to consider and plan, so as to attain the practical and economical purpose.

These features determine that minimalist style of home design and concept are supplementary and interlinked to the concept of “green and environmental protection, low-carbon lifestyles” in many aspects. It lays solid foundations for the application of green and environmental design concept in minimalist style of home design.

2. **Specific application of green and environmental design concept in minimalist style of home design**

Then, how is the green and environmental design concept specially applied in home designs? It can be summarized in the following three aspects: 1. Spatial design and planning; 2. Material selection of design; 3. Construction arrangement of decoration. The paper will elaborate from the above three aspects:

(1) **Combination between interior space plan and environmental design concepts**

Minimalist style of home design expects to create spatial orders with the most original and essential materials, and simplify space into the most basic designs of light, quantity and dimensions. Meanwhile, minimalist style of home design expresses the simplicity of space, eliminate redundant decorations, and reveal essential texture and beauty based on the pure walls, ceilings, floors and large mass pillars.

Nowadays, due to high costs of purchasing houses, small-sized houses, loft apartment and personalized factories, warehouse and residence reconstructions have become increasingly popular with house buyers. Space structures of such houses, as well as simple, individualized, and high-usage ratio features give full play to minimalist style of home design. Meanwhile, they are conducive to integrating green and environmental design requirements.

Due to small floor areas, small-sized houses and loft apartments have pressing needs to the maximum use of space. Because of their own structures and construction materials, personalized factories and warehouse reconstructions require more careful consideration and reasonable utilization in terms of spatial function designs, so as to achieve the maximum levels of rationality and comfort. It is almost similar to Smith Van Draut’s well-known saying “Less is more”. As for “less”, it means less decoration and modification. Less decoration is to use less decorative means of patterns and partitions, and use more spatial changes to achieve certain effects. As spatial mobility is of importance to functional places. Less partitions means to unit lockers and wardrobes as one as much as possible, and reduce chances of independent existence. Less modification means to achieve maximum rationality in design drawings, in order to reduce workload and construction costs.

Energy conservation uses reasonable design to bring natural wind, landscape and lighting into rooms, so that people and natural obtain full contacts. In this case, it can be considered that minimalist design reveals high-quality and low-carbon lifestyles.

In terms of color planning and soft accessories, minimalist designs often reduce
chroma to the lowest and least level in space. So, they are usually combinations of black, white and material original colors. Among such most simple and authentic colors, essential and genuine meanings of design objects are revealed. Natural essence of space is restored, so that people can free themselves from excessive decorations, relax, and think serious about origins of thing in nature. Meanwhile, adequate use of true colors and primitive materials reduce use of tedious design processes such as painting and cover decoration. They can be of great help in energy conservation and emission reduction, as well as reducing construction costs.

(2) Selection of decorative materials, technological process and sustainable development

Currently, in order to achieve “low-carbon designs” in the field of decorative designs, selection of design materials is of crucial importance. Environmental protection material can reduce plenty of pollution resources for the whole decorative construction and emission of formaldehyde in interior space, which is good for the overall and balanced ecological development. In the long run, it will be more conducive to people who live in such space.

For example: 1. Less use of blockboards. Blockboards are used in making cabinet and doors. It is suggested to use it less. Use of wood concerns the destroying and cutting forests; moreover, volatile organic compounds of blockboards are often contained in high levels. If they have to be used, it is suggested that no more than 30 pieces of blockboards be used within every 100 square meters, in order to reduce the emission of formaldehyde. As all blockboards contain formaldehyde. Even if a single piece of blockboard contain formaldehyde within reasonable emissions, excessive use of many blockboards may contain formaldehyde above the environmental protection standard. This is the “synergistic effect”. 2. Paint colors: coating and paint colors should be light colors. Dark and gorgeous color paints tend to contain higher levels of lead, as lead can ensure enduring colourfastness. It is suggested that hospitals, nursing homes and kindergartens avoid colorful decorations. 3. Wallpapers: wallpapers made from wood pulp should be used in home design and decoration. Wallpapers made from regenerative raw materials can also be used, such as straws and natural adhesives, as they are environmentally friendly. 4. Ceramic tile: as argil is non-renewable resources. Glazing tile consumes too much coal, thus emitting too much carbon. So it should be used less in designs. Soft-paste porcelain can be used on wall decorations. As for floor decorations, composite materials, bamboo or wooden floors can be used as substitutes.

