Application of Computer BIM Technology in Matching Structure

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Abstract. Nowadays, with the progress and development of computer technology, many industries have been applied to computer technology, computer technology has gradually matured, in this environment, BIM technology has gradually begun to develop. BIM is a very important technology, widely used in the construction industry in our country, in the construction industry matching structure, we can often see the figure of BIM, BIM application can bring a lot of advantages to the construction industry. The application of BIM technology to assembly structure improves production efficiency and construction quality.

Keywords: Computer, BIM Technology, Configuration, Production Efficiency

1. Introduction

BIM can also be called building information model, this concept was first proposed in the United States, this technology can effectively integrate building information. This technology can integrate the building cycle information into a 3D model information database. The information quality in the database is relatively high, the information source is reliable, and it has five characteristics: visualization, coordination, simulation, optimization and mapability. With the development of science and technology in China, people's requirements for construction efficiency, quality, cost and so on are constantly improved. Because of the low construction cost, fast construction efficiency and high safety factor, prefabricated buildings are more in line with the needs of the construction and the times. BIM as a new technology in the construction industry, it can effectively improve the efficiency of assembly building design, realize the standardized design of assembly components, and reduce the design error of assembly building. How to make better use of BIM characteristics in assembly building design and construction is a difficult problem that we need to study for a long time.

2. Application of prefabricated concrete building components

What is a prefabricated structure? The prefabricated structure is mainly to pre-process the construction, process these workpieces and then transport them to the construction site, assemble these workpieces on the site, and pay attention to scientific methods when assembling them. Finally, a complete building is formed. Of the many structures in architecture, precast concrete structure is the most
widely used. The design of prefabricated concrete architecture pays attention to the design and application of the whole life cycle. BIM technology is an important means to solve the information integration and transmission of the whole industry chain of prefabricated concrete architecture. The BIM technology can contain various kinds of information, such as component number, installation location, auxiliary lifting points and burying parts needed for production, transportation and installation, detailed list of materials used, etc. This technology can calculate, statistics and analyze the relevant information. It can not only reduce errors, reduce costs, improve production efficiency and work efficiency. BIM technology is now widely used in various industries and fields in China. Through the survey of relevant data, we can get the following data, as shown in Figure 1:

![Pie chart showing market share of BIM capacity in China](image)

**Figure 1.** China market BIM capacity measurement 2020.

3. Application in prefabricated housing

3.1. Application in prefabricated residential design

With the development of economy and the acceleration of urbanization, the construction of our country is more and more pursuing high efficiency and intelligence, which can greatly improve working efficiency, and BIM technology can also effectively improve working efficiency. In prefabricated residential construction, we will also apply BIM technology to further save time and construction costs. In BIM technology, we can set up prefabricated family library. In residential design, the design and processing of prefabricated components is very important, so as to improve the design accuracy of prefabricated components [2].

3.2. Application in prefabricated residential construction

The following is a concrete example to explain the BIM technology. China Construction Bureau has a construction project in the core area of Beijing Business Center. In this building, BIM technology has been applied to the extreme, and in the design of each residence. We have all applied BIM technology. First, we use 3D model software to simulate 3D positioning and optimize the scheme. Secondly, we use the Rhino5.0 to model the curtain wall, and then use the Naviswork to simulate the curtain wall installation again. Through this method, we can effectively reduce the construction period. Engineering practice shows that reasonable application of BIM technology can produce significant benefits in prefabricated residential construction. The BIM model research focuses on the application of the design stage. For example, the RFID identification technology and the BIM model are combined in the construction stage.
3.3. Application in prefabricated residential regulation
The prefabricated building plays a very important role in the development of the construction industry in our country. BIM can greatly speed up the construction speed of our country. BIM also has many advantages in quality management. Using BIM technology can not only improve the efficiency of quality supervision, but also clear quality traceability and effective real-time control, reduce the management difficulty of builders and improve the overall assembly quality.

3.4. Application in demolition of prefabricated housing
Compared with the traditional buildings in China, prefabricated buildings have better recycling of materials under this new technology. At the same time, some technologies in China's construction industry are not perfect enough and need certain development. Therefore, the application of BIM in prefabricated buildings can be more scientific and safe to carry out demolition work, collect the information of demolition method, demolition sequence, site arrangement, resource arrangement and so on, carry on the simulation demolition on the basis of BIM model, perfect the demolition plan, and reduce the pollution and risk coefficient such as dust.

