

Application of BIM Technology in Assembly Architectural Design

Zhou Wei^{1*} and Yating Liu²

¹Liuzhou city vocational college, Information engineering department, China,545036

²Liuzhou city vocational college, Architecture&art design department, China,545036

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Abstract: nowadays, with the rapid growth of China's economy, China's construction industry is also booming, and the number of assembly projects continues to increase. Compared with traditional architecture, assembly building has the advantages of convenient construction and low cost, so it is welcomed and recognized by people. With the development of science and technology, BIM technology can provide reliable technical support for assembly architecture. Therefore, this paper analyzes the application strategy of BIM technology in assembly building in order to improve the construction level of assembly building.

With the rapid development of China's economy, more and more attention has been paid to environmental problems. The traditional construction industry has serious pollution and low resource efficiency, which has become a problem that must be solved in our country. The clean assembly building attracts the attention of the construction industry because of its high efficiency and low energy consumption. From design to assembly building production and installation, all reflect systematization, specialization and efficiency. In recent years, BIM technology continues to develop in the construction industry. BIM related technologies can effectively improve the design, production and construction efficiency of assembly buildings, and promote new and faster assembly building forms.

1. The advantages of Assembly Building

BIM is the main composition of the whole building. BIM technology connects the design, accessories production, construction, decoration and operation and maintenance of the whole building process to serve the whole life cycle of the building and ensure the smooth progress of architectural design, construction, operation, maintenance and demolition.

BIM technology is based on virtualization and digital technology to assemble the information of assembly accessories, which can provide the information of assembly situation in the whole process, and can further improve the construction level and efficiency of buildings in our country. Although it is different from the traditional architectural method, on the whole, the assembled architecture also needs to assemble the various components together, and then in the design process, let the relevant technical personnel cooperate closely, and then make reasonable use of BIM technology to modify the design scheme in a timely manner, in addition, through the revision function of BIM technology, the design steps that conflict with the actual situation in the design scheme can be screened. The construction efficiency of the assembled building is improved. Traditional construction sites often operate at high altitude, making it difficult to ensure construction quality and even many potential dangers. However, the assembly of prefabricated parts is mainly carried out at low altitude. Most of the assembly parts on the construction site are assembled by professionals through mechanized operation, replacing manual operation to improve the efficiency and quality of the building. Reduce safety risks and save construction costs. Noise at construction sites is significantly reduced, dust is removed and pollution is effectively controlled. Steel formwork and wood formwork can be reused to achieve the goal of saving resources. Traditional buildings are seriously affected by climatic conditions, and construction will be delayed when weather such as low temperature precipitation is encountered. Most assembly operations are done

indoors, with external wallboards, assembly beams and pillars supplied directly from the factory, and these assembly parts are transported to the assembly station without being affected by the external climate.

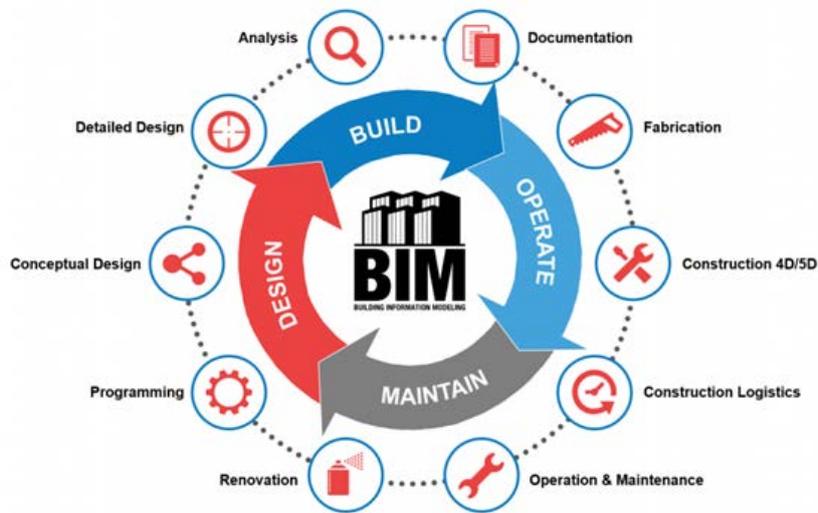


Figure 1. introduction of BIM Technology

2. Advantages of BIM Technology

In the construction project, BIM first receives different types of information and data, and then uses virtual digital information technology to simulate the actual information of the actual building. Bim technology and the information in the database use three-dimensional model as the representation. The outstanding features are high visualization, simulation, multinomial coordination, high optimization and so on. BIM technology has been applied to construction projects and has become a digital tool, using parameter models to summarize different types of information in the project. The whole project process can realize data sharing. Project-related construction personnel use this digital tool to understand building information in a timely manner and respond in real time to improve production efficiency.

3. The necessity of applying BIM Technology to Assembly Building

BIM technology is an information model of architecture based on computer technology and Internet technology. The design and management of BIM technology can be coordinated and simulated, and play a certain role in optimization in assembly engineering. Assembly architecture is different from traditional architecture: the design of the building began before it began, and different accessories were combined to build it. In the construction process, the process has been simplified, the quality has been guaranteed, and the construction speed has been accelerated. Assembled accessories are produced in batches. Through standardized production, the quality of parts can be guaranteed and the production process can be optimized. With the development of information age and the popularization of computer technology and network technology, BIM technology is used to design and manage assembly buildings, and buildings are constantly improved. In order to make better use of its functions, the value of BIM technology should be reused.

4. Application Strategy of BIM Technology in Assembly Architectural Design

In the design of assembly architecture, people can use different painting tools in software BIM to construct the information model of architecture. By entering the size, materials and other information of the assembly building components into the BIM software, and then building. The

information model of the building contains both time schedule and cost information, and the engineer adjusts the plan and cost diagram according to the information model of the building. In addition, engineers can also use the conflict check function in BIM software to test the size and location of each component in the assembly building to determine the matching degree of each component, thus improving the design consistency of the assembly building. At the same time, engineers can also simulate the building and organization process in BIM software, and adjust the actual structure according to the modeling results.



Figure 2. BIM Technical function Diagram

4.1 Application Strategy of BIM Technology in Assembly Building Component Production.

When building components, engineers can use BIM software to number the size and input, materials and location of each component to achieve the design of each component model. The component design model is 3D printed, so each component can reach the expected design level. In addition, BIM software can optimize the production process of assembly components. The production of components can select the information of each component size from the BIM software parameter library to optimize the design of each component.

4.2 Application strategy of BIM technology in assembly process.

BIM technology can be used to provide guidance on the spot when assembling each assembly building accessory. Each electronic chip can be connected to each component, and these electronic chips can be scanned by the card reader to find the information and number of each component matched by the electronic chip in BIM software, so that each component can be assembled in the corresponding order. In addition, engineers can use BIM technology to model on-site to reduce safety accidents to improve on-site management and to develop reasonable action plans in emergency situations. In addition, engineers can use BIM software to view the actual progress and cost of the assembly building and compare it with the expected progress and target cost in order to better adjust the construction plan and control the cost of the assembly building.

Conclusion

Therefore, due to the rapid development of the construction industry, BIM technology has also played an important role in architecture. The use of this technology in assembled buildings may

produce higher value. BIM technology not only improves the design quality, but also greatly reduces the pressure of designers. The use of digital technology and BIM technology in the production process can improve the level of assembled buildings to meet the environmental requirements of China.

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