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Research on Remote Monitoring System of Machinery Production and Maintenance Data Based on Internet of Things Technology

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Abstract

For the Internet of Things technology, it is a technology that uses the Internet of Things as a carrier to realize virtual space information sharing. The important premise of this technology is the virtual space formed under the network protocol. In the current rapid development of the Internet of Things technology, the mobile Internet of Things has also emerged, which provides a reliable guarantee for the innovation and development of various advanced technologies, including positioning functions, function technologies and GPS infrared positioning technology, etc.. For the Internet of Things system, it mainly includes perception layer structure, network layer structure and application layer structure, which can effectively carry out on-site management. When performing mechanical processing, as an enterprise, it needs reasonable management, of which on-site management is a more important part. Scientific and effective management of some production steps is the main purpose of site management. The machining of machinery is implemented on-site in the workshop. The workshop is more important in the development of the enterprise. It can effectively solve the problems of on-site management of mechanical processing. This has a direct connection to the quality and safety of the workshop. In addition, in the process of economic development, machining and manufacturing is also indispensable, so remote control of it is extremely important.

Keywords: *Internet of Things, Machinery Production, Maintenance;*

1. Introduction

Since entering the 21st century, China has applied intelligent automation technology in the field of mechanical design very extensively. So far, the application of intelligent automation technology in China's mechanical design has become increasingly mature. Since the application of intelligent automation technology, China's machinery manufacturing industry has In terms of quality and quantity, both have greatly improved. However, due to the fact that China's mechanical design field started relatively late, China's core technologies related to this still cannot compete with developed countries. It needs to be imported from countries with a higher level of development. Take the United States and Germany as examples. They started early in mechanical manufacturing and have more mature applications of intelligent automation technology. Compared with them, we still have many shortcomings. Further improve their own level.

2. Internet of Things related technologies

2.1. IPV6 technology

IPV6 technology is a basic technology of the Internet. The development of the Internet of Things is based on the development of the Internet. It is a product of the Internet as a foundation and extended in depth and breadth. Therefore, the communication protocol of the Internet of Things is still based on IP addresses. Basic. The development of the first generation of IPV4 technology was of great significance at the time. However, with the development of society and the advancement of technology, people's demand for communication continues to increase, resulting in that the original

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IPV4 technology can no longer meet the needs of netizens. In order to change this limitation, IPV6 technology was developed on the basis of IPV4[1]. Compared with IPV4 technology, IPV6 technology, as a new network protocol, has an address capacity several times that of IPV4. The address resources are very rich and can support dynamics. Routing mechanism. Therefore, using it as the main force of the future development of the Internet of Things has laid the foundation for the rapid development of the Internet of Things in various industries in the future[2]. The internet data system is in the figure below.

Figure1. Internet data system.

2.2. Wireless communication technology

With the development of society, the convenience of transportation and the increase of population mobility, short-distance communication technology cannot meet the communication needs of humans' daily lives. Using the development of the Internet of Things, some long-distance wireless communication technologies have emerged, mainly as follows Several types: GPRS/CDMA wireless communication technology, digital radio communication, spread spectrum microwave communication, wireless network bridge, satellite communication, ultra wave communication. GPRS/CDMA wireless communication technology is a wireless packet switching technology developed by China Mobile, which has the advantages of real-time online "pay-as-you-go" notification transmission. Digital radio communication is an abbreviation for wireless data transmission radio. It adopts digital signal processing, digital modulation and demodulation, forward error correction, equalization soft criticism and other functions[3]. Spread spectrum microwave communication was first used in the military, with strong anti-interference ability and suitable for field networking applications. The wireless network bridge can be used for the long distance between the fixed digital equipment and other fixed digital equipment, to inform the wireless networking. Satellite communication is a technology that uses artificial satellites as relay stations to forward radio signals, so as to realize communication between multiple ground stations. The internet data management system is in the figure below.

