

Application Research of PLC in Pharmaceutical Industry

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Abstract

With the rapid development of society and economy and the improvement of people's overall living standards, medicines, as special commodities related to people's life and health, have attracted more and more attention from the general public for their criticality, effectiveness, safety, and stability. Safety issues have become a common concern of government drug regulatory authorities and drug manufacturers. The effectiveness of the pharmaceutical process is the key to ensuring the quality of medicines. Under the background of the development and application of modern technology, it has become a general trend to use advanced technology and equipment to participate in the pharmaceutical process to ensure the quality of pharmaceutical production. Among them, PLC is a very advanced and intelligent auxiliary technology. The PLC system can guide and monitor the whole process of pharmaceuticals, significantly improving the quality and efficiency of the pharmaceutical industry.

Keywords

PLC; Pharmaceutical Industry; Application Research.

1. FOREWORD

Under the current situation of high coverage of new technologies, various industries are applying advanced technical means to improve the quality of production, management and service, and the same is true for the pharmaceutical industry. As an advanced programmable technology, PLC can carry out intelligent management and control for different links, different processes and different requirements in the pharmaceutical industry. The sustainable development of industrial enterprises has a very significant boost. This article briefly describes the importance of PLC in the pharmaceutical industry and the effective application of PLC in the pharmaceutical industry for reference.

2. THE IMPORTANT ROLE OF PLC IN THE APPLICATION OF THE PHARMACEUTICAL INDUSTRY

Compared with other industries, pharmaceutical production is a very rigorous process, involving processes, equipment, raw materials, management and other aspects. The quality of pharmaceutical production is related to the life and health of the people, as well as the harmonious and sustainable development of society. Omissions and changes in any link in pharmaceutical production will lead to fluctuations in the quality of drugs, and with the continuous progress of modern medical technology, the degree of mechanization and automation in the pharmaceutical industry is getting higher and higher. Obviously, the traditional pharmaceutical production and management mode has been The quality and efficiency requirements of the modern pharmaceutical industry cannot be met. As an automated programmable controller, PLC can write programs according to the pharmaceutical requirements of different pharmaceutical companies, and is suitable for the production,

production, monitoring and management of different drugs. The structure of the program is simple and easy to write. Once the program is written, it is stable and stable. It has high flexibility and strong adaptability, and can be optimized for various processes in the pharmaceutical industry, breaking through the limitations and uncertainties of traditional manual operations. The participation of PLC technology and systems has formed a visualization from various aspects such as personnel, equipment and technology. The data-based production management model greatly reduces production costs, improves the quality and efficiency of drug production, and fundamentally guarantees the intrinsic safety of production equipment and operators. Therefore, the application of PLC plays an important role in the production and management of drugs.

3. THE SPECIFIC APPLICATION OF PLC IN THE PHARMACEUTICAL INDUSTRY

3.1. Application of PLC Technology in Pharmaceutical Production

As we all know, the production of drugs requires the participation of a variety of different raw materials, and each raw material has a very strict ratio, and dispensing is a very core link in the pharmaceutical process. The PLC programmable system is used to separate the electromechanical control system and the upper computer. The software control system is combined to manage the electromechanical control system through PLC programming, including the editing and management of different raw material information, such as the proportioning weight, proportioning time, etc. to carry out detailed planning and control, while the host computer software is responsible for dispensing. In the process of dispensing, the application of PLC can make the process and degree of dispensing more clear and concise, and improve the whole-process visibility and management of the system.

3.2. Application of PLC Technology in Preparation Production

Preparation production is an important form of pharmaceutical industrial production. Preparation production has strict environmental requirements, including requirements for temperature, humidity, pressure, liquid level, and sealing. Based on this, the production process and management mode of artificial nature cannot meet the quality requirements and efficiency requirements of preparation production. Through the use of PLC programmable control system, real-time monitoring of various indicators of the production environment can ensure that the entire preparation process is fully closed and the whole process is controllable. Real-time production dynamic images are established through PLC programming and computer technology. To optimize the preparation production environment, on the other hand, the use of digital technology to achieve fully enclosed production makes the entire production operation process convenient, controllable and safe.

3.3. Application of PLC Technology in The Production of Pharmaceutical Coating

Many special drugs require coating production to ensure the efficacy of the drug. In the production process of pharmaceutical coating, it needs to be applied to different equipment and involves various systems. In this process, through the PLC programmable control system, different equipment can be centrally managed to achieve scientific interaction and control, such as the inlet and outlet air of the equipment. The system, the opening and closing timing of the solenoid valve of the spray gun, the adjustment of the temperature of the inlet and outlet air, and the speed, pressure, air volume and other details of the main machine drum are centrally controlled, which can effectively ensure that the main components and systems of the coating machine are visible. , Under the controllable state, it creates good preconditions for the production of drug coating.

3.4. Application of PLC Technology in Drug Drying and Sterilization

Medicines are special commodities and have certain requirements for drying and sterilization. In the process of drying and sterilization, a large amount of equipment is also required to cooperate. The PLC programmable control system is used to control the micro-printer and the temperature in the oven, so that the entire drying and sterilization process is controlled. Control within the quality requirements.

3.5. Application of PLC Technology in Pharmaceutical Packaging Production

Drug packaging is the final link in the production of drugs. The current forms of drugs are very diverse. Different drugs have different packaging requirements, either tablets or capsules, the number of packaging, and the required packaging materials. Equipment also varies. Through the PLC programmable control system, the linkage of different equipment is coordinated, and at the same time, the integration of online detection is realized, such as the detection of the quantity of drug packaging and the detection of packaging quality, thus ensuring the accuracy of drug production.

4. CLOSING REMARKS

To sum up, the contribution of PLC technology in the modern pharmaceutical industry is huge, and the impact on the pharmaceutical production and management mode is dominant and far-reaching. In the new era of ever-changing production technology and management concepts, based on the particularity of drug production management, various factors such as personnel, technology, equipment and other reasons may lead to drug production safety or quality problems in the production process. It will not only pose a serious threat to people's lives and health, but also greatly damage the interests and corporate image of enterprises. Under this situation, pharmaceutical companies should actively follow the development trend of the times, apply advanced PLC technology to participate in the process of drug production and management, vigorously promote the informatization and intelligence of drug production management, and combine the actual situation of the company in the management ideas and processes of drug production. Continuous optimization and innovation by means of PLC technology, improve the efficiency and level of drug production and management, so as to better maintain the normal production order of the enterprise and ensure that the benefits of the enterprise are guaranteed.

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