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Application of Green Construction Technology in Civil Building Demonstration Project under the Environment of Energy Conservation and Emission Reduction

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Abstract

Information technology has made the social development experienced another major change, almost covering and penetrating into all walks of life. Civil engineering design, with its main characteristics: large engineering design; Large amount of calculation; Long design cycle; The intensity of labor is high. With the continuous development of information technology in civil engineering design, various kinds of auxiliary design technologies represented by computers have gradually come into being, which have successfully solved the above difficulties and greatly reduced the difficulty of civil engineering design. Thus it can be seen that the development of information technology has brought inestimable benefits to the society. Therefore, how to further apply information technology to civil engineering and bring huge benefits to civil engineering has become the focus of current research.

Keywords: *Eivil Engineering, Computer, Modularization, Auxiliary Design;*

1. Introduction

The first problem to realize modular design in computer aided technology is to solve the relationship between graphics module and numerical calculation method. In the structural computer simulation analysis, the prominent feature of the graphic display module is that it is integrated with the selected numerical calculation method. According to the object-oriented idea, the function of graphic display should be defined as the attribute of component or unit in the data structure[1-3]. In this way, the data can be divided reasonably, and the logical correspondence between the data structure and the actual structure can be realized, so that the program has maintainability and extensibility[4-6].

2. Modular application of computer-aided design

With the advent of the information age, computer technology has penetrated into every field. At the same time, with the increasing scale and investment of civil engineering, computer technology has also been applied to civil engineering construction. Large engineering design; Large amount of calculation; Long design cycle; High labor intensity is typical of civil engineering. And the computer technology is used to solve these problems well.

2.1. CAD technology

CAD technology is computer aided design and drawing.This is the process of using a computer system to assist in the establishment, modification, analysis, or optimization of a design. Through many years of design practice, CAD technology has played an irreplaceable important role in engineering design due to its advantages such as simplicity, rapidness

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and convenient storage.Many projects have used computers for auxiliary design and auxiliary drawing, especially after the establishment of computer network auxiliary design and management, it can not only improve the design quality, shorten the design cycle, but also create good economic and social benefits.

2.2. Computer simulation system

Due to the objective existence of natural disasters such as typhoon, earthquake, fire and flood, the performance of engineering structure needs to face such small probability and large load. It is a very difficult and unrealistic method to conduct experiments to verify. First, it is impossible to fully simulate the parameter variation bar; second, the cost of physical test is too high; third, it is dangerous to destroy the experiment and the equipment is difficult to keep up with it. The computer simulation technology can simulate the whole process from deformation to collapse of civil engineering structures of prototype size under the action of disaster load on the computer, so as to reveal the links and factors of unsafe structure, thus greatly improving the reliability of civil engineering.

2.3. Different types of civil engineering

Involved in the civil engineering structure, material mechanical properties and stress distribution is complex, its component failure modes including, pressure, bending, shear and torsion, bonding, slip, bureau of pressure, die-cutting, fatigue and buckling, etc., traditional computing methods cannot obtain accurate judgment, and the emergence of this phenomenon has not been seen, but through computer aided 3 d graphics technology is used, the materials, components and structure of all levels of response, including unit space trajectory, crack distribution and three-dimensional deformation of structures, the dynamic response of structure space visual expression.

3. Application of high-performance simulation software in civil engineering

3.1. Significance of simulation technology in civil engineering

Computer simulation is of great practical value to structural engineering. Because of the high cost of structural tests and generally destructive tests, the same test cannot be repeated for a single specimen.The project management quality control process is as follows:

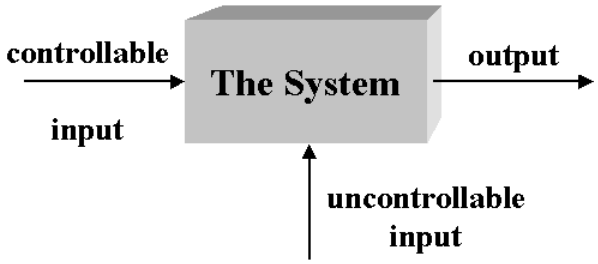

Figure1. Project management quality control process.

Due to the large size of the model, even for the scale model test, the requirements on the test equipment are quite high, and the physical, mechanical and other corresponding relations between the scale model test of structural engineering materials and the full scale test are a complex problem. In addition, there are many other problems, such as the large dispersion and high cost of test results caused by many uncertain factors.On the whole, China's construction enterprise informatization is still at the primary level of development. The informationization construction lacks reasonable planning; The development and utilization of information resources has just begun, and it is difficult to achieve the objective of optimizing the allocation of internal and external resources in the general contracting enterprises. Construction engineering management information system development and relatively closed application status is still in the stage, our country engineering project management information system is in accordance with the planning, design, construction and operation of the project such as stage of development of stage product, information, and project management process in different stages of the project information cannot be achieved between the data exchange and sharing, project participants and in

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between project participants, and project participants between departments and the government investment projects is also unable to realize information exchange and sharing, and thus formed the "information island" group of internal management and external management group of "information island", data redundancy, cause a large amount of manpower material resources waste.

