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Discussion on the Application of BIM Technology in HVAC Design

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Abstract

With the sustained and steady growth of China's economy, HVAC technology is becoming more and more advanced. BIM technology is used in ventilation and air conditioning design, which changes the limitations of traditional design. In the new period, it improves the construction efficiency and quality of HVAC engineering and optimizes the air conditioning performance. This paper mainly analyzes the application of BIM technology in HVAC design, and introduces the application of BIM technology in HVAC design in detail by introducing the characteristics of BIM technology. Keywords: BIM technology HVAC technology application Introduction: With the continuous development of information technology, HVAC design technology has also made continuous progress. In recent years, BIM technology has been used in HVAC design and played an important role. With the progress of the times and the development of science and technology, HVAC has appeared in people's lives more frequently. The combination of BIM technology and HVAC design of air conditioning is conducive to promoting the connection between different professional fields in HVAC design and further improving HVAC design. Therefore, in order to give full play to the advantages of BIM technology in HVAC design, relevant departments and staff should strengthen the application research of BIM technology. However, there are many problems in the application of BIM technology, and the phenomenon of energy waste is serious, which is not conducive to China's economic development. At present, the design of BIM technology in HVAC system must analyze the actual situation, pay attention to resource conservation and reduce environmental pollution.

Keywords

BIM technology, Hvac system, Application research

1. Analyze the Design Features of HVAC.

1.1 Data Interoperability Characteristics

HVAC engineering is different from ordinary engineering. In the design process, environmental pollution should be considered to save energy and protect the environment as much as possible. It is also necessary to coordinate building geometry and thermal engineering to clarify the load degree in combination with people's actual needs. The design should also take into account the construction needs of the overall structure of the building, water supply and drainage engineering and electrical engineering, and unify the data involved in these processes to realize the interoperability of the data. With the development of the times, information technology has gradually improved, in data processing. For the purpose of information sharing. Data processing should take into account two aspects. First, the data of every link of the whole project should be taken into account. Second, we should do a good job in information processing in the process of information output and improve the speed of format exchange.

1.2 Data Integration Features

HVAC should focus on design to improve design quality. Therefore, it is necessary to appropriately increase the design time and improve the quality of decision-making. Considering the impact of HVAC engineering on the environment and energy, we should pay attention to the development and application of building simulation performance software, strengthen the combination of software integration and HVAC design software, and pay attention to the development and application of energy-saving software. It is possible to appropriately increase computing devices, accurately calculate the energy loss during HVAC operation, adjust the whole data system through data integration, and calculate its dynamic load.

2. Application of BIM Technology in HVAC

2.1 BIM Technology in HVAC Planning Design

HVAC design needs to plan the whole system, which can be planned with the help of Magi—CAD software, and it is required to improve the design ability of designers. Through the application of this software, the designed model can be three-dimensional, tested and adjusted in time. In the process of design planning, BIM technology can improve the design quality, which is conducive to improving the scientific design decision.

2.2 BIM Technology in HVAC Work Scope

This technology has important applications in all aspects of HVAC design, and its working scope is relatively wide. In the process of use, BIM technology should follow certain technical specifications and understand its technical characteristics. Combined with the actual design requirements of HVAC, the design is carried out to improve the heating efficiency of the whole heating system. In addition, during the application of BIM technology, the application scope of HVAC is also wider.

2.3 BIM Technology in HVAC Three-dimensional Design Application

Different from the previous design, BIM technology transforms HVAC design into three-dimensional design, which can be transformed into a specific model according to the design content, and its performance can be tested according to the model, and its position relationship with the building should also be considered. BIM technology itself has the characteristics of data processing. In the process of designing the three-dimensional model of HVAC, we should consider its actual needs, put it in the whole building model, and adjust the position relationship. Secondly, it is necessary to analyze the relationship between its scale, size and the whole environment and make further adjustments. In order to improve the accuracy of model design. It is also necessary to give full play to the data processing characteristics of this technology, update the database in time to ensure the timeliness of data, and introduce relevant design standards to improve the database. In the process of model design, visualization function should be added to the design, which can analyze the model from all angles and check the unreasonable places in the design. In addition, the application of this technology in the process of three-dimensional model making can also accurately calculate the cost of the whole project, which is beneficial for managers to understand the actual construction of the project and make scientific decisions.

2.4 BIM Technology in HVAC Pipeline Design Application

This technology is used in HVAC pipeline design, which can record all kinds of pipeline information, diameter, length and location, and analyze its relationship with building structure. By adjusting these data, the pipeline can be better assembled, the pipeline situation can be monitored in real time, and various problems in the pipeline installation process can be solved in time. In addition, according to the pipeline information, specific

Profile, reduce the designer’s design burden. The application of this technology in pipeline design can also calculate energy consumption, further reduce energy consumption, improve energy utilization and achieve the purpose of energy saving.

3. Conclusion

To sum up, with the overall progress and development of the market economy, HVAC projects have attracted wide attention from all walks of life. Applying BIM technology to HVAC design system can provide more convenient living environment for residents on the basis of maintaining free ventilation in space and realize the goal of coordinated development of information technology and digital technology. BIM technology, because of its good data processing ability, can transform the two-dimensional design of HVAC design into three-dimensional design, improve the design quality of HVAC, at the same time, improve the scientific decision-making of related projects, reduce the design cost of HVAC engineering, and at the same time, improve the utilization rate of resources and reduce the environmental load. In-depth study of BIM technology, combined with the actual needs found in HVAC engineering to adjust, and strengthen the application of this technology in HVAC design. At

present, there are still many problems in HVAC design, which need the continuous attention of relevant departments to improve the technology.

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