

APPLICATION AND DEVELOPMENT OF MECHANICAL AUTOMATION TECHNOLOGY IN MACHINERY MANUFACTURING INDUSTRY

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Abstract: Processing and producing products in an automated and continuous manner is the main feature of mechanical automation. This article uses mechanical automation technology in machinery. The application in manufacturing industry is the theme of discussion. The concept and development situation of mechanical automation technology are analyzed, and the mechanical automation technology is elaborated from three aspects: integration, intelligence and flexibility. Specific applications of automation technology in the manufacturing industry.

Keywords: Mechanical automation technology; Machinery manufacturing; Technology application

1 OVERVIEW OF MECHANICAL AUTOMATION TECHNOLOGY

In recent years, the speed of scientific and technological innovation and development has gradually accelerated. Information Technology. New technologies such as automation technology and artificial intelligence are widely used in various industries. It provides favorable technical conditions for the development of industry, agriculture and other industries. The introduction of automation technology in machinery manufacturing can improve product processing efficiency, optimize overall production quality, further reduce the consumption of labor costs, and promote the development path of comprehensive automation in the machinery manufacturing industry.

Strong comprehensiveness is the main feature of mechanical automation technology, regardless of its good performance advantages or strong applicability are both expanded to a great extent. The scope of application of automation technology in various industries. Mechanical automation technology not only includes basic contents such as computer technology and electronics, but also involves information theory and systems engineering, etc., relying on the combination of computer theory and control technology application, its own control performance can be further improved. In technological innovation under the background of modern development, functional diversification, design standardization and application integration. Automation is gradually becoming the core development trend of mechanical automation technology. The technical process can also effectively improve the overall operating level of the industry and promote machinery manufacturing adapts to the new economic normal background. Promote the application of mechanical automation technology, it is also about gradually replacing the traditional manual operation mode in the past and improving the efficiency of various aspects. The accuracy and quality level of processing and production links are standardized by automated processes. Each operating process is constructed based on the characteristics and actual needs of machinery manufacturing. Integrated production and processing system [1-2].

2 APPLICATIONS OF MECHANICAL AUTOMATION TECHNOLOGY IN MACHINERY MANUFACTURING INDUSTRY

2.1 Integrated

In the current machinery manufacturing industry, computer integrated manufacturing is an important production model, through dual integration of technical functions and technical operations, effectively collect, transmit and process information efficiently, with the entire process of machinery manufacturing and production as the core, optimize each production operation process. At present, computer-centered integrated system is increasingly used in mechanical automation manufacturing, and its common components are mainly divided into the following four contents: First, the information management system. It is mainly aimed at the entire process of manufacturing and processing mechanical products. Involving materials, personnel, financial and production information content, for the entire operation of machinery manufacturing process, it plays a key connecting role. The second is the quality information system. In the machinery manufacturing production process, many types of products will be formed, which will automatically introduce the introduction of chemical technology into this operation process is intended to detect product quality information efficiently and accurately, and with the help of automatic scanning and automatic measurement technology, it can comprehensively collect various quality information of products [3-5]. The third is automated manufacturing systems. In the entire process of producing and processing mechanical products, automated manufacturing is the most critical one of the links, in the main position, in addition to covering automated processing centers, it also involves automatic assembly technology, CNC machine tool technology, or production and processing. The application of robots has comprehensively improved the efficiency and quality of mechanical production and manufacturing. The fourth is engineering technology information

technology system. Automated processing of mechanical products In the production process, this system mainly plays a supporting role. In addition to assisting Industrial design can also provide assistance with production analysis and numerical control analysis. promote The wide application of integrated systems in mechanical automation production not only achieves The full utilization of various resources in industrial production and processing also improves to a certain extent It improves the cooperation efficiency between various work departments. It can be seen that in machinery manufacturing Introducing automation technology to improve the integration level of the entire production process, It is an important development path for the industry to achieve efficient and high-quality production.

