The Concrete Research Based on Computer Technology in Mechanical Manufacturing

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Abstract. The machinery industry is an important pillar of China's economic construction. The design stage of traditional mechanical manufacturing is very difficult. This leads to the backwardness of mechanical equipment in our country. With the development of computer technology, great changes have taken place in the machinery industry[6]. According to the means of foreign machinery manufacturing, scholars believe that computer technology can promote the progress of machinery manufacturing level. Computer technology is also widely used in mechanical manufacturing. This paper describes the shortcomings of the current mechanical manufacturing technology. This paper also describes some applications of computer mechanical manufacturing technology.

Keywords: Computer, Machinery, Manufacturing

1. Introduction

Machinery manufacturing industry has a long history in China. After the founding of new China, the machinery industry in China officially entered the initial stage of development. With the rapid progress of foreign machinery industry, many scholars found that the level of foreign machinery has far exceeded the level of China's machinery. After that, the state actively implemented the financial policy of the machinery industry. This way helps the perfect transformation of the traditional machinery industry. However, the development speed of the traditional machinery industry is still very slow. Moreover, the manufacturing accuracy of mechanical equipment is also very low. The accuracy requirement is far from being able to meet the standard of use.

With the gradual popularization of computer technology, scholars found that the application of computer technology in mechanical manufacturing is very extensive. Germany's information technology can lead the world[4]. Therefore, China has introduced a lot of computer technology and software related to machinery manufacturing from Germany. After this, our country has also put
forward a lot of advanced mechanical technology (see Figure 1). This paper presents the main advantages of computer technology in mechanical manufacturing. In addition, this paper puts forward the related technology of machine manufacturing based on computer. I hope this paper can provide some help for scholars.

2. Feature analysis of machine manufacturing based on computer

2.1. Reduction of machining cycle of parts

The design process of traditional mechanical manufacturing is very complex. Many parts with high accuracy requirements have a long processing cycle. If there is an error in accuracy, the parts will be recycled. Moreover, if there is a problem with the drawing of the part, the whole production process of the part should be remade. However, the emergence of computer technology reduces the processing cycle of parts. It can make the manufacturing process of parts more stable.

![Figure 1. Engineering drawing based on Mechanical CAD software](image)

2.2. Emergence of batch production mode

The efficiency of ancient machining is very low. A lot of mechanical and technical work has to be done by hand. The processing cycle of parts with high requirements is very long. This leads to a lot of parts can not complete the mass production. This has also led to the economic downturn in the machinery industry. The emergence of computer intelligence technology helps the workshop to establish an intelligent system. Workshop can replace manual to complete the mass production of mechanical parts.
2.3. **Product innovation capability**

Many mechanical products of our country are imported from abroad. Many mechanical manufacturing technology is also the first invention of foreign scholars. This leads to the backwardness of China's machinery industry. The emergence of computer technology helps the rapid progress of China's machinery industry. At this stage, we are also developing some innovative mechanical products. We gradually develop some innovative advanced manufacturing technology.

2.4. **Emergence of Intelligent Mechanical Technology**

In fact, the relationship between robot and machinery manufacturing is very close. The relationship between artificial intelligence technology and machinery manufacturing technology is also very big. The technical basis of artificial intelligence is computer programming technology[9]. Using artificial intelligence can facilitate people to develop new intelligent mechanical technology. This technology can be used to develop new mechanical products. They can also be used to develop the future machinery industry.

3. **Important problems faced by China's machinery manufacturing industry**

3.1. **Maintenance of old mechanical equipment is difficult**

The production source of mechanical products is mechanical equipment. Through the support of mechanical equipment, we can develop some new mechanical technology. Moreover, mechanical equipment can also help enterprises more quickly reduce the production cycle of mechanical products. There is no doubt about that. However, today's machinery industry a lot of equipment are very old. In the process of maintenance, they will have a lot of equipment problems.

3.2. **The update of intelligent manufacturing technology is very slow**

Advanced manufacturing technology was first proposed by foreign scholars. They believe that this kind of manufacturing technology can help the traditional machinery industry successfully complete the reform. Advanced manufacturing technology can effectively help the future progress of the machinery industry. However, the update of the internal system of many mechanical equipment is very slow. This leads to the slow update of intelligent manufacturing technology. This will delay the development cycle of mechanical technology.

3.3. **Lack of talents in machinery industry**

According to the above description, we know that the historical process of the machinery industry is very long-term. Many mechanical engineers of the older generation are used to the traditional way of manufacturing machinery[7]. This leads to the backwardness of China's machinery level. Moreover, it also leads to the working environment of today's machinery manufacturing industry is very poor. More importantly, the salary range of machinery industry is also narrow. This has led to a lot of mechanical brain drain.

3.4. **Monopoly effect of large enterprises**
In order to obtain more benefits, many large-scale machinery enterprises and foreign machinery industry exchanges are close. Therefore, many industries follow the trend of foreign industries. Some machinery enterprises use the mode of industry monopoly to occupy the market. This led to a lot of new machinery industry can not survive smoothly in the market. The monopoly effect of large enterprises is a very important problem in today's machinery industry.

