Research on the Application of Automatic Production Line Based on Computer Control Technology

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Abstract. Information technology and computer technology in every field of society are playing a huge role, in the field of automatic production, computer technology with its strong operation and calculation ability and data processing ability, further promote the centralized control of automatic assembly line. In the future, it is an inevitable trend for computer system to replace human control. The application of computer technology can not only greatly improve the control efficiency, but also save manpower and material resources to a greater extent, and promote the progress of production level as a whole. Computer control technology is a computer-based technology. It is of great significance to analyze the application of computer control technology in automatic production line. Just as technology has changed our lives, it has also changed the way we produce and work. Nowadays, with the development of computer technology, network technology, information technology and other high and new technologies, all fields of the society have undergone earth-shaking changes, including the field of industrial production. Now the industrial production has realized the automatic assembly line production, and in order to better control the automatic assembly line production, in order to ensure its production efficiency, safety and stability, it must be applied to the computer control technology. At the same time, the application of computer control technology also helps to save human and material resources, thus saving the overall production cost and improving the economic efficiency of enterprises.

Keywords: Computer Control Technique, Automation, Assembly Line, Production Application

1. Overview of automatic production line
Automatic production line is an efficient way of production and processing. This kind of mechanical production line without manual involvement can replace the original manual production mode to a large extent by writing and setting specific computer programs, and it also has a relatively stable guarantee in the final product quality. The application of automatic production line liberates productivity and is widely used in agriculture, industry, service industry and so on. In addition, automated production lines often produce goods with uniform specifications, and this standardized production conforms to modern product production and r&d cooperation. The transformation of the
world economy has led to more exchanges and cooperation in modern production, and standardized products are more convenient for the effective connection of the work of various units. At present, the mainstream application of automatic production line is in the production line, this kind of automatic production line greatly improves production efficiency and saves huge cost. In recent years, the effective application field of computer control technology has been increasing and expanding, and its own development is also in depth and breadth [1]. First, in terms of development depth, intelligent implementation is an important direction of computer control technology. The corresponding control system will apply visual, auditory, olfactory and other biological simulation technologies to effectively identify information and feed back to the automatic control system, so as to enhance the security and stability of system control [2]. Second, in terms of development scope, the application of computer control technology will gradually to the integration of management and technology control systematic direction of development, the enterprise carries on the corresponding design, production, sales process operation are integrated into the intelligent control system, realize the cost of production is falling, effectively save manpower material resources, reasonable management and control of each production procedure, timely processing all kinds of problems, and improve the production quality and efficiency, promote the realization of the modernization of production and effective operation, to promote the progress and development of the enterprise. Thirdly, the application of computer control technology is characterized by openness, maneuverability, compatibility, intelligence and adaptability to the field environment. The fieldbus agreement is unified and open, and users can assemble the equipment and system according to the specific production situation. The compatibility is similar to the function of the device, and can be replaced by different manufacturers. Users can implement purchase according to their own needs, automatic production line improvement and matching. Figure 1. is an application example of automatic production line based on computer control technology [3].

2. Application of computer control technology in automatic production line

2.1. Using computer control technology to control production robots for automatic production
The word "robot" is not new to modern people, but many people's knowledge of robots only exists in the description of toys, inventions or science fiction. In fact, the application of robots in industrial production is one of their most important values. In industrial production, will inevitably encounter some production conditions are harsh ring section, in the past in the era of the science and technology is not developed, even if the production environment difficult again, also can according to rely on artificial to carry out related work, but since people developed production of robots and is widely used in industrial production, this problem has been effectively solved. As the name implies, a production robot is a robot specially used for production work. It can be used to better realize automatic production line. Of course, in the process of applying production robot, it must be controlled by
computer control technology. We can be understood as a calculating machine control technology of robot remote control switch, under the control of it, made the robot in the process of automated assembly line production will be more efficient, safe and stable, and once production robot in failed or what problem happened on the way, can realize automatic alarm. Programmable logic controller (PLC) is a kind of digital operation equipment used in automatic production line. The application of programmable computer controller can better carry out the storage, detection, editing and execution of production line programs [4]. It can also effectively control the automated production process of production line equipment, effectively obtain relevant information and data corresponding to the program for timely information and data transfer, write, control and help improve computer control automation and intelligent production capacity, while improving production efficiency and quality, effectively integrate and industrial manufacturing systems, and better improve the scalability and richness of the manufacturing industry, in order to fundamentally optimize and improve the production process of automated production lines. In this way, the smooth and effective implementation of the production process can be promoted, the production efficiency of enterprises can be improved, and the economic benefits of enterprises can be enhanced [5].

