Application of Computer-based Simulation Technology in Green Building Design

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Abstract. In a sense, social and economic progress and renewal have also led to the upgrading of computer skills. On the basis of the development of technology in our country, we have successively put forward the goal of sustainable progress of resource conservation and environmental friendliness[1]. At present, all walks of life are carrying out strategic reforms. The concept of green building has also been proposed by scholars. In recent years, people in the construction industry have been conducting research on computer simulation technology for green buildings. According to theoretical research, it is necessary to select computer simulation software from factors such as quality, strengths and weaknesses, and data entry in the design process of green buildings. It can be said that computer simulation skills play a very important role in the related fields of green building design.

Keywords: Simulation, Green Building, Design

1. Introduction

Any kind of outdated theory and concept cannot be passed on forever. The times are constantly being updated, and various computer skills are emerging in endlessly. In order to better meet the development of our country's environmentally friendly strategy, people put forward the concept of a new type of construction industry for green buildings. Of course, the original intention of the designer is to save resources and protect the environment in the construction industry. However, fortunately, the concept of green buildings has also received a lot of people's concerns. Many people in the community say that this design idea is deeply rooted in the hearts of the people. No matter it is now or in the future, I believe that the characteristics of this environment-oriented architecture will develop better and better.

In contrast, the development time of computer simulation skills is relatively advanced. In today's design background of such a construction industry, people have fully integrated computer simulation and green building theory[2]. By displaying the relevant data of the green building design and some complex calculations by computer simulation, this will make it easier for the green building construction personnel to check the relevant building conditions of the building. According to the research of foreign scholars, the application of computer simulation technology can maximize the efficiency of green building design work. In fact, judging from the progress of my country's green building design field, this technology is a rare opportunity for the improvement of the skills of my...
2. The current development status of my country's green buildings under the architectural theory

2.1. The preliminary realization of green buildings
Many people believe that the emergence of green buildings has achieved the standards of new design concepts for sustainable development strategic goals. In fact, looking at it from a different perspective, we can think of an environment-friendly development strategy that has led the concept of green building to the domestic construction industry. Therefore, we can think that the emergence of green buildings is inevitable. Of course, its appearance will also have a great positive impact on our lives (see Fig 1).

![Figure 1. Three-dimensional model of green building based on computer simulation](image)

2.2. Current status of green building design
Indeed, compared with the rise of foreign green buildings, my country's construction industry started relatively late. Compared with other countries, my country's green building design technology still has many practical problems. Indeed, this will affect the inconvenience of green building design in our country. However, with the rapid development of my country's construction industry, the design of green buildings will be more passionate.

2.3. The far-reaching significance of green buildings
The application of green building design concepts is an important development opportunity to promote sustainable economic and social development[3]. The proposal of this architectural concept is a friendly symbol of our country's natural environment. Whether it is now or in the future, people's attention to the design of green buildings will not be easily changed.

3. The design of green buildings based on computer simulation technology support

3.1. The generation of the wind environment law defined by meteorology
In the process of the application of the wind environment law, people believe more in the macro analysis brought about by the meteorological parameters. People have gradually discovered that outdoor weather changes have a great impact on the construction conditions of buildings. For the indoor wind environment, it is mainly a simulation study of indoor ventilation problems.
Table 1. The related process of computer simulation technology in architectural design

| Simulation include field                      | Main content                      |
|----------------------------------------------|-----------------------------------|
| 3D modeling                                  | Pre-model of the building         |
| Two-dimensional drawing correction           | Related two-dimensional diagram    |
| Various motion simulation                    | Calculation of damage to the building |

3.2. The light environment method based on the inside and outside of the building

As the name suggests, the light environment law pays more attention to the sunlight and softness of the light that the building can get. In some specific industrial areas, designers will also consider the appearance of light radiation in buildings. However, compared to the wind environment method, the computer simulation of the light environment is more complicated, which also reflects from the side that people prefer light to soft wind (see Table 1).

3.3. The generation of acoustic environmental law to prevent noise pollution

In fact, the main research target of the Acoustic Environment Law is the situation of noise pollution around the building. It is a simulation method that requires on-site inspection and dynamic analysis. People's unacceptable degree of noise pollution is much higher than the above two problems\[4\]. From the role played by the computer in the actual process of green building design, we can find that the evaluation and design of acoustic environment method will become an important and difficult content of green building engineering efficiency.

4. Analysis of the application of computer-based simulation technology in green building design

4.1. Specific application in the process of green building design

What simulation technology needs is the reference of physical parameters and some related conditions. Therefore, the construction of models is naturally an important content that cannot be missing in architectural design. Of course, in this process, what is required is that technicians can master several different two-dimensional design software or three-dimensional design software. Some computer simulation software applications are also essential. After importing the building model into the simulation software, the computer can obtain the building conditions and suitable air conditions of the relevant buildings, and even the cost required after the building is completed. The designer can make later modifications or constructions based on this information.

4.2. The type of computer software to be used

First of all, the academic content of design in the construction industry must have a lot to do with civil engineering. Then we can design green buildings in the form of professional civil engineering drawings. For example, the use of UG in computer 3D software, the use of CAD and the use of SolidWorks. In addition, regarding the computer simulation software, the author thinks that the simulation processing after simulation can be realized by using UG and Matlab.

4.3. The development prospects of computer simulation technology in the field of green building design

Through the above analysis, we may find that in the process of designing green buildings, designers should take into account the surrounding environmental conditions and geographic characteristics of the building. However, if we only look at it from the application of computer simulation technology, I am afraid that only the industry with the professional needs of green buildings can only operate at locations. Therefore, in the case of changes in the building environment, the calculation of the energy consumption of the building will also show complex characteristics\[5\]. However, despite this, the prospects for the development of computer simulation in the field of green buildings are still relatively broad.

3
5. Humanized optimization of computer-based simulation technology in green building design

5.1. Re-optimization of environmental issues
In fact, the author believes that it is not necessary to adopt specific simulation measures for every building environment. If some buildings are just to facilitate the storage of goods, the simulation of noise pollution around such buildings is wasteful. Therefore, this can be regarded as a cost-saving way.

5.2. Try to use two-dimensional views for data representation of buildings
The design of 3D models requires a lot of cost, which is not necessary for some simple green buildings. If we use a two-dimensional view to express the data of many simple buildings, then this can also save the construction cost of the building.

5.3. Optimization of the internal building area of green buildings
We know that the difference between building area and usable area is great\(^6\). If we can reduce the area of a building as much as possible, it will expand the usable area even more. In this way, the optimized conditions for saving building materials are also reached.

6. Conclusion
The rapid development of the digitization process has brought the advanced nature of computer technology into full play. In the context of such a society, the author believes that the concept of green buildings should be vigorously promoted and supported by people. In addition, in-depth research on computer simulation technology is also very necessary. At least they will bring huge benefits to society.

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