4. Analysis of the main application of computer technology in mechanical manufacturing

4.1. Application of drawing software technology

We know that mechanical drawings belong to a branch of engineering drawings. In the process of the development of the machinery industry, engineering drawings play a very important part. Without engineering drawings, the design of mechanical products can not be successfully completed. CAD drawing software includes two-dimensional software and three-dimensional software. Two dimensional drawings are usually used in simple mechanical design. Three dimensional drawings are generally used for difficult mechanical design.

| Application                | Effect            | Common software   |
|----------------------------|-------------------|-------------------|
| Drawing software           | Engineering drawing | Auto-CAD and 3dsMax |
| Dynamic simulation         | Flexibility of kinematic pair | NX 8.5 |
| Mathematical simulation    | Mechanical trajectory | Matlab |
| Virtual manufacturing      | Comprehensive simulation | Pro/E or Creo |

4.2. Application of dynamic simulation technology

In the process of designing mechanical linkage, we must ensure that the movement state of the product is natural. Before making products, designers usually use 3D software to design corresponding 3D models. A new coordinate system and a new kinematic pair are established in the model[3]. After that, some 3D software has dynamic simulation module. Designers can use the simulation module to establish the process of product motion simulation.

4.3. Application of mathematical simulation technology

In the process of designing a carbon free car, we must ensure the shape of the car's trajectory. In this case, we need to use the mathematical simulation software to make the mathematical simulation model of the car. Through the operation of software, the result of operation is a specific function. By predicting the trajectory of the function, we can see the trajectory of the car. In fact, many dynamic simulation techniques include mathematical simulation.

4.4. Application of virtual manufacturing technology

Generally speaking, the application scope of virtual manufacturing technology in China is relatively
narrow. The cost of this technology is relatively high. Many enterprises can not use a lot of funds to support the operation of the project[1]. It emphasizes the application of visual simulation technology and virtual reality technology. Visualization technology is a kind of technology to turn virtual data into images. Virtual reality technology can use virtual environment and physical modeling to create virtual models of products.

5. Analysis of specific advantages of computer technology in mechanical manufacturing

5.1. Proposal of conceptual design

In the process of purchasing electronic products, we will find that many manufacturers have introduced some product conceptual design. In fact, the technical basis of this kind of conceptual design is advanced manufacturing technology. Fortunately, the cost of conceptual design in the design process is relatively low. Although many conceptual designs have no physical samples, it still has a very strong market affinity. Its market advantage is great.

5.2. Simplification of drawing process

The process of traditional mechanical drawing is very complicated. In the past, mechanical drawing was done by hand. If there are some graphic changes in the process of drawing, the period of manual drawing modification is also very long. The drawing software supported by computer technology can effectively simplify the drawing process[8]. Moreover, 3D models can be easily converted into 2D drawings. This is a powerful drawing advantage.

5.3. Appearance of ultra-high precision products

The old mechanical equipment is very old. As a result, these equipment can only complete the rough machining process. Generally speaking, the manufacturing of high-precision products is impossible in the past mechanical design. Nowadays, computer technology is widely used in mechanical manufacturing. On this basis, fine processing equipment has also been developed. High precision products also appear.

5.4. The application of manual part is greatly reduced

Many people think that the number of workers in machinery factories is large. In fact, in the past, the work flow of workers in machinery factories was very complicated. Today's factory machinery and equipment are run by computer control. Many mechanical arms can also control the production process of mechanical products[5]. Nowadays, there are fewer workers in the factory. I believe that there will be no workers in the future intelligent factory.

6. Practical significance of specific research based on computer technology in mechanical manufacturing

6.1. China's machinery industry has become saturated

Many people think that the way forward for China's machinery industry is broad. In fact, this view is only superficial. China's machinery industry has gradually become saturated. This leads to the balance
of the level of China's machinery industry [2]. Compared with foreign machining technology, the processing technology of our mechanical products is backward. On this basis, we must improve the technology of machinery manufacturing.

6.2. The innovation consciousness of China's machinery industry is very poor

Although the development of the machinery industry has a long history, its traditional thinking of machinery manufacturing has not changed much. Domestic machinery enterprises have no sense of innovation. Many machinery factories are continuing the traditional machinery manufacturing technology. As a result, many mechanical products can not go out of Asia. In order to effectively solve this problem, the application of computer technology in machinery has an important development prospect.

6.3. Strengthen the development of sunset industry

The essence of machinery industry is a sunset industry. It can create less economy for our country. Today's machinery industry is only supported by a few important large enterprises. These enterprises include Gree Electric, Haier electric and Midea electric. Only by promoting the application of computer technology in machinery manufacturing, can we effectively accelerate the prosperity of sunset industry again.

7. Conclusion

Machinery manufacturing industry leads us to a better life. It gives us more life products. There is no doubt that the research of computer technology in the machinery manufacturing industry is important. We should strive to make our mechanical technology out of Asia and famous in the world.

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