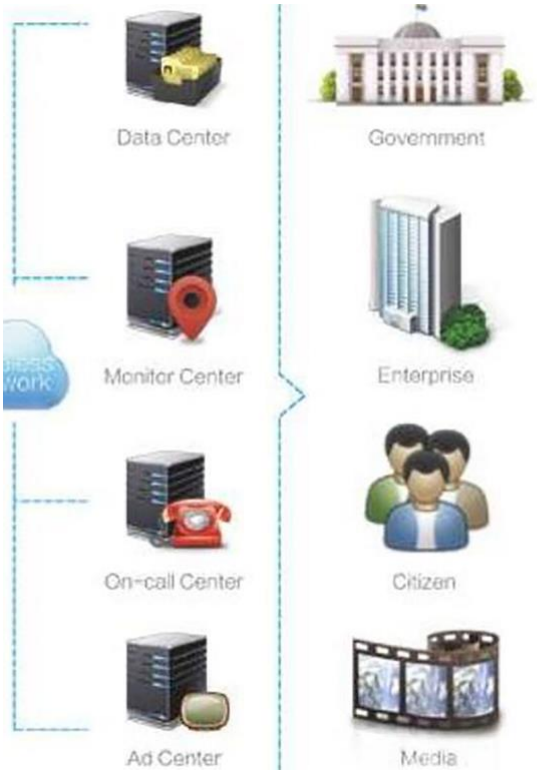

Figure2. Internet data management system.

2.3. Local area wireless network technology

Wireless networks and wired networks are complementary. For wired networks, LAN wireless technology can play an effective supplementary role within a certain range. The wireless network technology has a wide range of applications and is highly mobile, convenient, flexible and fast. Furthermore, under the premise of wireless technology, it is more convenient to access mobile terminals, wireless scanners, radio frequency identification scanners, etc. through the Internet, which brings greater convenience to life and is suitable for future human life needs. Over the years of development, automation technology is now

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moving towards maturity and practicality. It can be known from its value that in the process of advancing the development of this technology, we must not blindly introduce technology and ignore the actual needs of the domestic market. Otherwise, it will not only waste production resources, but also fail to create social benefits. Mechanical automation must firmly integrate the needs of social development and develop corresponding automation technologies around production needs. While creating greater production benefits, it also guarantees the effectiveness of its own production system, so that mechanical automation can develop in the direction of intelligence, digitization and greening[4]. The internet data wireless system is in the figure below.

Figure3. Internet data wireless system.

3. Mechanical production technology

3.1. Intelligent application

The intelligent system has many advantages. For example, the intelligent system can carry out independent thinking, can complete the production tasks autonomously and can also formulate production tasks in the actual production process in combination with the actual surrounding conditions and actual production conditions. If we want to make the mechanical manufacturing technology more accustomed, then we can combine various mechanical technologies, as well as the intelligentization and automation of technology purchases. To a certain extent, the intelligent machinery manufacturing system is built on the artificial intelligence system, which we can call a sublimation technology. For complex and advanced mechanical products, in the actual production process, many links require experts to operate in person. However, the current number of experts in my country is limited and mass production cannot be achieved. This makes advanced machinery Products cannot meet the needs of society. Therefore, in order to effectively solve this problem, in order to improve the professional level of production and improve the production efficiency of enterprises, then we can effectively combine the intelligence of experts with intelligent mechanical manufacturing technology and integrate it into mechanical manufacturing technology, so that we can save A large number of human resources can also meet the society's demand for advanced mechanical products[5]. The internet data application system is in the figure below.

