Research on Computer Realization of Building Fire Safety Assessment

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Abstract. Fire is a kind of sporadic local disaster phenomenon. The building fire in the fire has brought very serious losses to people's life and property. With the increase of the urban population, the increase of the number of building floors, the increase of the density of urban settlements, and the widespread use of electrical, natural gas and chemical substances in buildings, the possibility of fire and the losses caused by the building are also increasing, especially some houses of longer construction age, lack of fire fighting facilities and serious consequences in the event of fire. In recent years, computer technology has been applied to a certain extent in all fields of our country. The effective use of computer technology has further improved the technical level of building fire safety management, and then realized the automatic management of building fire prevention to some extent. In this case, the fire prevention management of buildings has higher sensitivity and safety, which brings more protection to the safety of people's lives and property. To understand the application of computer technology in building fire safety management, and then to better apply computer technology, can promote the development of building fire safety management.

Key words: Computer Technology, Buildings, Fire Protection, Safety Assessment

1. The application of computer technology in building fire prevention management.

1.1. Components of a computer building fire protection system

Computer fire protection system mainly includes decision-making expert system, intelligent dispatching host system, fire alarm processing system, digital recording system, fire geographic system, computer display system, GPS precise positioning system, image monitoring system in key places, led rolling display system, etc. The computer fire management system can realize the main number code extraction, called number analysis and automatic diversion, telephone conference, digital recording, auxiliary decision-making, alarm management, automatic elimination of false alarm, automatic answering and queuing of alarm calls, GPS electronic positioning map, fire alarm, fire fighting vehicle positioning and other GPS electronic scheduling functions. The system has detailed functions and many service items. It is an indispensable computer-aided software for modern fire safety management, which has laid a good foundation for fire work. In short, the system has a wide range of services, and is a commonly used computer-aided software in modern building fire safety...
management [1]. And in recent years, the frequency of fire is very high, and the economic loss is very large, so the establishment of fire protection system is a necessary measure. As shown in figure 1.

![Figure 1. The frequency and economic loss of fire in recent years](image)

1.2. The practical application of fire prevention system in computer building

In the aspect of fire prevention judgment, the computer building fire prevention system can assist the operator to judge the fire prevention information and situation, and then save more fire fighting time and provide convenience for the fire fighting and rescue work. On the one hand, when dealing with fire alarm, the system can judge the degree and type of fire on the monitoring screen. After judging the degree and type of fire, the system will judge whether the area belongs to the key defense area, and then arrange the alarm library. On the other hand, the system can collect the relevant information and fire plan of the fire area, and send the information to the terminal of the squadron, and show the receiving situation of the information. Moreover, if the fire area does not belong to the key defense area, the system will direct the operator to query, compare and analyze the data in the system database with the assistance of the expert system. In this case, the operator can judge the fire prevention ability of the local fire prevention team according to the telephone number or address, and judge the fire size and the cause of the fire at the same time. After the judgment is completed, the system can execute the dispatch order and display the specific fire fighting plan and information, thus helping the operator to complete the basic fire prevention judgment work [2]. When dealing with fire alarm, the computer aided expert decision system makes artificial judgment according to the degree and type of fire displayed on the screen. If it does not belong to the key defense area, the system automatically enters the expert decision system. Through the expert system prompt, the command operator uses the data recorded in the expert decision system database to compare, query and analyze. According to the telephone number or area address in the area information to judge the fire prevention ability of the local fire prevention team, check the fire size and the cause of the fire. The system can automatically generate dispatching orders, which can show the natural environment, terrain, water quantity, fire material and so on. The key security units should make a good protection plan, such as fire fighting measures, maps, the number of personnel dispatched, the number of fire fighting equipment and how to use, fire fighting defense layout plan and so on. Computer-aided expert decision-making system is an important tool for operators to make auxiliary judgment, which reduces the time of artificial fire prevention judgment, and briefly shortens the time of. It is a necessary link of the whole system. Therefore, the computer fire safety system is very effective. As shown in Figure 2, it shows the application of computer fire prevention system.
The practical application of building fire prevention system

