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Green Building Design Based on Computer Aided Analysis

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Abstract: Green building is getting the attention of the construction industry and all walks of life. However, green building is still in its infancy, its theory is gradually mature, but the backward technology causes many difficulties in the practice of green building. The purpose of this paper is to analyze green building design by computer-aided simulation. Firstly, the application of computer simulation analysis in building is studied, and the task of computer simulation analysis of green building is defined. Then from two aspects of light environment and wind environment, this paper studies the computer simulation analysis method of green building, and summarizes the computer simulation method of BIM performance analysis of green building. Finally, taking green building engineering as an experiment, the simulation method summarized in this paper is applied to analyze the design of green building engineering. The experimental results show that in the indoor environment analysis, given the pressure boundary conditions for the four windows of the building, the pressure of the south window is + 2.5pa, the pressure of the west window is + 1.5pa, the pressure of the east window is - 1.5pa, the pressure of the North window is - 2.5pa. The ventilation situation of the three rooms in North, South and East directions changed greatly before and after optimization, among which the rooms in North and south directions changed greatly, and the indoor wind speed increased by 0.1m/s.

1. Introduction

At present, green building is being paid attention to and developed in full swing in the industry. However, it can be seen that there are still some difficult problems in the construction information management of the whole life cycle of green building, such as backward technology and poor coordination. The whole life cycle theory is the support system of green building, and the problems

of high energy consumption and high pollution in each stage cannot be crossed. In terms of the application of computer technology, including virtual display technology, GIS technology and BIM based architectural design information integration, computer-supported architectural performance (sound, light, heat and other architectural physical environment) analysis, digital generation of architectural forms and so on, these are gradually becoming popular research and application of computer-aided architectural design. Architects begin to pay attention to the whole life cycle of design, construction, operation and demolition from the design stage, which undoubtedly brings more challenges to architects. The process of sustainable development puts forward higher requirements for green building. Professionals need more effective and scientific technical means to complete the task of green building. While meeting the needs of construction projects, the full information of construction projects provided by BIM ensures the more effective and scientific development of the construction industry. The whole life cycle theory adds more and more design points and corresponding green technologies to the practice process of green building, and these expanding work contents demand more and more auxiliary means. Information technology is the most appropriate way to solve the problem of green building.

In order to design a green office building with natural lighting, an experimental study on the optimal open structure of the northwest oriented office building was carried out. Nabeeha Amatullah Azmi established a research model of adjustable louver slot on the west side. The lux illuminance meter is used to measure the indoor illuminance of different windows, which varies according to the spacing, position, material and quantity of windows. The calculation results of solar factor are consistent with those of other literatures. According to the design requirements, the calculation results of several structures are established. Finally, when designing the shading device of green office building, the research results are adjusted according to the building environment and surrounding environment [1]. Starting from the concept of special space of ecological building, Yue Miao expounds the social and ecological benefits of special space greening project. Combined with the characteristics of architectural form, this paper introduces the classification method of special space of ecological architecture with habitat as the main body. On this basis, the green design methods and plant selection principles are discussed, which can provide some reference for landscape architects to carry out green design of ecological buildings [2]. Neural network has an important application in microwave CAD. Burrascano P after briefly introducing the neural networks currently used in this area, explained some of their most important applications and typical problems in practical implementation. This paper summarizes the current research trends, introduces the application of self-organizing map, and improves the accuracy and applicability of the model. Finally, the application of neural network in microwave CAD is prospected [3]. Zhou Tuan Feng analyzed the biomechanical properties of zirconia post and core by 3D finite element method. Three dimensional finite element models of monolithic CAD / CAM zirconia post core restoration (the first group), recast zirconia post core restoration (the second group) and cast gold alloy post core restoration (the third group) were established by geometric method. The results of three-dimensional finite element analysis show that the integrated zirconia post core repair is more beneficial to disperse the bite force than the prefabricated zirconia post core and the cast gold alloy post core. The monolithic zirconia post and core can protect the teeth and keep the restoration intact [4].