2.2 Intelligent

Machinery manufacturing production work is often inseparable from the control of many large-scale equipment and facilities. Use, apply automation technology to the processing and manufacturing of mechanical products, and gradually It further improves the efficiency of manual operations and other operational links, and significantly improves the quality of the product. production efficiency, but under traditional automated production lines, many equipment and facilities still However, it relies more on manual control, and the production operations and management of each link still require A lot of human resources are invested to ensure the smooth operation of the mechanical production system. remove In addition, whether it is the processing and production plan of manufacturing mechanical products or the subsequent sales and operations, they all need to be completed one by one relying on human work. This is also To a great extent, it restricts and hinders the modern development of the machinery manufacturing industry. [6-7]. Flexibly applying intelligent technology to mechanical manufacturing can fundamentally change the To improve this situation, enterprises can focus on product processing and production characteristics and actual needs. requirements, build an intelligent management system, collect the operating parameters of the equipment and all Required data information, and then use computers to analyze and process, combined with actual situation, take scientific and feasible control measures to provide effective support for subsequent production operations. Effective guidance. For the mechanical automation industry, intelligence is the key to its production and processing. The core development direction of engineering and control. Expanding intelligent mechanical engineering can also It is considered that effective communication between mechanical equipment, software and hardware and operators is provided. Provide strong technical support to create a more friendly operation interface and further enhance production interactivity of production equipment. After mechanical products go through a series of production processes, they It can have certain intelligent features. For users, they can refer to their own According to your own needs and preferences, you can adjust the functions of the device and change its appearance to meet your needs and preferences. Personalized needs for products and services, which intuitively reflects the design and production of mechanical products. Critical Path to Producing Interactive Features [8-9].

2.3 Flexibility

During the machining production process, refer to the specific manufacturing plan, product requirements, external environment and other factors, adjust the production process or Technical operation, in order to meet the actual needs of production activities, is the soft Basic concepts of sexualization. The main purpose of building a flexible production model is to have Machinery integrates key operating procedures such as product design, processing and production, relying on Based on the information system, it collects and processes information in the shortest time and can also conclude Adjust the machine in a timely manner according to market changes and actual production and manufacturing needs. processing goals of mechanical products and optimizing the entire operating process, which is not only beneficial In order to improve the economic benefits of the entire industrial operation, it can also strengthen the Enterprises' ability to adapt to market changes [10]. In recent years , China's industrial system has become increasingly perfect. In mechanical automated production, flexibility, a new type of production processing, has The industrial model has been widely used. On the one hand, the quality and performance of mechanical products have been improved. On the other hand, the production and processing efficiency of the entire industrial chain can be significantly improved. Lift. Faced with complex and unpredictable market situations, companies often need a certain amount of time To adapt and adjust, this is also the shortcoming of the traditional mechanical manufacturing model. Establish a flexible production and processing system and introduce automation technology to facilitate enterprises in the final Adjust the adaptation time of product processing and manufacturing in the shortest time and improve its own market awareness Adaptability to field changes.

3 DEVELOPMENT TRENDS OF MECHANICAL AUTOMATION TECHNOLOGY IN MACHINERY MANUFACTURING INDUSTRY

When applying mechanical automation technology in machinery manufacturing, in addition to the need to consider The actual needs of product processing and production operations should also fully consider economic factors. Therefore, when introducing advanced technology, equipment and facilities into the automated production and processing process, we should comprehensively improve product manufacturing quality and performance levels and processing work. On the basis of business efficiency, Reduce the cost of each link, Relying on automation, Intelligent production and control processes achieve unified and standardized processing and manufacturing goals and reduce the probability of substandard products in the processing of semi-finished products. and biography Compared with the traditional machinery manufacturing production

model, the automated production model in product manufacturing It reflects higher effectiveness and significantly reduces the consumption of labor costs. It provides a reliable guarantee for the processing quality of mechanical products and reduces unnecessary costs. It can be seen that it is more economical and feasible to apply mechanical automation technology. Usability is an important issue facing the machinery manufacturing industry.

4 CONCLUSION

The purpose of introducing automation technology into the machinery manufacturing industry is to On the basis of manufacturing technology, it organically combines modern automation technology and intelligent technology. technology and information technology, etc., to optimize the entire production cycle of mechanical products and construct Establish an integrated and flexible production, processing, and control model to improve mechanical production The manufacturing quality of the product. In the future, we need to continue to explore mechanical automation technology. so that it can be better applied in the machinery manufacturing industry and improve my country's machinery manufacturing industry. Build level.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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