3.2. Disadvantages of existing simulation technology

The main contents of computer simulation research are the establishment of structure model and analysis method and the development of simulation system. In the simulation design of civil engineering, based on the complexity of civil engineering design, there are defects in simulation.The distribution of project management indicators is as follows.

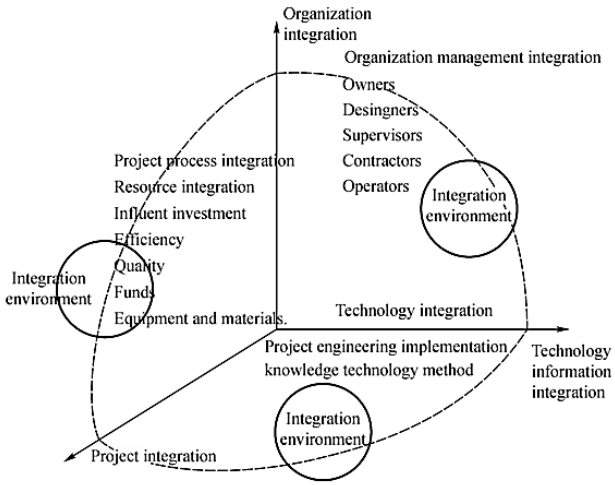

Figure2. Project management indicators.

For example, the constitutive relation of concrete materials plays a key role in structural engineering simulation. However, due to its complexity, it has not been possible to propose an appropriate constitutive relation that can describe the properties of the condensing soil under all conditions. Therefore, based on the purpose and requirement of simulation, the constitutive relation of the intrinsic mechanism of the material should be determined according to certain standards.

For the simulation of simple structures such as reinforced concrete beams, the constitutive relation classes in concrete can be established according to the object-oriented concept. According to the requirements of simulation, each constitutive relation can be overloaded to obtain various structures for selection and optimization.But for complex structures such as high-rise buildings, such treatment is obviously impossible. And now the target of simulation has been from simple beams and columns to the whole building structure system. Therefore, computer simulation technology cannot be satisfied in civil engineering and needs further development.

3.3. Development direction of simulation technology

With the development of engineering practice and theoretical research, the requirements of high precision, all-factor, large scale and true 3d for computer simulation analysis are proposed. It is necessary to make further research on the high-efficiency interactive graphic modeling, the visual inspection of computing model, the inspection and evaluation of computing results, etc.

Figure 3. Green building demonstration project under the environment of energy conservation and emission reduction.

At present, China has a good foundation of civil engineering informatization, and the development of civil engineering informatization has begun to take shape, and a relatively perfect theoretical system and a large number of practical technologies have been formed. However, these still cannot meet the needs of civil engineering development. Especially in the network technology research, most of the information and management system is still based on local area network (LAN), while the mutual communication and data sharing between the machine, but can't make the information exchange between institutions, limits

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the entry of information and extraction, and also limits the project management and resource sharing, brings to the management of a lot of the same, become the factors hindering the development of the civil engineering informatization. In addition, scholars in many fields of civil engineering have respectively carried out researches on various information technologies, but none of them have formed a scale, resulting in the duplication of researches and the waste of resources. In the future, it will be necessary to make comprehensive research and strategic planning on civil engineering informatization from the perspectives of technology, politics, economy and legal system.

4.Application of green construction technology in the environment of energy conservation and emission reduction

People's Daily work and life are basically completed in the building interior, so the quality of indoor decoration also affects people's health to a certain extent. With the rapid development of China's economy in the current era, people's living standards have also changed dramatically from the past. People pay more attention to green, livable, comfortable and healthy living environment.

Figure 4.A more livable green construction environment.

Different plants placed in the room can make the indoor air obviously purified, and can effectively protect people's physical and mental health. When people see vibrant green plants, they will also feel the living environment is fresh and dynamic. Modern building interior decoration and design need to pay attention to more green and environmental protection design, which can effectively reduce the pollution to the surrounding environment, can also play a role in the optimization of resources and environment, has a greater protection for people's health.