This paper analyzes and combs the BIM Technology principle, functional characteristics, green building concept and evaluation standard, and on this basis, taking the whole life cycle of green building as the main line, discusses the feasibility and integration process of introducing BIM Technology Application. The optimization design method of green building based on technology

analysis is integrated. In practice, combined with the practice in green building projects, the application methods of orientation selection, lighting analysis, wind environment analysis and indoor environment analysis are studied. It is proved that BIM Technology can be used to realize the application of computer-aided green building design and performance analysis.

2. Proposed Method

2.1. Green Building

Ecological building, green building and sustainable building are the development trend of construction industry in modern society [5]. In terms of definition, ecological building is a building with ecological balance as the breakthrough, the relationship between human and nature, development and protection, and the relationship between building and environment as the core, and the harmonious coexistence of heaven, earth and man; green building refers to the building with the minimum consumption of earth resources and energy and the minimum generation of waste in the life cycle of building, and sustainable building refers to the building with natural resources Reduction and recycling: the starting point of the building is the regeneration of the environment, the efficient and optimized combination of energy, the health and safety of human settlements and the balanced operation of the ecosystem, which is the recycling of resources and energy [6-7].

Green building refers to the building with the least negative impact on the environment and the best economic and social benefits in the whole life cycle of planning, design, construction, use and maintenance [8]. It is an integral part of sustainable development. Sustainable building should be based on improving the comprehensive environmental benefits and provide people with an economic, comfortable and cultural place [9-10].

The core contents of green building are energy saving, land saving, water saving, material saving and ecological environment protection. In this sense, the basic connotations of green building, ecological building and sustainable building are interrelated, consistent and sustainable building concept with Chinese characteristics [11-12]. Therefore, this paper's building sustainability standard will be considered by reference to the green building standard.

At present, in the planning and design stage, the architect should choose a design scheme that can make full use of energy and materials [13]. We should integrate ecological sustainability, energy conservation, information technology and green technology into all aspects of people's lives to make people's lives better and more comfortable [14]. In short, high-quality environmental architecture is not only a place for people to enjoy beautiful environment, but also a part of harmonious environment system [15]. In addition, “sustainable design” also attaches great importance to economic and social benefits. Green building has many advantages. Adopting sustainable design technology and means can not only reduce energy consumption and environmental impact, but also reduce operating costs, create a more comfortable living environment, improve the health level of residents, and improve the real estate value and rental return rate [16-17]. Finally, the practice of sustainable design can greatly reduce the energy consumption cost of building space, such as electricity consumption, make the layout more reasonable and healthy, keep the overall ecological process of the earth more harmonious, and more suitable for living, work and leisure [18].

2.2. Application of Technical Analysis Methods in Green Building Design

Because of the complexity of green building itself and its environmental system, only through

experience or simple calculation, can we accurately judge the merits and demerits of the design scheme [19]. Therefore, using simulation analysis to guide design is one of the key points of green building design. The important factor that distinguishes green building from traditional building is the quantitative comparison of existing building creation content before building [20]. Through the necessary analysis of the wind, light, heat and noise environment of buildings (is the technical analysis referred to in this paper), the paper puts forward the effect comparison and selection after adopting the architectural design means, so as to promote the generation of more reasonable and scientific architectural scheme [21].

The technical analysis involved in this paper mainly refers to the computer simulation of indoor and outdoor physical environment (light, heat, wind, energy consumption, etc.). Simulation definition: refers to the basic process of using model to reproduce the actual system, and through the experiment of system model to study the existing or designed system [22-23]. The models mentioned here include physical and mathematical, static and dynamic, continuous and discrete models. Computer is an important tool for simulation [24]. Through the application of simulation technology in practical engineering, we believe that simulation refers to the establishment of mathematical models of some objective things through detailed research, and through various reliable mathematical methods to study the reaction of things under various possible conditions, so as to understand the essence of things [25].

The importance of information feedback in architectural design is emphasized. Various prediction, simulation and analysis methods analyze and evaluate the feasibility of various schemes, and design and improve the schemes in combination with evaluation standards. On the other hand, architects coordinate with equipment and structural engineers horizontally to form information feedback, which is carried out through real-time prediction, simulation analysis optimization and case improvement.