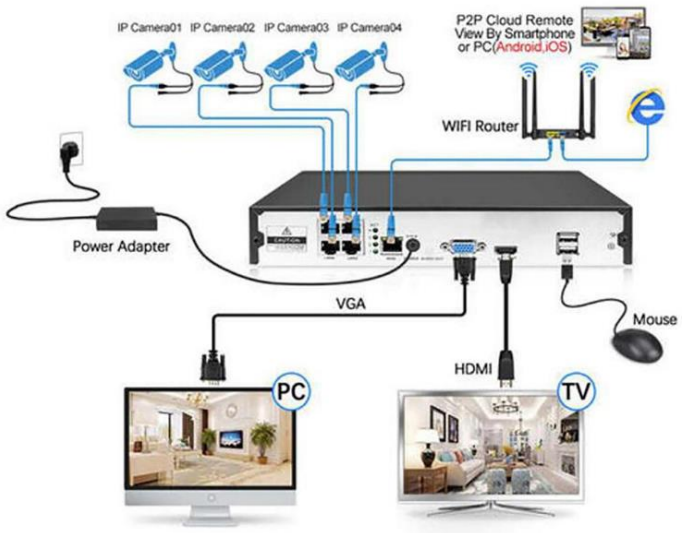

Figure4. Internet data application system.

3.2. Application of CNC technology

Mechanical automation technology is also widely used in numerical control technology, which has changed the traditional method of combining computer hardware and numerical control technology for production. The new method is to organically combine numerical control technology and mechanical automation technology through software programming, thereby enabling To achieve product production, this effective combination

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makes the production process more convenient. At the same time, the mechanical automation manufacturing capabilities of CNC technology have also been improved, creating more economic benefits for the enterprise. The biggest advantage of automation technology is high production efficiency, although the current mechanical automation technology has promoted the rapid development of society and created huge economic benefits. But we can foresee that the technological level of society in the future will far exceed that of the present. Therefore, in order to meet the future social production needs, higher production efficiency is the pursuit of mechanical automation. Standing still cannot allow the industry to achieve sustainable development. Only continuous innovation and continuous research can promote the overall progress of the industry[6]. The internet data cast system is in the figure below.

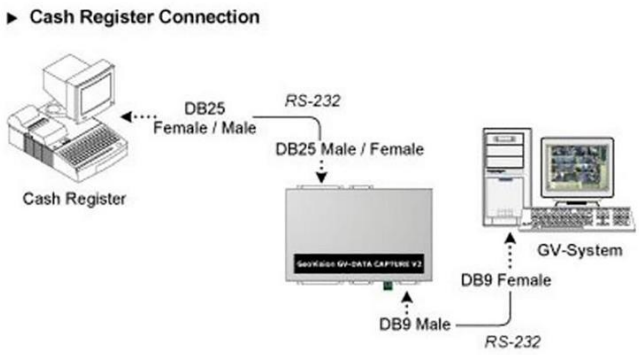

Figure5. Internet data cast system.

4. Remote maintenance monitoring system

4.1. Integrated application

In recent years, with the rapid advancement of science and technology and the continuous development of computer network technology, intelligent automation technology has begun to be used in all walks of life in society, especially in the field of mechanical design. While applying intelligent automation technology in my country's machinery manufacturing industry, it has also introduced other new technologies. The emergence of these technologies meets the needs of machinery manufacturing in society to a certain extent and also realizes intelligent automation to a certain extent. Integrated application refers to the integration of technologies that meet the different needs of the relevant design of the mechanical manufacturing process to form an integrated state and then the integrated application in the mechanical design. The so-called integrated application, in simple terms, is to use the system engineering theory as a guide in the mechanical manufacturing process and use it in accordance with the operation of related information technology to finally achieve the purpose of intelligent automation of mechanical manufacturing. Integrated application requires the integration of all production and operation activities in the enterprise into an organic whole, based on the whole, overall consideration, comprehensive consideration of the various activities of the enterprise and then subdivided various organizations of the enterprise to realize the internal optimization and integration of the enterprise , Lay a solid foundation for the realization of high-efficiency and high-quality machinery manufacturing and at the same time provide favorable conditions for enterprises to carry out scientific and systematic management. The internet data sensors system is in the figure below.

