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A Brief Discussion on Mechanical Automation Technology and Mechanical Manufacturing Industry

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Abstract

In the process of continuous social and economic development, enterprises have gradually begun to use automation technology in order to improve production efficiency and reduce production costs. The machinery manufacturing industry is an important basic industry in the development of the national economy. With the increasing level of modern science and technology and the degree of industrial modernization, as well as the accelerated process of industrialization in China, the pace of marketization has been further improved, the product update cycle has been gradually shortened, and the shortage of labor resources has become more prominent; at the same time, new requirements and challenges have been put forward for the traditional manufacturing model; therefore, under the background of continuous social and economic development, improving the production efficiency of enterprises has become an important issue that enterprises must consider in order to achieve long-term sustainable and stable growth. This article mainly analyzes the overview of mechanical automation technology, machinery manufacturing industry, mechanical automation technology and control system engineering, and the design and manufacturing of machinery manufacturing industry.

Keywords

Mechanical automation; technology; machinery manufacturing industry

Introduction

At present, mechanical automation technology has become an important part of the manufacturing industry, and industrial automation technology is closely linked to the mechanical manufacturing industry. It can not only promote production efficiency, reduce costs and improve corporate competitiveness. Therefore, it is very important for my country's current the first point is for enterprises; the second point is for consumers; the third point is for the national government. The fourth point is to look at the machinery industry from a macro perspective. The proportion of industrial automation technology in the national economy and its future prospects reflect the close connection and importance of the mechanical manufacturing industry.

1. Overview of Mechanical Automation Technology

1.1 Basic principles of mechanical manufacturing

Mechanical manufacturing is a labor-intensive industry. Its characteristics are that its production process has high input, high consumption and low pollution. With the continuous growth of social and economic levels and the gradual

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improvement of people's quality of life, China has become the world's largest manufacturing country. At present, China is in the process of industrialization and transformation towards modern industry. At the same time, due to China's large population and high employment pressure, the demand for energy is very large, which has led to the rapid rise of the mechanical manufacturing industry not being so fast. Therefore, in order to meet people's increasing material needs and spiritual pursuits, the development speed of the mechanical manufacturing industry is also constantly improving. As China's economic level continues to grow at a high speed, people's requirements for product quality are getting higher and higher, which greatly increases its production costs. The combination of automation technology and mechanical manufacturing can greatly reduce labor costs, reduce environmental pollution and other advantages to create more profits and social benefits for enterprises [1].

1.2 Main methods of mechanical automation technology

The main methods of mechanical automation technology include: mechanical equipment automation technology, computer control technology and intelligent control system. Among them, manufacturing enterprises mainly use advanced computer networks and communication systems to process and manufacture products. In the modern manufacturing industry, modern industrial design and manufacturing methods are applied to complete production planning, control and testing; while mechanical automation can realize the automated operation process, thereby improving labor efficiency and reducing the number of workers and the impact of human factors to achieve the purpose of cost saving.

1.3 Implementation steps of mechanical automation technology

The implementation steps of mechanical automation technology are to integrate mechanical equipment and materials, power, etc. required in the production process through mechanical automation. In this entire operation process, we can find that it mainly includes the following three aspects: the first is to use computer technology to complete a series of data processing tasks such as materials and information; the second is to use advanced control theories and methods to monitor the operation of the entire system. The last link is to use automatic control systems to realize the automatic operation of mechanical equipment [2].

2. Mechanical Manufacturing Industry

2.1 Introduction to mechanical manufacturing technology

Mechanical manufacturing technology refers to the machinery, equipment, instruments and other auxiliary tools for the production and processing of various industrial products, including metal materials, parts, chemical raw materials, etc. The mechanical manufacturing industry is closely related to human life. With the continuous improvement of social and economic levels and the rapid development of science and technology, the demand for energy is increasing; due to a series of problems such as the complexity of traditional processes, high labor intensity, and harsh environment, my country is at a disadvantage in the field of mechanical manufacturing. In order to solve these problems, we began to study the application of automated production technology (AutoCAD) and automated control technology, and achieved certain results.

2.2 Problems in mechanical manufacturing

At present, there are widespread problems such as waste of resources and environmental pollution in my country's manufacturing industry. With the development of society, the requirements for product quality are getting higher and higher. Under these factors, some drawbacks have also appeared in the mechanical manufacturing process. First, the backwardness of equipment has led to a great increase in manual labor; secondly, with the passage of time and low work efficiency, the machine failure rate has increased, and even safety accidents have occurred, causing personal property losses and casualties and other serious consequences; finally, due to the development of mechanical automation technology, various new problems have emerged in the industrial production process, such as environmental pollution, high energy consumption and serious waste.

2.3 Mechanical manufacturing solutions

Mechanical manufacturing solutions refer to the use of modern control methods such as computers and microelectronics technology to analyze problems encountered in industrial production and develop optimal solutions to achieve

efficient production. It includes two aspects: automation equipment and control systems. First, intelligent systems are used in hardware. Second, computer programming technology is mainly used in software to complete the monitoring of the entire process. Finally, these functions are applied to product design [3].