2.3. Green Building Performance Analysis Platform

This paper mainly focuses on passive energy-saving analysis. Among the performance analysis software which mainly focuses on building monomer itself, various software are based on different algorithms, some are interface optimization for other software such as design builder. What's more, cloud analysis for the model, such as green building studio. Because the green building design covers the analysis requirements of the surrounding climate, environmental factors, ventilation, lighting, thermal environment and noise of the building, all the building performance analysis software may not cover all the above functions, or the algorithm of the software may not be accurate. Therefore, the selection of software and collaborative application are inevitable problems. Through summary, the software classification based on the performance analysis of the building is shown in Table 1.

(1) Optical environment simulation software

At present, the international light environment simulation software mainly includes window, radiance, sky vision, Lightscape, rayfront, daylight visualizer, daysim and Ecotect. There are also many sunshine analysis software in China, such as CIIC sunshine, Tianzheng sunshine, Hongye sunshine, etc., but these software only carry out lighting right analysis, without blessing lighting simulation, lighting simulation, real rendering and other functions. The light environment simulation of green building needs to simulate the projects of sunlight, radiation, lighting, daylighting, etc. The light environment simulation of green building still depends on imported software.

Table 1. The classification of BIM performance analysis software

Software classification		Major function
Sunshine and daylighting analysis	Ansys CFX Fluent Airpak Phoenics	1. Building wind environment analysis 2. Nature and machinery of civil buildings Mechanical ventilation effect analysis 3. Analysis of ventilation effect of soil industry 4. Diffusion analysis of building pollutants
Energy consumption analysis and construction Life cycle analysis software	eQUEST DeST Energyplus Design Builder IES<VE>	1. Analysis of annual energy consumption of buildings 2. Full life cycle analysis 3.Effect evaluation of energy saving rate of transformation
Sunshine and daylighting analysis software	Autodesk Ecotect Radiance DTALux	1. Sunshine analysis 2. Building lighting analysis 3. Analysis of indoor glare and color rendering index 4. Building visibility analysis
Acoustic environment analysis	CadnaA	1.Analysis of building environment noise
Evacuation simulation	Legion Pathfinder Steps	1.Traffic safety evaluation, traffic operation analysis, traffic flow model, traffic facility design, new traffic technology evaluation

Ecotect software is often used to simulate outdoor light environment. Ecotect uses a variety of meteorological data, including CSWD, ctvw, IWEC and SWERA. IWEC is a meteorological database provided by the national meteorological data center of the United States. China's data collection is not complete, and some data are calculated. Ctyw is also provided by the national meteorological data center of the United States. SWERA comes from the United Nations Environment and development agency and is the space satellite measurement data. Although these meteorological data come from different sources, they are basically the same and can be used. CSWD meteorological data is the most widely used.

(2) Wind environment simulation software

Computational fluid dynamics (CFD) is a systematic analysis of physical phenomena, including fluid flow and heat conduction, by means of computer numerical calculation and image display. At present, the better CFD software includes fluent, Phoenix, CFX, star CD and the CFD software Airpak, which is specially used in the field of architectural design. Fluent and airport are software developed by American companies, while Phoenix, CFX and star CD are products of British companies.

1) Outdoor wind environment

The size of wind environment simulation calculation area directly affects the accuracy of simulation results. If a small simulation area is built, the flow field will be distorted. If the calculation area is too large, more grids need to be divided to reduce the calculation speed. The height of the calculation area is 3 times the height of the building, the inflow direction is 3 times the

width of the building, the outflow direction is 10 times the width of the building, and the width of the calculation area is 6 times the width of the building.

2) Indoor wind environment

Hot pressure ventilation is mainly a large space part. When modeling, you can build the whole building model or local model, which depends on the location of the air passage. For example, the air inlet of the atrium space passes through other parts of the building, which need to be simulated. If the air inlet and outlet of the atrium space are directly connected with the atmosphere, only the atrium part model can be established. In terms of grid division, it is denser than outdoor wind environment. Under the condition of higher computer hardware configuration, the grid of ordinary buildings is suitable to be less than 0.5m, and the wind environment simulation under this precision is more real.