4.1. Analysis of pollution factors causing harm to human body in the interior decoration design of buildings

4.1.1. Residual chemical pollution in decoration materials

In the process of making building decoration materials, chemical processing is usually quite complicated, and the chemical properties of different decoration materials are also different. During the use of materials, different cutting and heating methods will destroy the stable structure of materials, and toxic and harmful gases will be easily produced after the collision of residual chemical reagents and pollution with air. And the residues of chemical pollution in decoration material such as formaldehyde, carbon dioxide, formaldehyde excitant odour, which have very obvious effect on the health of human body is also more obvious, when the chemical composition of heated after corresponding physical or chemical reaction occurs, furniture materials, decoration materials of different composition is also prone to mixed reaction, in the process of human habitation are potentially dangerous.

4.1.2. Biological pollution in decoration and living

Generally speaking, it is easy to produce chemical pollution in People's Daily living, living and working interior decoration. In addition, it is also easy to produce different biological pollution in people's life. Biological pollution is different from traditional physical pollution (sound pollution, light pollution) and chemical pollution (formaldehyde, carbon dioxide). It spreads pollution by means of microorganism or bacteria.Some of them are pathogenic, and after a long time of reproduction, they are easy to spread wantonly in the human living

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environment, thus causing greater harm to the human body. Common contaminants include long-term untreated household waste, home textiles, and bacteria from plants and pets.

4.2. Main measures for the application of green design in indoor construction based on ecological and environmental protection

4.2.1. Attach importance to strengthening the application of green and environmental protection design concept

For the interior decoration design of the building, the first procedure is to start with the basic decoration payment, carry out the reasonable optimization of indoor construction application and green environmental protection design, and should embed the concept of ecological environmental protection in the process, so as to reduce the decoration pollution at the root. In the layout and management of the building interior, the materials and structures used in the building should be discussed. In the process of indoor construction, attention should be paid to the floor, wall, ceiling and other different areas, safety, environmental protection, health and other aspects of adjustment and inspection.

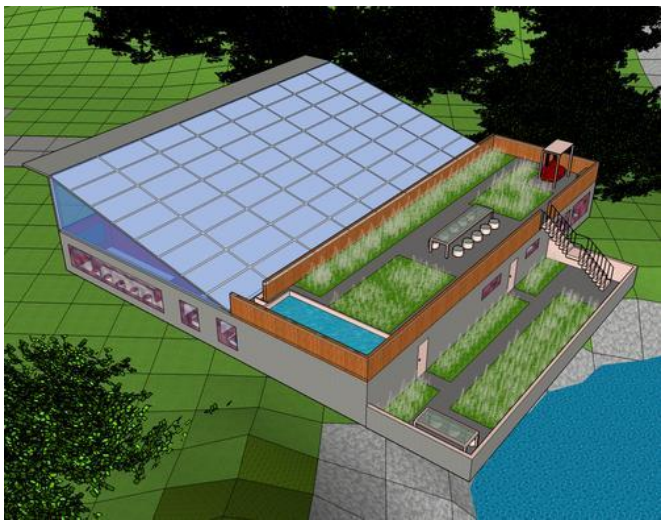

Figure 5. Demonstration diagram of green construction technology under the environment of energy conservation and emission reduction.

And in the overall layout of the link should pay attention to the application of green and environmental protection design processing, so as to better meet the needs of different groups of interior decoration and design requirements. In addition, in the process of selecting materials, attention should also be paid to environmental protection and energy saving. Attention should also be paid to the overall ventilation of house design, so as to make indoor air circulate frequently.

4.2.2. Strengthen the collocation and use of building decoration materials

In decorating the choice of material and collocation, the health environmental protection that ought to pay attention to source and healthy and comfortable collocation, should avoid to breathe in too much poisonous and harmful gas in use process, the collocation in paying attention to material and balance processing, had decided all sorts of material to use amount, undertake macroscopic whole observation and adjustment. Especially metope lacquer and the material of the ground, the proportion that its occupy in whole indoor place is bigger, because this also is opposite indoor environment influence is the biggest, the collocation problem that controls quantity appropriately when choosing material can prevent building materials effectively, let poisonous and harmful material and gas do not produce exceed the mark phenomenon.

4.2.3. Attach importance to the improvement of energy-saving effect of building interior decoration

With the increasing improvement of people's living standard, people's requirements for contemporary architectural decoration design are also increasing day by day. The indoor environment decoration of the building should pay attention to the selection and collocation of energy-saving decoration materials, and the selection of materials should be based on the healthy material standards issued by the state in the selection process. To refine the choice in a variety of aspects, as far as possible to choose more healthy, more pollution-free decoration materials. Only in this way can the indoor air quality of the building be significantly improved, and the waste of resources and environmental pollution be reduced, so as to improve the energy-saving effect of indoor

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decoration and decoration, and protect people's health.

