

Analysis and formulation of influencing factors of mechanical processing technology on parts

Maoshun Li ^a, Qiyu Liu ^b, Wei Miao ^c

School of Shandong University of Science and Technology, Shandong Qingdao, 266590 China

^a1101947185@qq.com, ^b1311268787@qq.com, ^c1351218987@qq.com

Abstract: In machining, the rationality and innovation of machining processes are becoming more and more important. The machining process is the whole process of making raw materials into qualified parts by mechanical processing. Therefore, the machining process runs through the entire process, and in each process has an important impact on the machining of the parts. Reasonable processing technology can ensure product quality, reduce processing costs, improve processing efficiency, and ensure production safety. The article explores the impact of processing on various aspects of the part.

Keywords: Machining process; part processing; influencing factors.

1. INTRODUCTION

The development of machining processes has an important impact on the machining of parts. Machining is the process of changing the shape, size, relative position and properties of raw materials by mechanical processing to make them a qualified part. The processing technology runs through the entire production process, and the processing content and operation method of each process have an impact on the quality of the parts. Therefore, we need to analyze the various factors of its impact to help us develop a reasonable processing technology. The machining process specification generally includes the following contents: the process route of the workpiece processing, the specific processing content of each process, the equipment and process equipment used, the inspection items and inspection methods of the workpiece, the cutting amount, and the time quota. In the current process, due to changes in certain conditions, such as changes in production conditions, the introduction of new technologies and processes, the application of new materials and advanced equipment, etc., will change the existing machining process. Therefore, it is required to revise and improve the process flow in time, adjust the determined processing sequence and processing content to improve the processing efficiency and ensure the rationality and efficiency of the process. The same part is processed in different companies and the process flow is different. Therefore, the machining process is the product of the company's actual production situation.

2. FACTORS AFFECTING MACHINING PARTS BY MACHINING PROCESS

2.1 The factors that affect the machining accuracy of the machining process can be mainly divided into the following points. The geometric accuracy of the machining process itself is one of the reasons for the impact on the machining accuracy of the part. The accuracy of the machining process system itself has an impact on the machining of the part. The accuracy of the machining process is mainly affected by three factors:

(1) Due to the entire process of the machining process, the machining process itself has the accuracy problem in the manufacturing process, so we have an influence on the precision of the machined parts when it is put into use.

(2) When the whole process of the machining process is installed and used, due to the difference with the mechanical installation, plus the inaccurate operation and inaccurate positioning, the processed parts are affected during the processing of the parts.

(3) The mechanical system processing technology is in its specific use. Due to the long-term use of the machining process, there will be some important mechanical parts or fixtures with serious wear and tear, so that the machining process of the mechanical system is affected by the machining of the parts.

At the same time, the precision of the self-processing machine in the machining process will also affect the machined parts, such as the machine used for processing does not meet the requirements, and during the use, or the installation is not in place, the operation is not fine, the positioning is not accurate, or The wear and tear caused by long-term use will affect the machining accuracy of the parts. We can control the error during machining and can take some optimization and compensation measures. For example, in the automatic and intelligent CNC machine tools, professional correction software can be equipped. For general machine tools, if there is wear, the error compensation of the system and components can be realized by referring to the correction data and manually setting the nut.

2.2 During the actual operation of the machining process, the system is often deformed by force, resulting in slight deformation of its position and shape, which seriously affects the normal operation and life reduction of the system. Exploring its causes, the main influencing factor is the actual strength of the system. During the actual operation of the system, the small components such as tools and fixtures used by the system are subject to high-intensity workload. If the time is too long, the relative position will change, and each component will face multiple forces. During the operation of the system, the components of the system not only have to withstand the work force exerted by the system itself, but also withstand the relative force applied from the machined parts, while at the same time bearing the friction between the parts and the parts. Thermal deformation during the operation of the machining process system In fact, during the operation of the machining process system, not only will the impact of multiple forces be affected, but also other factors. Specifically, it is thermal deformation, including thermal deformation of the tool, thermal deformation of the machined part, and thermal deformation of the machine tool itself and its components. Thermal deformation refers to the deformation of the system due to heat. It can seriously damage the exact geometric relationship and motion relationship between the tool and the part being machined, which seriously affects the precision of the machined part. This is because, in general, the influence of heat deformation on the

part is large. Especially in the processing of parts with high precision requirements and the processing of large parts.

3. DEVELOPMENT OF MACHINING PROCESS

In summary, we are developing a process for processing a part. It is necessary to formulate the process in all directions and from multiple angles. When formulating the process flow, it should respond to the comprehensive and multi-angle analysis of the production route, and propose several feasible solutions for comprehensive analysis and measurement. Through a multi-faceted analysis, determine an optimal process plan. The all-round is mainly based on the type of parts, a comprehensive process analysis of the parts. Understand the technical requirements of the part drawing, analyze the part processing size, shape and positional accuracy, surface roughness and design basis, determine the material, shape and heat treatment of the part, determine the production time, determine the various equipment and measurement during the processing. Tools, special fixtures, etc. The multi-angle mainly selects the machining positioning reference according to the design basis, determines the degree of concentration and dispersion of the processing sequence, and arranges the order of heat treatment, inspection and other auxiliary procedures; determines the processing method and processing equipment of the raw material surface, and rationally arranges the processing order of the parts, Ensure the rationality and efficiency of parts.

When we develop the processing technology, we still need to consider the existing mechanical equipment, and the machining equipment plays an important role in the formulation of the processing technology. The selection of mechanical equipment should not only ensure the quality of processing, but also be economical and reasonable. Under the conditions of batch production, we generally use general-purpose machine tools and special fixtures, and if necessary, CNC equipment and special processing equipment can be introduced. Ultimately achieve high efficiency and high quality.

4. CONCLUSION

In order to further improve the accuracy of parts and components, reduce the unqualified rate of parts production and achieve economic benefits. It is necessary to strengthen the research and input of the machining process to minimize the factors affecting the accuracy of the parts. Then make rational use of existing machinery to develop a reasonable processing technology.

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