The boundary conditions of the wind simulation are the same as those of the outdoor wind environment. There are many kinds of boundary conditions for hot pressure ventilation. The air inlet and air outlet are set as pressure boundary conditions, and can also be set as atmospheric pressure or atmospheric pressure and atmospheric pressure difference 0Pa. The wall boundary setting is related to the heating and air conditioning area and sunshine of the building. According to the actual situation, it is estimated that the heat dissipation or heat absorption of the atrium wall is generally between - 10W / m2 and + 10W / m2. The heat source shall be modeled for the heating body. If the volume of the heat source is small, the power of the heat source can be connected to the heating capacity of the floor or the ground.

2.4. Application strategy of BIM Performance Analysis

Ecological analysis is the basic work content in the process of green building design. The implementation of BIM Technology makes the content of ecological analysis of sustainable building more abundant, and the technical means of analysis have also been improved. And the intervention time of analysis has become more flexible. Therefore, when building design units formulate BIM implementation specifications for sustainable buildings, they should clearly define the content, technical means, analysis process and analysis intervention time of building performance analysis according to their own business characteristics and needs.

(1) Analysis content

Building performance analysis generally includes the following contents:

The first is ecological analysis. Ecological analysis is the necessary means and important foundation for sustainable design, generally including energy consumption analysis, water resource utilization analysis and carbon emission analysis. Secondly, comfort analysis. Comfort analysis generally includes sunshine analysis, ventilation analysis, acoustic environment analysis, thermal environment analysis and vibration analysis of high-rise buildings. , followed by security analysis. Safety analysis generally includes building structure analysis, disaster prevention analysis (earthquake field fire protection analysis), smoke simulation analysis, human flow movement and evacuation analysis, etc.

(2) Technical means

Technical means mainly refer to the software tools and analysis process used for analysis. If an analysis software tool is selected to run separately, the main problem to be considered is the data interoperability between the analysis software and BIM modeling software, that is, whether the model data created by BIM modeling software can be imported directly or how to transfer to the analysis software for analysis and simulation.

(3) Analysis process

The analysis process can be determined according to the specific analysis content and the requirements of the analysis software. At different stages of the project, different participants of the project extract the required data from the corresponding BIM model according to the needs of completing their own tasks. For different performance analysis of construction projects, different building information is needed as support. According to the requirements of the analysis direction, the information in BIM model is extracted, simplified and sorted out to generate a specific analysis model, from which different formats of data are exported, and then imported into professional software tools for professional analysis. The analysis results will be fed back to the architect as the basis for modifying and adjusting the design.

(4) Intervention time

In the process of architectural design, the time of analysis should follow two basic principles: early and whole.

First of all, introduce analysis into the design as early as possible. According to the analysis of relevant data, 80% of the factors affecting the building performance are determined by the early design decision of the project. The orientation of the building, sunshine, wind environment, shelter of surrounding buildings, etc., all have a significant impact on the overall performance of the building in the future. Therefore, in the conceptual design stage of the project, sustainable analysis should be introduced to evaluate the various possibilities of the scheme from the perspective of sustainability, so as to provide a basis for important decisions.

Secondly, in each stage of architectural design, the performance of the building is analyzed at any time according to the needs. In principle, the intervention time of different types of analysis should be determined according to the purpose and specific content of the analysis.

For example, in the scheme design stage, the energy consumption level of the building is qualitatively evaluated and quantitatively calculated. Evaluate whether the architectural design scheme meets the relevant mandatory provisions in the energy-saving design standards; and use the building energy consumption analysis simulation software to dynamically calculate the building energy consumption, so as to compare the advantages and disadvantages of different schemes in terms of energy consumption. In the preliminary design and construction drawing design stage, with the gradual determination of the details of the building and building system, the analysis software can be used to conduct more accurate analysis and Simulation of the overall energy consumption and carbon emission level of the building, and the design can be adjusted and modified according to the analysis results to achieve the optimization of the design.

(5) Scheme optimization

In the early stage of architectural design (architectural planning, conceptual design, scheme design), we should make full use of the advantages of BIM Technology to optimize and compare the design schemes. Its content mainly includes the optimization of design scheme and quality management. In the process of optimization, we should give full play to the leading role of professionals and the innovative ability of architects. The designer can design based on the parametric BIM model, and the 2D view generated is also completely related to the 3D model. Through the preliminary analysis of building performance and building environment, the comprehensive evaluation of technology, economy and society of the overall design scheme is carried out. Through the comparison and selection of multiple schemes, the multi scheme design model is quickly established, and the design scheme is obtained by adjusting and optimizing the design scheme.