3.5. Application in intelligent construction of prefabricated building
The construction and installation industry of our country has its own characteristics, two of which are labor intensive and extensive management. The application of advanced computer technology to the construction industry is the inevitable result of development. This can also effectively improve the intelligence of the construction industry in China. In my opinion, green can be extended to the concept of green building.

What is a green building? The concept of green building was introduced into our country only in 1990, and then our country began to attach importance to the development of green building. After 20 or 30 years of development, our green building has made great progress. At the 2018 International Green Building Conference, many experts pointed out that the number of green buildings is enough and the quality is needed. Green building design process requires a lot of building information processing, and the concept of BIM is the product of modern information, which coincides with it [1].

4. Advantages of prefabricated buildings
Compared with traditional buildings, prefabricated buildings have many advantages, such as the function of green environmental protection. China has recently advocated the concept of sustainable development. Pay great attention to the harmonious development of man and nature. Assembly architecture can realize this concept. Building industrialization is the quickest way to develop green building. The application of BIM technology in the design and construction of prefabricated buildings at the present stage can improve the efficiency of design quality and help the realization of green construction. BIM technology is applied to green construction, we can know the amount of resources consumed in the construction process in advance, and can provide guidance for the construction enterprises to formulate the enterprise standards for the consumption of enterprise resources. Besides, BIM have a lot of core modeling software technology, and the following picture shows only one part, as shown in the Figure 2.

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With the application of BIM technology, we can pay attention to the problems in construction in advance, so that the error rate can be effectively reduced, and the BIM technology can strictly control the construction process, so that the construction quality can be effectively improved. We can use this technology to control and optimize the construction schedule effectively. Greatly reduces the construction safety hidden danger. Therefore, the application of BIM technology in the construction process can effectively control the construction process, improve the quality of the project, and save resources and reduce the pollution to the environment. Of course, not only in the construction process, BIM can be applied to the whole life cycle of construction products. Green building does not simply refer to the construction stage, but the whole life cycle of the building. Through the use of the proposed green building REVIT and other BIM related modeling software to establish a model, set up a BIM information platform, green building from the early building planning to the end of life green demolition of each stage of simulation, calculation, so as to maximize time savings and reduce energy consumption [3]. Through the above explanation, we all know that BIM technology has many advantages, BIM technology has also experienced a long time of development in China, the following table describes its development process, Table 1 shows:

**Table 1.BIM domestic development.**

| Year  | Generating BIM concepts               |
|-------|---------------------------------------|
| 2002  | Generating BIM concepts               |
| 2004  | Appear BIM related software           |
| 2010  | BIM research phase                    |
| 2018  | BIM technology upgrade R & D phase     |

As we all know, China is the largest developing country in the world, our economy is still developing and changing, the population structure is also changing rapidly, the labor cost is increasing gradually, and the construction industry is gradually beginning to transform. So prefabricated architecture and BIM technology will become more and more important, with great development space and market in the future. BIM bring a revolution to the construction industry, it will information the building, so that the construction process visualization, and the combination of prefabricated buildings is complementary [4].

BIM technology application can be said to speed up the development of the construction industry.
and the process of the construction industry. We can reduce the probability of error in the construction industry, save a lot of manpower and material resources, effectively reduce costs, and bring the greatest benefits to the construction industry. The application of BIM technology in prefabricated residential buildings has produced remarkable benefits from early design, scheme simulation, mid-term construction, quality supervision, and later demolition and recovery. BIM technology can optimize the design scheme, improve the engineering quality and reduce. Above all, BIM technology can provide great help for prefabricated structure. Reasonable application of BIM technology can bring good benefits to domestic construction [5].

Although BIM technology has brought great convenience to the construction industry, most of the current BIM technologies in China are foreign research results, lack of independent innovation, and there is still a big gap between technology and foreign countries. Management level is also relatively low, so China's BIM technology still needs to be improved and developed [6].

5. Conclusion
Through the elaboration of this article, we also have a deeper understanding of BIM technology, BIM technology has brought a lot of benefits to the construction industry, but China's current technology still needs to continue to innovate and develop.

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