

On the Effective Strategy to Improve the Level of CNC Machining Technology

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Abstract: After years of research and development, China's CNC machining technology has made great progress. But our country's mechanical NC machining technology is still relatively weak, after some exploration, we need to pay attention to the promotion strategy of the level of mechanical NC machining technology, to further ensure the quality of processing.

1. Introduction

In recent years, with the continuous advancement of science and technology, CNC machining technology has made great achievements, and is gradually widely used in different fields in the current society. Numerical control technology is an important basis of industrialization level after entering the 21st century. It is to upgrade the original traditional mechanical structure into numerical control mode, which can improve the technical application level to a great extent. CNC machining technology will directly affect the development of different enterprises and industries, and also bring great impact on the development of China's social economy.

2. Overview of CNC Machining Technology

2.1 Definition

CNC machining technology is a relatively advanced control and management technology. Applying this technology in different fields can make the staff realize the control of the production process through digital technology, so that the data of manual processing can be combined with the data of CNC machining, which is of great significance to improve the production efficiency and quality. CNC machining system mainly includes several modules, such as equipment, program, tool, fixture and so on. For CNC machining process, first of all, after processing and programming the workpiece, it is necessary to import the processing equipment. The computer in the processing equipment mainly takes the set program as the main basis, then processes different faces and bodies in sequence, and finally completes the corresponding operation according to all the processes in the equipment, so as to produce the corresponding structure. Specifically, the mechanical numerical

control system can be as shown in Figure 1 below [1].

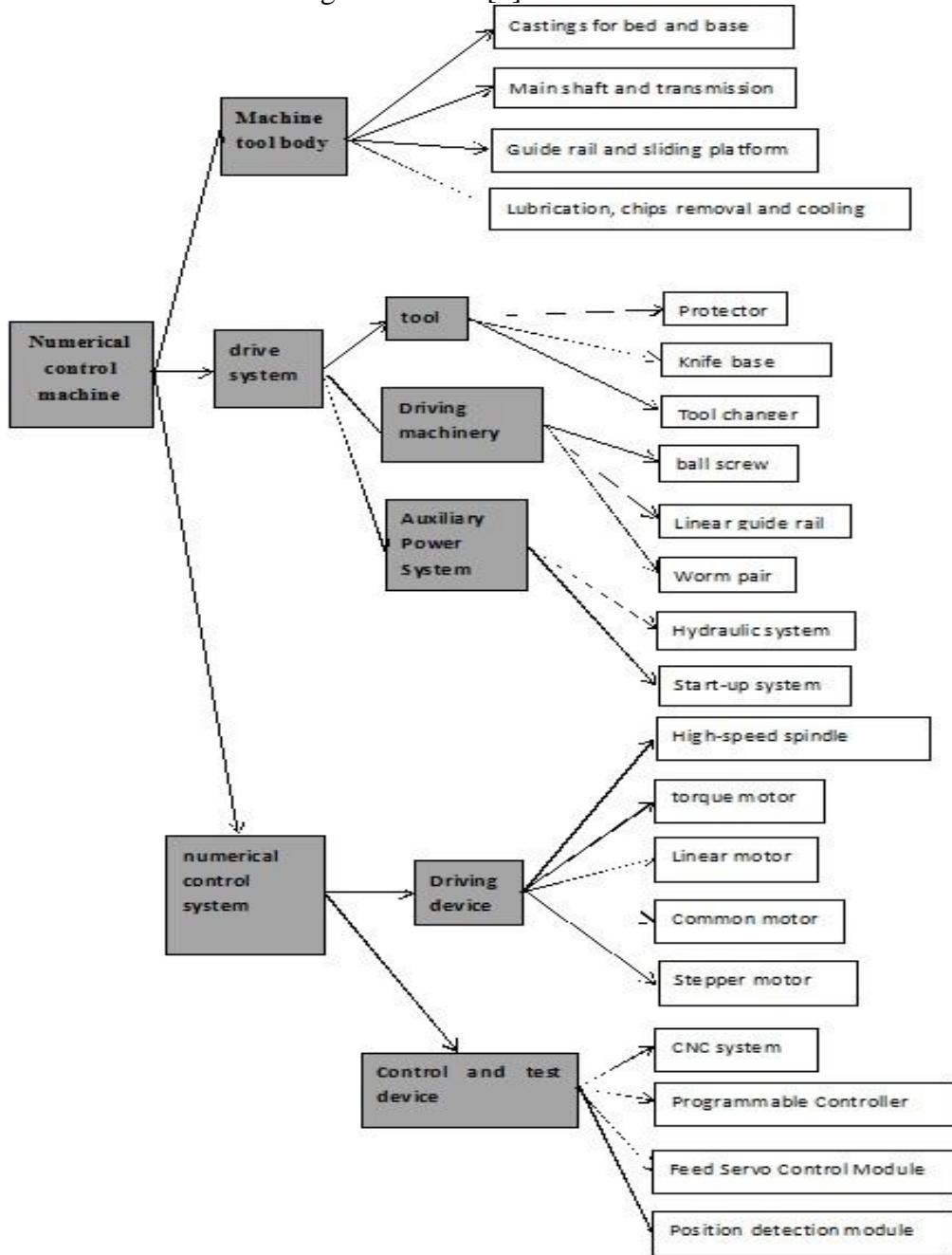


Figure 1: Control system of CNC machine tool

2.2 Significance

The mechanical numerical control machining technology in China is constantly being studied and analyzed, and gradually achieved many results. But for the technical and advanced nature, there is still a big gap between the developed countries and the developed countries. Therefore, the development of mechanical numerical control machining technology needs further improvement. First of all, CNC machining technology is an important part of industrial production and an important representative of the level of modern technology. Its production efficiency and quality are closely related to the national economic construction, which is of great significance to enhance

national strength; Secondly, the research of CNC machining technology is also an important way to improve the level of technical personnel reserve, which is also of great significance to improve the level of economic construction, especially in the national production [2].