The scheme optimization of sustainable building usually starts from the early stage of project

design. In the initial stage, we should pay attention to the impact of buildings on the surrounding land environment and the relationship with other buildings around, such as the pressure of super high-rise buildings on traffic and municipal administration, the shelter of surrounding sunlight, the change of surrounding air, etc. in the process of modeling, rough quality model can be used to express and improve work efficiency. The analysis software can be used to simulate the light, sunshine radiation, sunshade, wind environment and thermal environment of different models. According to the analysis results, the design scheme should be adjusted reasonably in time (such as choosing appropriate orientation, building form, enclosure structure, window wall area ratio, etc.), so as to minimize building energy consumption, maximize the potential of natural lighting, and get different design schemes according to different requirements, and finally optimize through comparison.

In the scheme design stage, the quality model generated in the early stage of design is imported into BIM modeling software for appropriate adjustment and modification, and then the scheme design is completed. Compared with the conceptual design, the conceptual design model should contain more information such as building materials, building component characteristics, etc., and combine with analysis tools to carry out more accurate simulation analysis of energy consumption, sunshine, ventilation, lighting, thermal environment, etc., acoustic environment and safety design model. If the architect changes the spatial form, structural form and materials of the building, the results of the architectural analysis will change accordingly. From the perspective of architecture and environment, compare the advantages and disadvantages of different design schemes, and find out the architectural design strategy of energy saving, low carbon and little impact on the environment, which is both quick and convenient.

3. Experiments

3.1. Project Overview

The project is located at the intersection of province a and B. This building is an office building, 20 floors above the ground and 3 floors underground. The total construction area of the project is 100651.56 square meters, the above ground construction area is 72870.47 square meters, and the underground construction area is 27781.09 square meters, as shown in Figure 1.

Figure 1. Effect drawing of green building project

The horizontal and vertical distance of green construction site is large. In order to meet the

requirements of saving land for green buildings, the space and depth dimension design of buildings are very large. The problem of poor lighting and ventilation brought by this design is put in front of the designers. This requires the use of computer simulation to optimize the design of the building, so as to provide users with a better office environment.

3.2. Meteorological Parameters

Province a is located in the mid latitude area, which is affected by solar radiation, atmospheric circulation and geographical environment, and belongs to the warm temperate semi humid monsoon climate. The monsoon is obvious, with four distinct seasons. It is dry in spring, hot and rainy in summer, cool and dry in autumn, and cold and snowless in winter. Due to the unique topography, the extreme climate of a province is obviously stronger than that of the surrounding areas. The annual average temperature is 14.81 °C, the maximum extreme temperature is 42.5 °C, the minimum extreme temperature is - 19.7 °C, the maximum monthly average temperature is 27.5 °C (July), and the minimum monthly average temperature is - 0.3 °C (January). The annual average precipitation is 693.4mm. The annual sunshine hours are more than 2000 hours. Province a is one of the areas with obvious monsoon climate, controlled by polar continental air mass, and often attacked by cold air in the north. The weather is cold and sunny, with few rain and snow, mostly northerly. In summer, affected by the tropical and subtropical ocean air masses, the Ocean warm and humid air flow is the main part. The weather is hot, the rainfall is abundant, the illumination is abundant, there is the south wind. The spring and autumn monsoon are not the same. In a year, in different seasons, the city is controlled by different atmospheric circulation, forming a climate change with four distinct seasons: warm in spring, hot in summer, cool in autumn and cold in winter. A province has 136-157 days in winter, generally from the first ten days of November to the last ten days of March; 105-120 days in summer, generally from the last ten days of May to the first ten days of September; spring and autumn are the shortest, both less than two months.

4. Discussion

4.1. Orientation Selection

Ecotect can calculate the best direction according to the importance of each meteorological parameter. According to the Ecotect software, it is more convenient to calculate the best building orientation. The best building orientation of a province can be calculated by using the Ecotect software, which is 150 by east to 150 by west, as shown in Figure 2. At the same time, the software gives the “best” range and “worst” range, which provides the basis for the orientation selection of architectural design.