The digital recording and display system has the function of recording alarm information and displaying alarm information on screen. When the recording system in the monitoring room receives the alarm call, it can answer it automatically, and record the location, telephone number and call time of the alarm call accurately. For the call content can be clearly recorded into electronic recording format, stored in the database, easy for operators to query, analysis and comparison. The display system is relatively simple, after the major alarm information intervention, can be displayed in front of the operator through the display, easy to remind and observe. In the daily fire safety management, computer building fire prevention system can also be used in many aspects. First of all, the system has the function of recording and displaying, which can record the alarm information in the form of recording, and display the information on the system screen. Specifically, after receiving the alarm call in the monitoring room, the system can automatically answer the phone and record the location, picture and time of the phone accurately. The contents of the telephone will be recorded by the system in electronic recording format and stored in the system database, so that people can query, analyze and compare information. The display function is mainly to display the alarm information on the screen, and then remind the operator to process the information. Secondly, the system has GPS positioning function. Specifically, because the system has an electronic map database of all alarm areas, the geographical location, building distribution, water distribution and key defense units of the region can be incorporated into the system database, and the alarm points can be displayed by hierarchical display. After the fire engine is dispatched, the system can display the vehicle position information, but also show the vehicle route and estimated arrival time. Therefore, if the vehicle is hindered in the course of driving, the system can remind the vehicle to change the route, and then control the fire fighting time. Moreover, the system has the monitoring function, can carry on the image monitoring to the key place. Specifically, the system can carry out video surveillance in key fire prevention areas and transmit video information to the command center through the Internet. In this way, the commander can judge the scene according to these images, and then carry out the command of the fire scene [3].

With the development of urban fire control management, it is more necessary to establish fire prevention communication system and carry out rapid rescue, which is of great significance to ensure the safety of people's lives and property. The image monitoring system of key places has the function of video surveillance and command in key fire prevention areas. It can network the video surveillance system, record the images and sounds of each monitoring unit, and transmit the information wirelessly to the command center in real time. The operator can clearly see these images on the TV screen of the command center, which is convenient for the commander to carry out a detailed investigation of the
situation on the spot, and finally achieve the purpose of effective command and operation. The fire alarm handling and dispatching system is a control system that connects the alarm telephone through optical fiber to the local fire department. The command center stores the telephone number and geographic information in the alarm information. The command center can monitor, connect and intercept the telephone information of the alarm. Especially for the mobile phone alarm, the system can automatically connect the telephone to the local fire brigade, where the command department to handle the nearest, convenient and fast [4].

2. In the application of computer technology to carry out security research

In the application of computer technology to the fire safety management of buildings, we must do a good job in the maintenance and management of technical equipment, and improve the system database management, so that the fire prevention system of computer buildings can play its greatest role. And then for the people's life and property safety to provide more protection. Because the building fire prevention involves a lot of knowledge, the content is extensive, the building fire prevention knowledge is arranged and divided into the following two categories:

First, deterministic knowledge, such as the implementation of fire prevention norms, only compliance with norms and non-conformity with the second class, there is no intermediate answer, such as fire prevention zoning, deterministic knowledge, part of the target knowledge, this kind of knowledge can be directly used to solve problems, part of meta-knowledge, This kind of knowledge is the further explanation, explanation or control strategy to guide the target knowledge.

Second, non-deterministic knowledge, this kind of knowledge can not be simply judged by right and wrong, is or not, such as fire safety knowledge learning and training, in the design of the system, the use of fuzzy methods to give such knowledge a certain degree of credibility, and through fuzzy operations, draw a conclusion with credibility, the system of building fire-proof total score:

\[ A = \sum_{j=1}^{n} U_j a_{ij} \]  

(1)

Because of the importance of building fire prevention design and construction, if one of the two points is less than 60 points, the system determines that the fire safety of the building is poor [5].

In order to realize many functions of computer building fire prevention system, the system is composed of many kinds of precise equipment and instruments. Therefore, in the daily management work, we should strengthen the maintenance and management of technical equipment, so that the equipment can play a normal role, and then prolong the service life of the equipment. On the one hand, it is necessary to check the power supply of the equipment regularly. Once the equipment is found to be insufficient, it is necessary to charge or replace the battery in time, so as to avoid the phenomenon of equipment failure. On the other hand, the wireless optical fiber equipment should be checked regularly to avoid human damage. In the installation of optical fiber equipment, the location of the installation should be reasonably selected to prevent the equipment from being damaged. In addition, the management should do a good job in the maintenance of the computer equipment in the command center, and then ensure the networking speed and daily normal use of the equipment. At the same time, managers should do a good job in daily life system database maintenance and management. On the one hand, managers should regularly check the database of each subsystem of the system, and collate and check the system data. Once the data is found to be abnormal, contact professionals to repair and maintain the system data. On the other hand, managers should set the administrative authority of the system to prevent the data in the database from being deleted or modified incorrectly [6].

3. Conclusion

In a word, building fire prevention management is an important work of fire protection construction in China, which is of great significance to ensure the safety of people and country's life and property. The intelligent management of computer building fire prevention system has played a good auxiliary role
in the continuous development of this cause. We should pay more attention to the application of computer technology in the field of fire protection. Only by doing a good job in building fire safety management can we provide the most basic guarantee for the safety of people's lives and property. The application of computer technology in fire prevention judgment, daily fire safety management and fire automation management makes building fire safety management more convenient and effective, so people should strengthen the application of computer technology. For the staff of building fire safety management, in order to better apply computer technology, it is necessary to do a good job in the maintenance and management of technical equipment and system database.

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