3. Influence factors of NC Machining Technology

3.1 Human Factors

Mechanical numerical control technology has become a modern technology that can be widely used, which occupies a very large proportion in China's economic development. For the current situation of China's enterprise development, there are obvious deficiencies in the treatment of cost and efficiency, which need operators to focus on. There are many enterprises in China which are continuously backward because they pay too much attention to the interests of enterprises, which will affect the application quality of operation technology to a certain extent [3].

3.2 Programming Factors

Programming is an important prerequisite for the application of processing technology, which has a very important impact on the work quality of the whole machine tool. In the process of the application of CNC machining technology, it is necessary for the staff to do a good job of programming, and focus on the improvement of the programming technology level of the staff. However, in the practical application of technology, unreasonable programming often occurs, which will bring adverse effects on the quality of the final product and the whole work.

3.3 Processing Operation Factors

Machining link is an important part of CNC machining, which has an important impact on the quality improvement of the whole CNC machining technology. In the process of processing operation, the relevant operators need to understand and debug the dimensional accuracy stability of CNC equipment, and focus on the tool replacement and tool method selection involved in the processing. If we do not have a detailed understanding of the cutting performance of machine tools and equipment, and do not choose the appropriate tools and cutting methods, it will bring adverse effects on the quality of processed products. In addition, for the programming technicians, it is also necessary to arrange the cutting route reasonably according to the scientific means, so as to create more favorable conditions for the stability of the processing link [4].

4. Effective Strategies to Improve the Level of CNC Machining Technology

4.1 Standardized Management of NC Machining Equipment

CNC equipment is an important part of CNC machining. Its flexible application and effective maintenance have an important impact on the stability of machining performance. First of all, it is necessary for the relevant enterprises to enhance the maintenance awareness of the operation and technical personnel through publicity and training. At the same time, it is also necessary to do a good job in the inspection of the mechanical processing equipment regularly, so that the stability of the equipment can be effectively improved; Secondly, the maintenance personnel need to check out the shortage of mechanical equipment in time to create more favorable conditions for subsequent processing; Finally, in the process of the application of CNC machining technology, we need to make a reasonable classification of different equipment parts, and timely do a good job of analysis,

and then according to different work to make the standardized management of equipment parts, so that it can get better work effect [5].

4.2 Reasonable Selection of Machine Tools

In the process of the application of CNC machining technology, machine tools are an important part of it, which will also have a great impact on its machining level. Before the formal operation, the relevant staff need to do a good job in the reasonable selection of machine tool cutting tools, but also do a good job in the classification of different types of tools. For different types of machining, different cutting tools are often used. For example, the cutting effect of ball head cutting tool is general [6]. Comparing it with normal flat head cutting tool, we can see that the actual processing efficiency is relatively low, and the quality is general. But this kind of tool has very strong stability, basically will not appear the phenomenon of cutting too much, so in the process of the application of mechanical numerical control machining technology, it is necessary to reasonably select the tool, to promote the better improvement of the level of numerical control operation technology.

4.3 Training High Quality Talents

For the application of mechanical numerical control technology, human resources are always an important part of it, which plays an important role in promoting its technical level. Relevant factories and enterprises must actively cultivate high-quality designers and programmers. First of all, we need to improve the technical level of designers. We need to combine modern advanced ideas with foreign technical experience. Through regular technical training, we can effectively improve the technical competitiveness of enterprises; Secondly, it is necessary to improve the comprehensive quality level of programmers [7]. Different channels can be used to effectively help programmers, so that their professional and technical level can be improved, and the overall quality of machine tool processing can be effectively guaranteed.

4.4 Strengthen the Maintenance of Mechanical Numerical Control Equipment

Numerical control machine tool is the main equipment of mechanical numerical control processing technology application, we must pay attention to its operation and maintenance management. First of all, the enterprise needs to establish a scientific equipment operation and maintenance management mechanism, and make a reasonable operation and maintenance plan according to the actual operation of the equipment, so that the equipment operators can do a better job of maintenance and management according to the plan, and the post responsibility of the operation and maintenance technicians can be better improved; Secondly, we need to upgrade the old CNC equipment and technology in time, so that it can better carry the research of CNC machining technology, and provide more accurate test data for CNC machining technology, so as to promote the effective improvement of CNC machining technology [8].

5. Conclusions

In recent years, China's CNC machining technology has been greatly improved with the development of national science and technology, but it cannot be as excellent as the most advanced CNC machining technology in the world. Therefore, to catch up with the most advanced technology in the world, more efforts need to be made by relevant technicians [9].

To sum up, the level of CNC machining technology has an important link with the market competitiveness of the workpiece, and has an important impact on the development of an industry

and the economic strength of the country. The development of the core technology of CNC machining needs to focus on the digital design and the improvement of the comprehensive quality of personnel. By analyzing the relevant factors of the level of CNC machining technology, and taking scientific means to make timely solutions and optimization, the technology development has a stronger driving force, So as to realize the healthy development of enterprise economic benefits. In addition, it will help to promote the development of China's manufacturing industry in terms of science and technology, high technology and high efficiency, and improve the core competitiveness of enterprises as a whole [10].

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