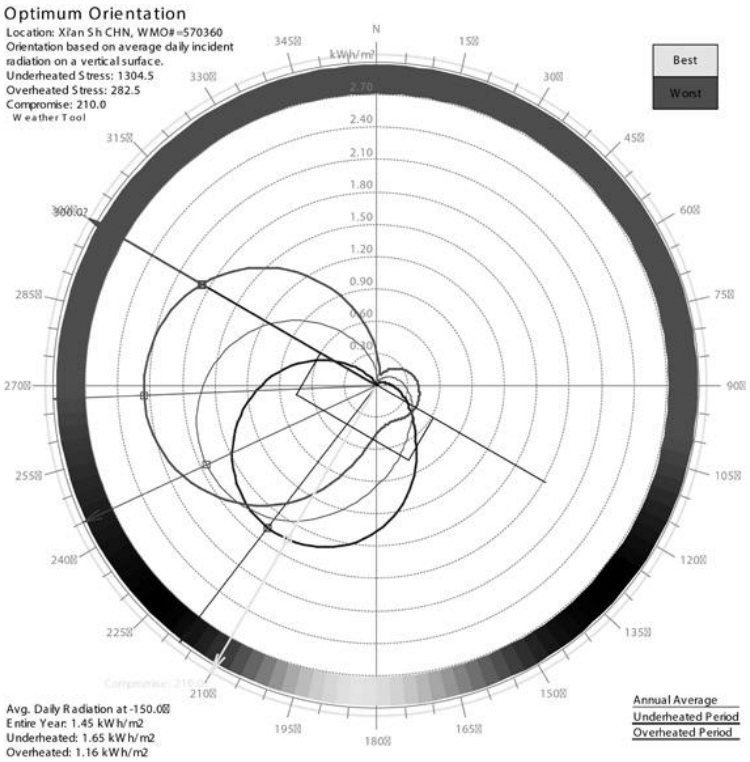

Figure 2. The best direction of a province

Due to the site condition limit of the project, the building orientation can only be 36 degrees south by West 36 ° SBW is located at the junction of "best" and "worst", which is inclined to the "best" area. Although the direction is not as good as 30 ° SBW, it is also in a better direction range.

4.2. Lighting Analysis

The 50 m horizontal dimension of green building project limits the natural lighting in the building. In order to make better use of natural light in the middle of the building, the upper part of the building is divided into three towers, each of which is close to a rectangle (34mx30m). This design increases the lighting area of the facade and reduces the distance from the center of the building to the external window. To verify the lighting effect of this design, a simple computer simulation analysis method can be used.

The whole rectangle and three rectangles are selected to simulate the indoor lighting coefficient. The direction of the partition wall of the tower is mostly perpendicular to the external wall, which hardly blocks the light of the window. The internal partition wall is omitted in the modeling, and the external window is consistent with the actual design. The distribution diagram of indoor lighting coefficient of overall rectangular layout is shown in Figure 3. It can be seen from the diagram that the lighting coefficient at the place 10m away from the window in the building is less than 2, which can not provide enough natural lighting for daily office. Figure 5.4 is the indoor lighting coefficient distribution diagram of the three rectangular layout building. The lighting coefficient of all areas in the building is greater than 3, which can meet the needs of daily office. Obviously, the three rectangular layout is more conducive to indoor lighting than the overall rectangular layout. According to the above analysis, the conclusion of optimization design is drawn that the three rectangle tower is selected to increase the utilization rate of natural lighting.

