Development Direction of Mechanical Design and Manufacturing and Its Automation

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Abstract: Mechanical design and manufacturing and its automation is a new discipline, which is developed by integrating various technologies. Through continuous development and practical exploration, mechanical design and manufacturing and its automation have gradually formed a technical system with automation as its main feature. With the continuous innovation and development of science and technology and the gradual improvement of people's quality of life, new standards and requirements have been put forward for the understanding and understanding of science and technology. Mechanical design, manufacturing and automation will also be continuously improved and better applied in the development and competition of various industries. The development of mechanical design and manufacturing and its automation has led to the reform and innovation of the whole industrial industry. At present, mechanical design and manufacturing automation technology has been used in many fields of mechanical manufacturing, effectively promoting the efficiency of mechanical design and manufacturing in various fields. In this paper, the concept of mechanical manufacturing, the characteristics of mechanical manufacturing, the development direction of mechanical design and manufacturing and its automation are discussed.

1. Introduction

Mechanical design and manufacturing and its automation are based on design and manufacturing, and are interdisciplinary subjects that integrate various technologies. The important origin of China's national economic and technological equipment is the machinery manufacturing industry, which is conducive to the continuous improvement of China's industrial system. Therefore, it is very necessary to explore the design and manufacture of machinery and its automation. The meaning of mechanical design and manufacturing automation refers to the use of advanced automation technology and electronic technology in the process of mechanical design and manufacturing, and it is fully combined together to carry out a variety of design technologies to blend with each other, so as to improve the production quality of mechanical automation and shorten the production time of automatic production [2]. With the continuous innovation and development of science and technology and the gradual improvement of people's quality of life, new standards and requirements have been put forward for understanding and understanding of science and technology [3]. Automation of mechanical design and manufacturing is the application result of high and new technology in the field of mechanical design and manufacturing. It is also the inevitable combination of the development of mechanical design and manufacturing industry and plays an important role in improving the technical level of mechanical design and manufacturing industry [4]. The automation development of mechanical design and manufacturing has brought a lot of convenience to people's production and life. This has also made the continuous development and progress of mechanical design and manufacturing and its automation technology in recent years.

Through continuous development and practical exploration, mechanical design, manufacturing and automation have gradually formed a technical system with automation as the main feature [6]. With the changes in the demands of the international and domestic markets and the continuous improvement of the level of science and technology, the traditional and conservative machinery design and manufacturing level is far from being able to meet the increasing demand for industrial production [7]. The development of mechanical design, manufacturing and automation has spurred the reform and innovation of the entire industrial industry, brought convenience to people's

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production and life, and will continue to improve and develop in the future. With the support of science and technology, the intelligent, modular and miniaturized development of mechanical design and manufacturing automation has become an inevitable development trend [8]. It uses advanced theories and methods of design and manufacturing technology to solve the complex technical problems encountered in modern engineering and achieve intelligent design and manufacturing of products. The current mechanical design and manufacturing automation technology is used in many fields of mechanical manufacturing, which effectively promotes the improvement of the efficiency of mechanical design and manufacturing in various fields, and has great practical significance for the realization of its work innovation and reform goals.

2. Background, Characteristics and Advantages of Mechanical Design and Manufacturing and Its Automation

Although mechanical design and manufacturing and its automation are formed by combining various technical means, they are not merely the simple accumulation and superposition of multiple technologies. For mechanical design and manufacturing and its automation, it is completely different from the traditional mechanical design and manufacturing, and is different from the past mechanical design and manufacturing. One of the advantages of mechanical design and manufacturing and its automation technology is that it can fundamentally simplify complicated and diversified mechanical operation procedures and methods, reduce the difficulty and danger of mechanical operation, and is very convenient for mechanical design and manufacturing and its automation technology [9]. The research on mechanical design, manufacturing and automation highlights the systematicness and complexity, and puts forward higher requirements for the refinement of machines, thus fundamentally ensuring the diversified requirements of mechanical products. Compared with the traditional machinery design and manufacturing industry, advanced machinery manufacturing and its automation are more humanized and intelligent. The effective integration of various technologies enables mechanical design and manufacturing and its automated equipment to fully meet various requirements. Although mechanical design and manufacturing and its automation are formed by combining various technical means, they are not only simple accumulation and superposition of multiple technologies, but also the integration of various science and technology into practical application according to the actual situation. For mechanical design and manufacturing and its automation, it is not the superposition and combination of simple mechanical technology and various design technologies, but the integration of various design technologies to improve the mechanical production efficiency and quality through the advantages of each technology.

Mechanical manufacturing and its automation are not the accumulation of multiple technologies, but the integration of them to achieve the integration of multiple technologies, making mechanical manufacturing and its automation more humane and intelligent. Automation clients can create automation objects, access objects provided by automation servers, obtain or set properties of objects, or call methods of objects. The interaction between automation objects and automation customers is shown in Figure 1.

In the process of the constantly changing needs of users, the existing mechanical automation technology cannot meet the needs of users. Mechatronics technology is an extension of modern mechanical automation technology. The widespread use of computer technology allows mechanical automation products to be debugged according to different needs to produce the products required by the premises. The failure of traditional machinery manufacturing can only wait for the staff to monitor and repair, and machinery manufacturing and its automation can well avoid this problem. In most of the production process, we will encounter some situations where human power cannot be controlled and operated. In this case, we can apply mechanical design and manufacturing and its automation technology to replace human power itself. During the healthy production process, operations are performed to complete the necessary production processes [10]. Mechanical design and production is the use of automated system design. Through the application of automation, it can achieve the actual functions required by the products produced at the output to the greatest extent,

so that the products produced meet the production requirements. Each product has its own unique product characteristics and production requirements, which is also the main purpose of the product being developed. The main task of mechanical design and manufacturing is to produce products smoothly on the premise of meeting the characteristics and production requirements of these products.