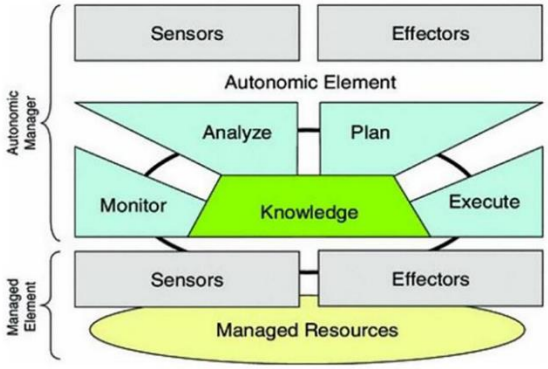

Figure6. Internet data sensors system.

4.2. Flexible automation

Flexible automation mainly uses computer technology for management, which makes the management of the enterprise more convenient and faster through the aid of computer, thereby improving the overall efficiency of the enterprise

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and maximizing the production efficiency of the enterprise. With the increasing application of intelligent automation technology in mechanical design and the continuous improvement of people's living standards, at this stage, people have different requirements for the adaptability and responsiveness of the machinery manufacturing industry. Therefore, companies can no longer be complacent and continue to use traditional management methods. They should comprehensively consider from the perspective of customers and conduct a comprehensive assessment of customers' consumption needs and changes in the market environment. At the same time, they must rationally adjust the internal structure and development model of the company according to the pace of development of the times. , Timely update the intelligent automation technology and continuously optimize the enterprise's mechanical manufacturing structure, so that the enterprise can take root in the society under the premise of meeting the needs of customers and the market and thus get better development. With the popularization and application of computer technology, the application of flexible automation technology is more common in the field of machinery manufacturing. Flexible automation technology mainly uses computers as a whole information control center. According to a certain control model, it monitors relevant information and inspects enterprises. Information security status, product quality, etc. Flexible automation does not affect the operation of other technologies during use and other equipment can still keep running.

5. Conclusion

The machinery manufacturing industry of the Internet of Things is an important industry developed by the country and one of the most important sectors in my country's industrial system. Its development quality and level of development directly affect many domestic production and manufacturing fields and to the scale and speed of my country's economic development Has an important leading significance. Of course, the mechanical manufacturing of the Internet of Things itself is complicated and troublesome and it is easy to produce production quality and production safety problems under human error. Therefore, the Internet of Things machinery manufacturing industry must vigorously introduce the technology of Internet of Things machinery automation to create greater output and economic benefits on the basis of ensuring production quality. Of course, we must also recognize the shortcomings of the current technology itself and develop new technologies on the basis of correcting the shortcomings. Taking practicability, environmental protection and efficiency as development goals, on the basis of advancing automation in all fields, improve the production capacity of the Internet of Things machinery manufacturing industry.

References

[1] Equipment, machinery; Production of agricultural machinery in Russia up 20% in value terms in H1 to 72 bln rubles - Rosspetsmash[J]. Interfax : Russia & CIS Food & Agriculture Weekly,2020.

[2] Hernadewita,Hermiyetti,Hendra,Syukriah,R. Astari Br. Surbakti,Dewi Auditiya Marizka. Overall equipment effectiveness analyse for performance of cnc milling machine operation[J]. IOP Conference Series: Materials Science and Engineering,2019,505(1).

[3] Hernadewita,Hermiyetti,Hendra,Syukriah,R. Astari, Br. Surbakti,Dewi Auditiya Marizka. Overall equipment effectiveness analyse for performance of cnc milling machine operation[J]. IOP Conference Series: Materials Science and Engineering,2019,505(1).

[4] Mangeni Bonphace. The role of public-private partnerships (ppps) in ensuring technology access for farmers in sub-Saharan Africa[J].

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ISSN: 0193-4120 Page No. 5572 - 5577

African Journal of Food, Agriculture, Nutrition and Development,2019,19(1).

[5] Matt Naitove. Technology showcase at wittmann battenfeld's 10th anniversary event[J]. Plastics Technology,2018,64(10).

[6] V I Astashchenko,D V Emelyanov,I N Gilazov. The application of plasma-electrolysis boronizing of parts[J]. IOP Conference Series: Materials Science and Engineering,2018,412(1).

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