4.2.4. Choose green plants that can purify indoor air for display

At present, many owners will choose to place some green plants or succulent plants indoors after the completion of the overall construction of the house. The advantage of this is that the indoor air can be more effectively purified and treated.

Figure 6. Application of green construction technology in civil construction.

Different green plants for indoor air treatment optimization are also different, such as camellia and Chinese rose to significantly lower the amount of carbon dioxide in the air, like crape myrtle, carnation plant can better sterilization effect, different plants are put in the purification of indoor let indoor air can be significantly, and can effectively guarantee the health of body and mind of people, when people see the vibrant green plants also feel living environment is lively and active.Orchids and lilies, for example, are not suitable for indoor planting and placement. These plants can make people overexcited, so that they can't concentrate and lose sleep.Therefore, in the process of green plant selection should also be based on the different characteristics of plants to choose, reasonable selection and placement will allow the human body to get the maximum degree of relaxation.

5.The application of green construction technology in civil construction engineering

With the rapid development of China's economy in the current era, people's living standards have also undergone earth-shaking changes. People pay more attention to green, livable, comfortable and healthy living environment. Chemical pollution is easy to occur in the indoor decoration of People's Daily living, living and working. In addition, biological pollution is also easy to occur in People's Daily life, which spreads pollution by different means of microbial or bacterial transmission. Modern architecture interior decoration and design needs to pay attention to more green environmental protection design, which can effectively reduce the pollution to the surrounding environment, so in decorate material selection and collocation, should pay attention to the source of the collocation of healthy environmental protection and healthy and comfortable, living should avoid inhaling too much poisonous and harmful gas in the process, on the one hand, meet the demand of people live, work, on the other hand to save resources and energy.

5.1. Install the bus

According to the analysis of current civil equipment installation is a civil equipment of bus bar installation is a very complicated and complex work, but the work is very important, will directly affect the civil a service life of the equipment after the installation is complete and the security situation, needs related to the installation personnel focus on bus bar installation problem.In civil bus bar installation process of a device, the need to group the corresponding regulation of standard calibration tool, for the corresponding market cannot batch supply bus bar installation tools, installation personnel shall be prepared in advance, the finished the installation tools, so you can make the installation process, not affect the proceeding of the bus bar installation work.

When purchasing busbar equipment in green building, dealers send busbar equipment to green building through a variety of transportation channels. In this transportation project, busbar equipment will inevitably be deformed or bent.According to the bending situation of this kind of bus equipment, if a

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few buses are bent, the way of manual correction can be used to modify the bus.If the number of bent buses is large, the bus corrector can be used to correct the bending part, so as to ensure the efficiency of the work and the service life of the bus.

If it is necessary to bend the bus, the bus can be placed between two roller shafts. After calibration, tighten the gantry pressure screw first, and slowly press down the handle of the flat bending machine at the same time.It should be noted that in the process of pressing down the handle, care should be taken to avoid excessive force, to ensure that the bus will not crack as a result.

5.2. Transformer installation

The installation of a transformer is a very important job.Before the transformer is installed, it is necessary to be familiar with the design drawings, understand the relevant data in the drawings in detail, purchase the equipment required for installation, and design the installation mode according to the location of the devices.At the same time of installing the transformer, proper treatment of the mounting surface and erection of the foundation wires are required.Then, relevant staff need to check and confirm the transformer, to ensure that the transformer can be used normally, and all the parameters and data are consistent with the design drawing, so as to proceed with the next step of installation operation.

5.3. Quality control of primary equipment installation for green building construction

In general, in order to do a good job in the safety and quality control of the installation of primary equipment in green buildings, the basic requirements are to adhere to the principles of compact layout, reasonable utilization and civilized construction for the overall layout of the construction according to the actual needs and conditions of the construction site.Different from other engineering industries, problems are easy to occur in the operation of the power industry, some of which are civil faults, some of which are operation faults of the power system itself, which are uncontrollable.If there are problems in the installation of civil equipment in green buildings, and there are no corresponding emergency measures, there will be more serious consequences, such as a large area of power supply interruption, which will have a direct impact on people's life and work.

6. Conclusion

To sum up, after decades of continuous application in civil engineering, computer aided technology has been constantly developed and improved in civil engineering. In its early development, it was mainly used for scientific calculation and computer graphics. With the progress of information technology in civil engineering, professional computer software has been widely used in civil engineering, and has brought a new revolution to the traditional civil engineering design. In the future, computer-aided technology in civil engineering will mainly focus on the application of computer design software, simulation system and management information technology in civil engineering, step by step towards information civil engineering, and finally realize a complete set of information solutions for civil engineering.

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