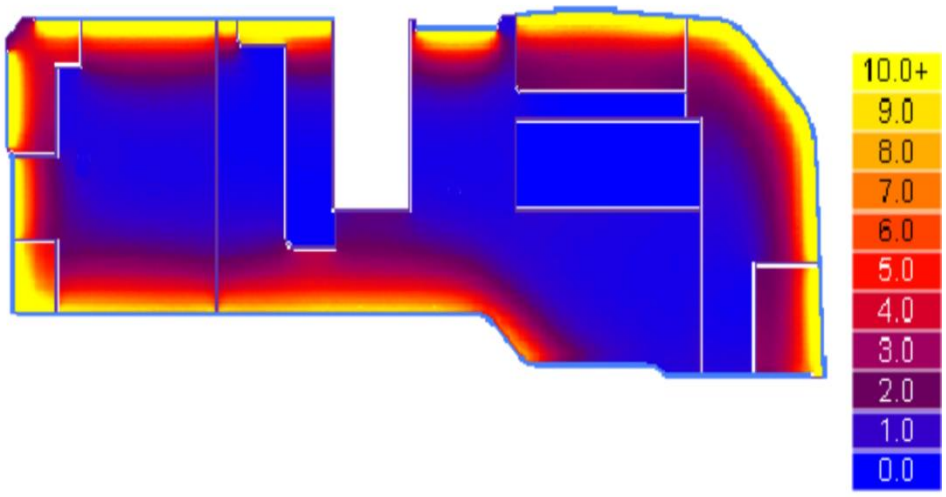

Figure 3. Distribution of indoor lighting coefficient in rectangular layout

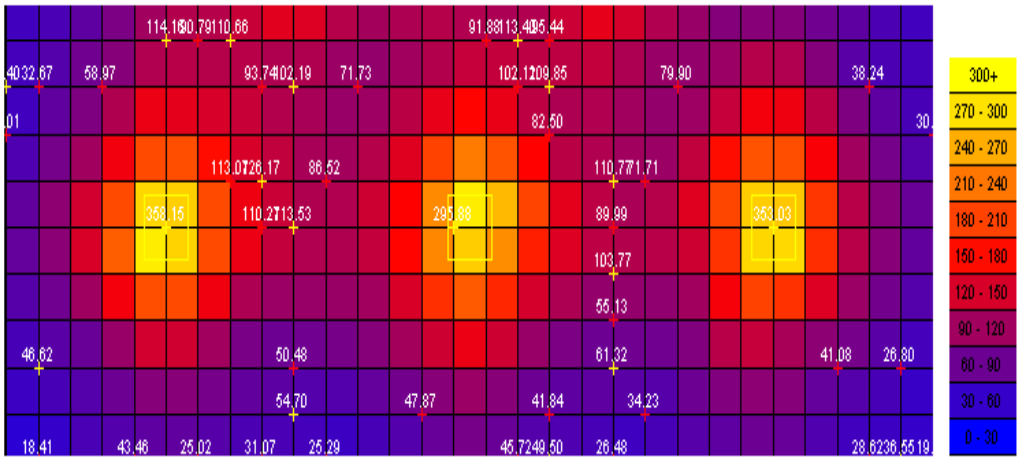

Figure 4. Distribution of indoor lighting coefficient in three rectangular layout

4.3. Wind Environment Analysis

In addition to wind protection in winter, the building layout should also consider strengthening natural ventilation in summer. The wind pressure distribution before and after the building in summer is shown in Figure 5. Near the left is the wind pressure distribution on the windward and leeward sides of the three rectangles tower. It can be seen from the figure that the wind pressure on the windward side of the building is about + 4pa, the wind pressure on the leeward side of the building is about - 3PA, and the wind pressure difference is 6pa. The wind pressure distribution on the windward side and leeward side of the “pinyin” tower is about + 5pa on the windward side of the building, about - 4pa on the leeward side of the building, and the wind pressure difference is 8PA. Compared with the straight three rectangle layout, the “pin” shape layout is 2 PA higher than the hall wind power, which is more conducive to the natural ventilation in summer.

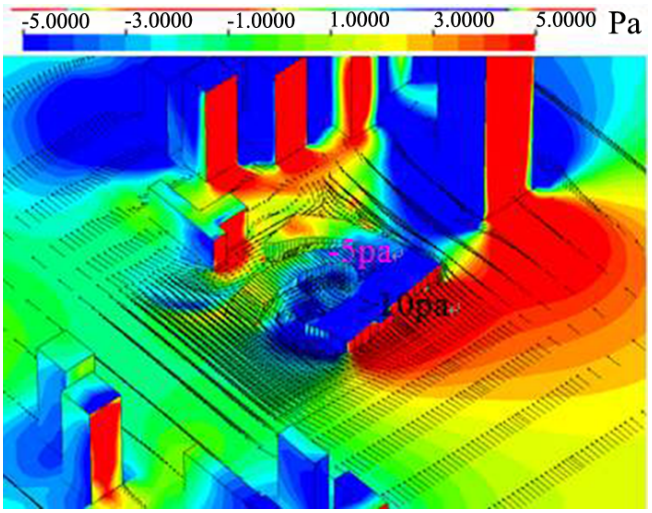

Figure 5. Wind pressure distribution before and after buildings in summer

From the results of wind dynamic analysis, the "product" shape layout is better than the three rectangles layout. This also further determines the tower design of the building, using the "product" shape layout of the three rectangular tower design.