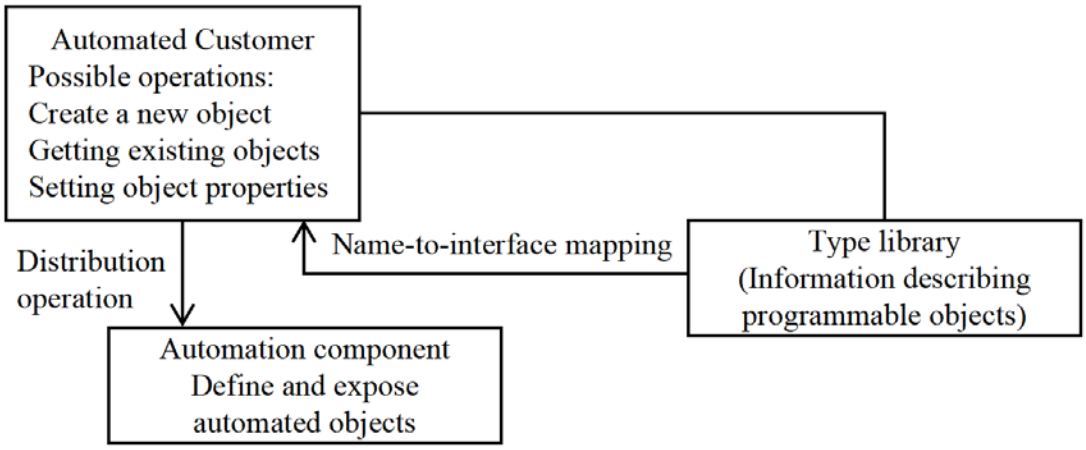

Figure 1 Interaction of automation customers and automation components

3. Development Direction of Mechanical Design and Manufacturing and Its Automation

The main advantage of mechanical equipment manufactured by mechanical design and manufacturing and its automation technology is that it can significantly improve the automatic control level of machinery and strengthen the intelligence of machinery through advanced automation technology, control technology and information processing technology. In order to meet the needs of the market and the requirements of the times, mechanical design and manufacturing and its automation technology must be integrated with network information technology, which can not only fundamentally improve the network information level of mechanical production equipment, but also share mechanical information. For mechanical design, manufacturing and automation, the result of its deepening and extension is mechatronics. Especially with the support of information technology, electromechanical integration has developed rapidly. If a power failure occurs suddenly in production, it can be quickly switched to other modes, and the circuit can be cut off at the same time to prevent the occurrence of large-scale safety accidents. Human beings are the main users of mechanical automation products, so products should have emotion, intelligence and humanity. Modular development of mechanical design and manufacturing can meet the needs of different industries for different products. During the research and development of new products, expansion of production scale and standardization of product units are required at the same time. It can make the mechanical operation more intelligent and implement the production activities according to our requirements. It is necessary to define the development trend and direction of mechanical design, manufacturing and automation, which is of great significance for the future of the entire mechanical manufacturing industry.

Modern machinery manufacturing enterprises take the road of mechatronics, which meets the development needs of modern machinery manufacturing enterprises. Intellectualization of mechanical automation technology is the future development direction of industrial technology. In the process of continuously improving the level of modern science and technology, intellectualization of mechanical automation technology becomes possible. In terms of machinery manufacturing industry, its harm to the environment cannot be ignored. Therefore, environmental factors should be taken into account in the process of designing and manufacturing machinery products to realize greening. Using mechatronics technology, the mechanical equipment designed and manufactured can not only have a stable and reasonable structure. Compared with the manpower itself, the mechanical operation will, to some extent, complete the predetermined process

more accurately, and can also avoid the related losses caused by improper manual operation. Modularization is also one of the development trends of mechanical design and manufacturing and its automation technology in the future, because modularization can carry out modular grouping work in the research and design stage of mechanical products to realize systematization of product production. Mechanical design has an important impact on the quality of mechanical products. Mechanical design must be carried out scientifically and reasonably according to market demand.

4. Conclusion

Mechanical design and manufacturing and its automation are multi-application disciplines formed by the integration of various technologies. They are well known for their great contributions to people's production and life. China's machinery manufacturing industry must adapt to the global development trend and solve the problem of low management system and technology level. This paper mainly discusses the design principles and advantages of mechanical design and manufacturing and its automation, as well as the future development direction of mechanical design and manufacturing and its automation. The future mechanical automation equipment can not only finish relevant work efficiently and accurately, but also has the characteristics of less environmental pollution and is easy to be recycled. The application of a series of technologies in mechanical design has promoted the development of mechanical design and automation to a diversified direction. Designers need to define the development direction of mechanical design and manufacturing and its automation, and constantly introduce new technologies. For the development of mechanical design, manufacturing and automation, it has obvious advantages, higher quality and stronger stability. At present, China's mechanical technology manufacturing should overcome the existing technical problems, constantly improve, adapt to the development of the world, accelerate the development of mechanical manufacturing industry, and establish a good international image of China.

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