Therefore, in home decoration, “low-carbon” mainly refers to environmental friendliness of material selection and conservation of usage. Relevant studies verify: if one kilo of steel is reduced in decorations, carbon dioxide emissions will be reduce by 1.9 kilos. If 0.1 cubic meter of wood is reduced, carbon dioxide emissions will be reduce by 64.3 kilos. Such objective statistical data demonstrate that material selections and usage controls can pose great impacts on environmental protection.
The design concept of “less is more” advocated by minimalist can achieve maximum reasonable use of space. It combines spatial openness, artificial space with maximum natural comfort, uses less decoration and partition, highlights the design concept of spatial mobility, and greatly reduces the use of decorative materials. It is the best annotation of “low-carbon” design.

Nowadays, most people have realized the importance of environmental protection and sustainable development. In order to improve life quality for future generations, more and more people choose to use recyclable energy-saving materials in decoration and construction. Environmental and energy-saving materials mainly refer to decoration and construction materials that consume less energy, good for human health, and improve people’s life and sanitation qualities. Such materials can be used repeatedly, reused and recycled. They are also free of pollution, radiation, volatility, poison and harm. For instance, some consumers choose to use bamboo as the material for suspended ceiling. It is not only unique, but also environmental, friendly and energy-saving. Others may use a lot of cane furniture, in order to reduce the use of wood materials. Because of water shortage, most consumers also develop the awareness of conserving water. In purchasing sanitary products, they tend to choose energy-saving products. People’s changing concepts also stimulated them to abandon expensive decorations, and focus on natural and pure directions. It also further enhances the popularity of minimalist design style among the general public. Designers also combine design with local features, select seasonable and local materials in decorations and designs. In this way, minimalist design style not only gets rid of stereotyped and fixed patterns, but also become unique with localized features. Moreover, it also greatly reduces energy consumption of raw materials in collection, production and transportation in architectural material industry, and achieves low-carbon and sustainable development. In addition, minimalist design and environmental concept are more closely related with each other, and satisfy requirements of modern people’s life styles.

(3) Decoration construction arrangements and specific implementation of environmental concepts

Because of unique features of minimalist style in design concept, compared with other decoration styles, decoration and construction of minimalist style tend to be much simpler and easier to make decorative arrangements. Achieve reasonable arrangements and connections of construction work, in order to effectively reduce project duration, noise pollution and decoration material rubbish. For instance, reasonably arrange punching and slotting noise. Lengthen construction duration. In residential areas, construction work should adopt low-noise construction equipment and set up absorbent lined barriers. Reasonably use construction and decoration materials, so as to maximize use ratio of materials, and reduce wasted materials. For example, according to specific features of houses, selecting proper positions and methods for file fixing, as well as combination and permutation of wooden floors.
Scientific and reasonable construction arrangements can effectively enhance work efficiency, and ensure full implementation of environmental protection design concepts. In a word, construction and supervision of interior decoration are organizational and systematic. It requires project management personnel to stick to “active, serious and responsible” work concepts, conduct comprehensive management work before, during and after construction work, and achieve low-carbon development of decoration and construction. In addition, they should also adopt scientific construction management methods, implement comprehensive management over interior decoration projects, enhance the quality and level of interior decoration, design and construction projects, and ensure sustainable development of the industry.

Conclusion

Through constant improvement in design concept and detailed construction process, minimalist design style should be combined with green and environmental design concept, so that this design concept can better meet the requirement of social development. Scientifically and reasonably reducing design and construction duration, reducing the pollution of traditional interior decoration design and construction on dwelling environment, and the use of natural resources such as wood, as well as making due contributions to the constant development of low-carbon economic mode and lifestyles in the whole society are the main targets for designers in the future.

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