

Application of CNC machining Technology in Modern Machining

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Keywords: Machinery manufacturing; CNC technology; Automation

Abstract: With the continuous development of the machinery manufacturing industry, the machinery manufacturing technology is also constantly innovating. NC technology is more and more widely used in the process of mechanical processing, which greatly improves the efficiency and quality of mechanical processing. Modern numerical control technology has strong processing flexibility, and can realize the precision processing and standardized production of objects under various complex conditions. NC technology mainly uses digital information to control machining. The application in the manufacturing industry not only solves the technical problems that many traditional mechanical manufacturing technologies cannot solve, but also further promotes the automation development of the industry. The development of CNC machining technology is related to the development of various national economic sectors and directly affects the development of the national economy. This paper analyzes and studies the application of CNC machining technology in modern machining, in order to improve the quality of machining.

1. Introduction

With the rapid development of science and technology, traditional mechanical processing has been unable to meet the development needs of modern mechanical processing industry [1]. In order to improve the processing level of mechanical products, electronic numerical control processing technology is introduced into mechanical processing. NC technology is a kind of mechanical processing technology based on traditional machining technology, which uses digital control technology and combines computer network technology and data communication technology [2]. NC technology mainly uses digital information to control machining. The application in the manufacturing industry not only solves many technical problems that traditional mechanical manufacturing technology can not solve, but also further promotes the automation development of the industry, and promotes the overall process of industrial modernization in China [3]. CNC technology also simplifies the machining steps, making the machining process more standardized and orderly. The rapid development of computer technology and its application in the field of numerical control processing have greatly promoted the development level of automation of machining technology [4]. We should actively use the development opportunities of advanced technologies to better serve the development of machinery manufacturing industry and strive to catch up with the technological level of developed countries in the shortest time [5].

The use of numerical control technology can greatly improve the accuracy and precision of machining and improve machining efficiency. In the current development of machining, CNC machining technology has made great progress [6]. However, compared with developed countries, there is still a certain gap. CNC machining technology is an important technical support for high-tech industrialization. The development of CNC machining technology is directly related to the development and progress of high technology [7]. CNC machining technology is a bridge and channel for high-tech achievements to break away from laboratories, transform into actual products, and go to market. Machining has relied entirely on CNC machining technology, which not only improves production efficiency, but also produces more precise and aesthetically pleasing products [8]. For the transformation of many high-tech achievements, we must have a certain hardware foundation. CNC processing technology can promote all kinds of high-tech achievements from the laboratory to the society, turn these technologies into real products, to the market [9]. The development of CNC processing technology is related to the development of various national

economic departments, and directly affects the development of national economy.

2. Application of CNC machining in Machining Technology

The use of numerical control technology in mechanical processing can improve production efficiency and processing accuracy, and save the manual requirements. In the field of modern mechanical processing, numerical control processing technology has gradually been widely promoted. It quickly occupies the market with the characteristics of high precision, high efficiency and low cost. The rapid development of computer information technology and its continuous application in the field of numerical control processing have greatly promoted the development level of automation technology of mechanical processing in China. An important way to realize the transformation from traditional to modern manufacturing industry is to widely apply NC processing technology to modern machining industry and become the core technology of its production and manufacturing. Most of the numerical control computer equipments are embedded computer systems, which not only have the function of the interface unit matched by the numerical control machine tool, but also the structure of the function module. The application of numerical control technology in industry can be said to ensure the safe production, while the quality and quantity have completed the tasks that humans sometimes have difficulty to accomplish. When a fault occurs during processing, the computer system can also signal based on the fault. The automatic control system stops working to ensure the safety of the equipment.

The application of numerical control technology improves the control ability of machine tool processing. By using numerical control technology to complete the control during the machining process using machine tools, the production efficiency of machine tool processing can be greatly improved. Machining quality information is physically distributed across different sectors, regions and countries. Only through the database system and the computer network can the ability of information sharing and remote interactive access between the various members and the internal processing of each enterprise can be realized. Sampling inspection should be carried out before raw materials enter warehouse in order to obtain the theoretical components of the incoming inspection sheet and the incoming inspection sheet. When using the equipment, the moving components of each coordinate are transmitted to the corresponding driving power supply, and the cutting motion of the machine tool is maintained along the programmed path. The application of NC technology in industrial production is mainly embodied in the production line of mechanical equipment, in order to achieve large-scale integrated production of products.

CNC machining technology can integrate some processes that can be integrated with each other, shorten the processing time and improve production efficiency. The social demand for mechanical products is constantly showing a large number of diversification, personalization, product orders are gradually showing the characteristics of multi-varieties, small batches. For most engineering problems, there are few analytical solutions because of the complex geometry of the object or the nonlinearity of some characteristics of the problem. Project quality control refers to the control of the progress of each stage and the deadline for the final completion of the project in the process of project implementation. The process duration obeys lognormal distribution. Figure 1 is the result of critical chain planning.