4.4. Indoor Environment Analysis

According to the requirements and the simulation results of the outdoor wind pressure of the building, the pressure boundary conditions are given for the four windows facing the building. The pressure of the south window is + 2.5pa, the pressure of the west window is + 1.5pa, the pressure of the east window is - 1.5pa, and the pressure of the North window is - 2.5pa. The calculation results are shown in Figure 6. The ventilation of the three rooms in the west, northeast and Southeast directions has almost no change before and after optimization. The ventilation situation of the three rooms in North, South and East directions changed greatly before and after optimization, among which the rooms in North and south directions changed greatly, and the indoor wind speed increased by 0.1m/s. In this simulation, the minimum wind pressure difference that meets the requirements of green building evaluation is calculated as 5pa. In the above, the actual pressure difference between the front and the back of the building simulated by the building is as much as 8PA, and the actual indoor average wind speed is greater than the simulation value.

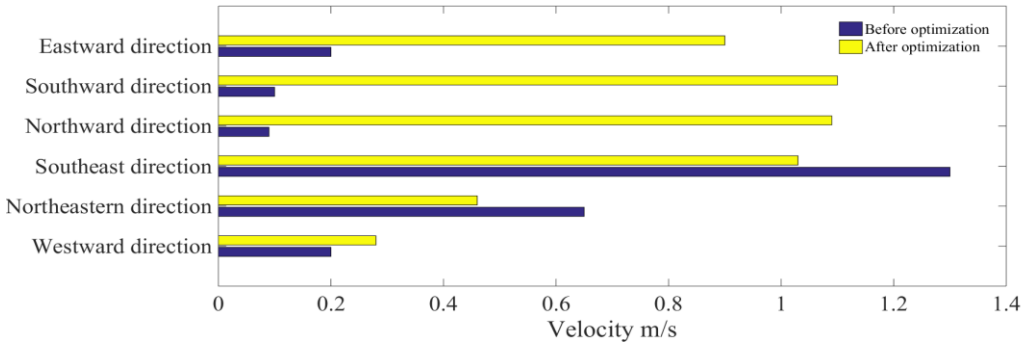

Figure 6. Comparison of indoor plane wind speed distribution before and after opening window in corridor

5. Conclusion

The concept of green design is dominated by high and new technology, through scientific overall design, to create an effective low energy consumption, pollution-free, comfortable and green ecological living environment, scientific use of ecological resources, display the high unity of building and human, ecological environment and science, which has become the mainstream trend of construction industry progress under the background of environmental globalization. Based on the current green building standards, this paper summarizes the computer simulation methods of light environment and wind environment, analyzes and compares the simulation results, and summarizes the scheme optimization methods applicable to different functions and environmental conditions combined with meteorological conditions and relevant standards.

This paper studies the green computer-aided analysis method from four aspects: orientation selection, light environment, wind environment and indoor environment, covering the main simulation content of green building design, which can meet the requirements of current national green design and evaluation standards. In the simulation of light, wind and indoor environment, according to the simulation process, the meteorological data, model extraction, model establishment, calculation setting and evaluation indexes are analyzed and summarized, and the problems that need to be paid attention to in each simulation step are explained, which has a guiding role in the actual engineering computer simulation.

In the summary of the computer-aided analysis method, this paper analyzes the meteorological conditions and relevant standards, reflecting the regional and normative of the method. Through the method of computer-aided analysis, four aspects of building orientation, building daylighting, building wind environment and building interior environment are simulated and analyzed respectively, which also provides reference for solving complex problems and can be widely used in green building design and analysis. In the process of green building scheme design, the simulation method is applied to directly design the required building scheme. This method can avoid the time and economic loss caused by many scheme adjustments, and verify the standardization, efficiency and applicability of this method.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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