3. Mechanical Automation Technology and Control System Engineering

3.1 Composition of mechanical automation control system

The mechanical automation control system mainly consists of a control core, a data acquisition unit and a drive device. Among them, the control system is mainly composed of sensors, controllers, etc., which can detect and monitor the operating status of mechanical equipment in real time. Mechanical automation technology can realize automatic control and intelligent management in the production process; at the same time, it can also reduce labor costs, improve work efficiency, and reduce energy consumption, providing enterprises with considerable economic and social benefits.

3.2 Network communication

network communication technology in the machinery manufacturing industry Network communication is an indispensable and important part of the development of modern society and the process of economic globalization. Computers and communication equipment, information processing systems and other related industries are inseparable from it, and the most basic and indispensable thing in the industrial production process is information technology. Therefore, it is crucial to use modern science and technology to improve the production efficiency and product quality of enterprises. At the same time, it is very helpful for the entire country and other countries in the world ; automation technology has an extremely wide range of applications in the machinery manufacturing industry; for example, advanced equipment such as computers and communication networks are used in the processing and manufacturing field; the application of automation technology in the machinery manufacturing industry mainly refers to computer network communications, industrial production fields and other related industries.

3.3 Mechanical automation monitoring

Mechanical automation monitoring mainly uses computer technology combined with the mechanical manufacturing industry to manage mechanical equipment in real time and realize automated production. The system mainly includes functions such as data acquisition, automatic processing and remote monitoring. The system can ensure the normal operation, safety and stability of the machine; at the same time, it can also provide enterprises with more information service platforms and help staff understand product quality and the ability to control failures, etc.

Figure 1. Mechanical equipment.

Figure 2. Mechanical equipment.

Figure 3. Mechanical manufacturing.

4. Design and Manufacturing of Mechanical Manufacturing Industry

4.1 Structure of the machinery manufacturing industry

The structure of the machinery manufacturing industry mainly consists of three parts: machinery manufacturing, mechanical processing and assembly lines. Among them, the automation equipment on the production line is mainly used by manufacturing plants. With the increasing development of China's economic level, the industry has also been rapidly improved. And the competition among manufacturing companies is becoming more and more fierce. Therefore, if you want an industry to have good products and sell them better, you must have high-quality talents; at the same time, you must continue to innovate and reform it to make the machinery manufacturing industry more perfect and stable. This is very important for us. Only in this way can we not be eliminated in the fierce competition. Therefore, for a manufacturing industry, automation technology and machinery manufacturing are inseparable.

4.2 Design and assembly of machinery manufacturing industry

The design and assembly of the machinery manufacturing industry is mainly the production of the machinery manufacturing industry, and its main feature is high automation, which requires us to have a good, stable and reliable processing system. At present, China has established a complete and mature set of products with independent intellectual property rights and in line with international standards. With the continuous improvement of scientific and technological levels and the increasingly fierce market competition, machinery manufacturing companies have attached more and more importance to technological innovation capabilities. Therefore, under the current social situation, the machinery manufacturing industry should focus on how to achieve efficient production rather than simply relying on manual operation to complete automated production; at the same time, to improve the level of automation in production, it is necessary to ensure better product quality.

4.3 Design and installation in the machinery manufacturing industry

The machinery manufacturing industry is an important foundation for the development of the national economy and plays a vital role in the entire social economy. With the continuous improvement and perfection of scientific and technological levels and production technologies, people have put forward higher requirements and demanding demands on product quality, variety and appearance; at the same time, they also contribute to providing enterprises with better service quality and reducing costs. Mechanical automation technology has a wide range of application prospects in various fields of industrial production. It has become the fastest and fastest growing in the world today, and has an important impact on people's daily lives.

4.4 Main material selection in machinery manufacturing industry

The main material selection and processing technology of the machinery manufacturing industry, the machinery manufacturing industry is a manufacturing industry, which occupies an important position in the national economy. With the continuous development of science and technology, the improvement of people's living standards and people's higher and higher requirements for product quality. China has now become the world's largest producer and exporter of daily consumer goods and one of the largest importing industrial countries; due to factors such as China's large population and cheap and abundant labor, China's economy has grown rapidly and shown a good trend and gradually formed an industrial structure of "buying cheap goods from the world and selling good goods from the world". The machinery manufacturing industry is an important pillar of the national economy, and it is also a high-growth, low-loss industry, playing an increasingly important role in the national economy.

5. Conclusion

Mechanical automation technology is closely related to the development of mechanical manufacturing industry. Mechanical manufacturing industry and mechanical manufacturing automation technology complement each other, rely on each other, promote each other, and make progress together. To a certain extent, both have their own characteristics and advantages. Among them, the development of mechanical manufacturing industry is closely related to social economy and people's living standards, and is an important indicator of the degree of modernization of a country. Therefore, analyzing and studying the two is conducive to promoting the better and faster application of China's industrial automation technology to practice, thereby promoting the entire national economy to move forward well and fast. Meeting the requirements of mechanical automation is of great significance to promoting the development of China's manufacturing industry towards modernization and intelligence.

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