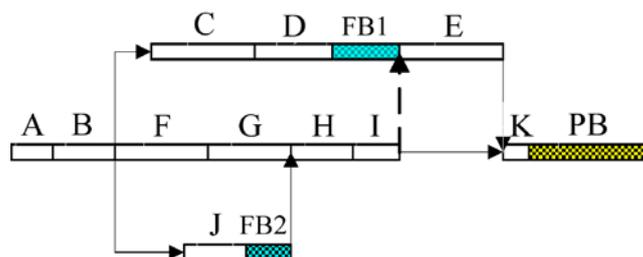


Fig. 1 Key chain method planning results

China's traditional weapon industry machinery processing industry is very mature. If you abandon the original processing machine tool and use modern CNC machine tool technology, it is not only unrealistic but also costly. The development of automation of machining technology is actually the result of many factors. Among them are the development of social economy and the renewal of science and technology. The application of numerical control technology in machine tool equipment usually relies on code to complete control. Various sequence actions such as spindle, shifting, tool selection and start and stop of the cooling pump during machining are completed by programming [10]. Workflow is the computational model of workflow, which represents the tasks in the process. What logic or rules are connected together, and what models are used to represent and calculate them? Although the information level of each subsystem is constantly improving, the coordination among the subsystems is poor, and they only focus on the information within their own scope. People can identify the wear and tear of mechanical equipment, and at the same time, they can apply expert system to realize the diagnosis of mechanical equipment faults.

3. The Importance of CNC machining Technology in the Field of Machining

CNC technology can maximize the automation efficiency of mechanical equipment operation. Therefore, it is more convenient and fast to serve modern mechanical processing. To accomplish a task, people from different departments and fields need to cooperate with each other. Similarly, the system needs to coordinate the workflow and progress of each participant through workflow. For the nonconforming products or non-conforming approvals found by quality inspection, the quality trial procedure needs to be initiated. Make suggestions on the disposal of rejects, concessional use and repairs of non-conforming products. The CNC machining technology is to compile the working flow and mode of the machine by using the pre-set machine recognition language on the computer. The wide application of CNC machining technology in machine tools has realized the digitization of machine tool processing. It not only improves the production efficiency of the machine tool, but also improves the controllability of the machine tool to achieve arbitrary processing of the object. Compared with traditional machining technology, CNC machining technology has some incomparable advantages. Strengthening the application of CNC machining technology can greatly improve the detection level of mechanical equipment.

From the perspective of development, the performance of the numerical control system has been effectively improved, and it can be well applied to the various requirements of mechanical processing products. The basic theory of mechanical processing and quality control mainly analyzes the connotation and characteristics of mechanical processing, the connotation of mechanical processing control and quality control methods. Developing a project plan is one of the reasons why many people are unwilling to make a plan because they need to consider and answer many questions. The pain curve points out that developing a project plan is indeed a painful thing, but it will reduce the pain during the project implementation process and later. The pain curve of the quality control cycle is shown in Figure 2.

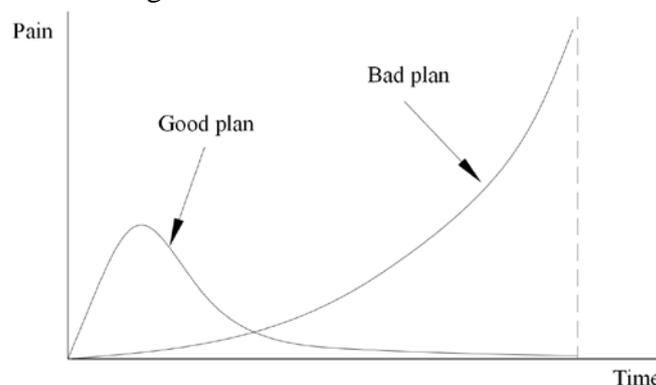


Fig. 2 Project control life cycle pain curve

CNC machining technology is a relatively advanced technology and has many positive

contributions to the emergence and development of more new technologies. Compared with the traditional processing methods, CNC machining technology can realize the production mode of the pipeline. The core idea of the quality management system of the machine shop is to study the process that occurs during the production process of the workshop, and analyze and manage the various factors that affect the quality of the process and parts. Through the discretization of the structure, the actual structure can be divided into a collection of finite units, and adjacent units can only be connected to each other at the nodes. Applying NC processing technology to the production process of machine tools reasonably and scientifically can increase the production volume of machine tools and implement batch production. CNC machining technology is effective in machine tools and equipment, which can realize the digitization of machine tools. Combining with modern numerical control technology on the basis of the original machine tool equipment can not only improve the quality requirements of modern industrial mechanical processing, but also save energy and economic costs.

4. Conclusion

With the continuous development of information technology and computer technology, the application of computer information technology is more and more extensive. CNC technology is widely used in various industries in China. It can not only reduce the labor intensity of workers, improve the production efficiency of enterprises, but also improve the utilization of materials and reduce production costs. Manufacturing industry is an important industry in China and an important pillar industry in the development of national economy. Therefore, we should attach importance to the application of various high-tech industries in the process of production and manufacturing. Today, with the rapid integration of information technology and machinery manufacturing, we must take advantage of the rapid development of information technology to catch up with the level of mechanical development in developed countries. The application of numerical control technology in the mechanical processing manufacturing industry has got rid of the shackles of the traditional mechanical manufacturing industry, and has got rid of the traditional control of mechanical production by relying on simple manpower. CNC machining technology brings a technological innovation to the processing industry, which is related to the modernization of the industry and its international competitiveness. In the machinery manufacturing industry, people should actively strengthen the application of numerical control technology, realize the automation and intelligence of machinery manufacturing, and continuously improve the level of industrial production in China.

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