2.2. Realize digital remote control by using bus technology in computer control technology

Computer bus technology is an important part of computer control technology, which can effectively realize digital remote control, so as to avoid and reduce the occurrence of industrial production accidents, and better ensure industrial production safety. Especially in coal mine, oil and other energy mining, there are often many risks and hidden dangers, if only rely on manual to carry out the operation, once the occurrence of a safety accident, it will directly threaten the safety of workers. If computer bus technology is applied to realize digital remote control, many production risks can be effectively avoided. Computer master line technology is characterized by its openness, through which various devices can be connected, so as to strengthen the information communication among devices and realize integrated safety production. The digital and open bottom layer control network is often referred to as fieldbus technology. This control system can be effectively realized based on the two-way serial digital communication network implemented by measurement and control equipment. Nowadays, fieldbus technology is widely used in logistics management, transportation, manufacturing and other fields, and has achieved large-scale development. Computer control system of field bus technology, each data measurement and control device will become a node of the network system, multiple microprocessor application form this kind of node system control network of digital information, and then implemented the control room monitoring operator, the scene of the production monitoring instrument and two-way information transmission between the production of machinery and equipment, to the enterprise information based on the production site of the underlying networks, and with the aid of the characteristics and advantages, the implementation of the fieldbus technology is now automated assembly line production system structure model of progress and development. The corresponding fieldbus technology has various features and advantages, such as openness, interoperability, autonomy, intelligence, etc. It can build information monitoring network based on field equipment conveniently and quickly, so as to achieve modernization and automation of production line. However, in the actual application of field master line technology, we must pay attention to the regular test of system performance, scientific and reasonable debugging of field bus reliability, and pay attention to all kinds of similar problems, so as to improve the production efficiency and quality of the production line and promote the sustainable and stable development of enterprises. Table 1.1 shows the ways in which computer control technology is applied in automated assembly line production [6].
Table 1. Application of computer control technology in automated assembly line production.

| Application of computer control technology in automated assembly line production | Using computer control technology to control the production robot for automatic production |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                                                                  | Digital remote control is realized by using bus technology in computer control technology |
|                                                                                  | Using computer control technology to promote the intelligent development of automatic production line |

2.3. Using computer control technology to promote intelligent development of automatic assembly line production

The realization of automatic assembly line production cannot be separated from the application of computer control technology. In recent years, with the increasingly intelligent development of computer control technology, automatic assembly line production is also gradually developing towards the intelligent direction. The current automatic production line mode is showing more and more intelligent characteristics, which makes the products produced by it higher quality, more in line with the relevant standards, and the whole production process has become more humanized. In addition, it is more convenient to upgrade and update the production system of the increasingly intelligent automatic assembly line, which lays a strong foundation for its further upgrading. Industrial robot automatic production line is the application of advanced computer technology and the corresponding industrial robot control system, and traditional way of industrial production lines than the application of the modern industrial robot automation assembly line has higher production quality and efficiency, but also effectively reduces the worker labor and labor intensity, enhances the stability and safety of production activities, with high effectiveness and applicability. The robot automatic stamping production line is widely used in automobile main engine factory. This robot has press, the composition of the automatic stamping production line oiler, loading system, the middle and tail line transmission system parts, each control system should be in the traditional control method, equipment and control layer of each level are applied differential hard pieces of machinery and equipment and the corresponding supporting network, thus ensure complete each system function. And the corresponding control system will be applied and the field bus form of the corresponding PLC control system, has the corresponding independent control function, and thus effectively enhance the reliability and stability of the system. In addition, the computer control system also has various simulation functions, which can facilitate the debugging and control of industrial robots and effectively improve the operation quality and work efficiency of industrial automated production lines. This kind of automatic production line has a high degree of intelligence, which can promote its better upgrading and lay a good foundation for the liberation of productivity.

3. Conclusion

To sum up, the application of computer control technology in automated assembly line production master should reflect in robot control production automation production, the use of bus technology to realize the digital remote control, promote the development of intelligent automation production line, etc., it is the application of the greatly improved the efficiency of the automated assembly line production, security and stability.

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