Development and Study on Curriculum of Mechanical Design, Manufacturing and Automation

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Abstract: With the development of the times and the progress of science and technology, information technology is also developing rapidly, and the development of information technology promotes the automation development of machinery industry. Nowadays, the advantages of mechanical design and automation are obvious, but at the same time, people's needs are constantly changing and improving. In the ever-changing Internet era, mechanical design, manufacturing and automation will inevitably develop with the pace of the times.

1. Introduction

Machinery design and manufacturing have made great contributions to society. With the progress of the times, the combination of theory and practice in different fields has promoted the automation development of machinery industry. It has not only made great contributions to social production, but also promoted social development and the development of the whole industry. This paper mainly focuses on the application characteristics and advantages of mechanical design and manufacturing automation, and looks forward to the development trend of mechanical design and manufacturing and automation in the context of the Internet era.

2. Advantages of Mechanical Design, Manufacturing and Automation Application

2.1 Enhanced Social Productivity

The purpose of mechanical design and manufacturing is to replace manual labor and improve production efficiency. With the continuous development and improvement of the automation of mechanical design and manufacturing, most of the current machinery and equipment have super-high automation control function, and the data of control and detection have been greatly improved. The automation control system can make the executing mechanism of machinery execute instructions in full accordance with the design requirements, and can ensure that. Evidence is objective, not subject to the subjective influence of mechanical operators, so that it can achieve the best operation, improve the quality of work and improve the rate of qualified products. Nowadays, modern mechanical production has been basically realized in all fields of production in our country. Automation design also provides great convenience for the use of machinery, improves the production efficiency synchronously, reduces the production cycle greatly and saves some sunk costs.

2.2 All-round improvement of mechanical properties

The main purpose of traditional mechanical design is to realize the convenience, efficiency, reduce labor costs and save labor. Most of the mechanical automation design has the functions of monitoring, protection, alarm and automatic diagnosis, which greatly improves the efficiency of mechanical application. At the same time, the mechanical automation design also takes the machinery itself as the main body. Because the machine itself has self-protection mechanism and control ability, some minor problems in its operation process, such as circuit overload, circuit overcurrent, can be found and regulated in time to ensure the safety and reliability of mechanical applications. The automation of mechanical design and manufacture improves the mechanical

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efficiency, and the electronic components are selected because the internal components and wear parts of the machinery are abandoned. The real-time monitoring of the machinery by using modern digital technology and information technology not only improves the sensitivity of the machinery, but also reduces the wear degree of the machinery. Longer service life also helps to improve mechanical accuracy.

2.3 Adapt ability is higher.

Automation machinery is more adaptable, while traditional mechanical design and manufacturing functions are more uncertain. Automation of automated machinery mostly relies on programs to execute instructions, and instructions do not change substantially because of the different subjective ideas of mechanical operators and products produced by mechanical locks. That is to say, in order to meet the needs of social production and actual parameter changes, mechanical automation equipment can realize different functional settings of automation equipment in the process of installation and debugging. These control procedures can be input into the control system of mechanical automation products by multiple means without changing any parts of the products. From this, we can see the high adaptability of mechanical automation products. Mechanical automation products have been separated from the restrictions of single function and single technology of mechanical and electrical products. Now mechanical automation products not only have composite technology, but also have the restrictions of single technology and single function of mechanical and electrical products. They have composite technology and composite functions, which greatly improve the level of product function and automation. Because of the high adaptability of mechanical automation products, the cost of mechanical maintenance and operation are relatively reduced. The automatic detection and alarm function of automatic machinery can greatly reduce the time to find faults, improve the efficiency of maintenance personnel, and debug the machinery as soon as possible to the greatest extent, and finally solve the faults. The self-function of automatic machinery not only reduces the production cost, but also reduces the generation caused by mechanical faults. Production risk, at the same time, the reliability of machinery in the production process is effectively improved.

3. Development Trend of Machinery Design, Manufacturing and Automation

Machinery manufacturing industry is an important part of manufacturing industry and the main source of technical equipment in various sectors of the national economy. It is of great significance to the development and continuous improvement of China's industrial system. Therefore, the development of machinery design, manufacturing and automation is of the utmost importance. It is necessary to carry out systematic research to promote its continuous completion. Goodness and development. In the context of the Internet era, the future development trend of the combination of information technology and manufacturing industry, mechanical design and manufacturing and automation may focus on the following points:

3.1 Miniaturization

The trend of mechanical design, manufacturing and automation towards miniaturization is obvious with the support of highly integrated electronic components. For the production industry, the operation of mechanical equipment requires a huge amount of energy, production equipment also occupies too much production space, the operation of mechanical equipment requires too much resources. In the 21st century, more and more attention has been paid to the micro-mechanical automation products, and the mega-mechanical design is to realize the related functions of the machinery. However, in the mechanical automation products, the micro-automatic mechanical products try to avoid duplication with the functions and design of the mega-mechanical products, and reduce the automation as much as possible. Conflict between control and mechanical design, the purpose of highly integrated design of mechanical space is to make machinery occupy less production space and need less production resources without affecting its automation performance, while improving its flexibility and avoiding the excessive waste of production energy. The

miniaturization of such automated mechanical products will continue to improve and optimize, and can be applied to more sophisticated production activities such as military equipment or medical production.

3.2 Virtualization

Machinery design is accomplished by multi-programming, such as test, screening, design, integration, etc. It often takes a long time. It not only wastes a lot of time but also wastes manpower. It also hinders the development of enterprises and is not conducive to optimizing the rational allocation of funds. On the basis of network technology, modern information technology and digital technology, using computer virtual mechanical design and electronic design drawings of PC terminal, the related mechanical manufacturing simulation model is established to test whether the mechanical design is scientific and achievable by simulating production, which not only improves the mechanical design. Fineness also improves the design efficiency of mechanical design. At the same time, due to the wide spread of the network, it also promotes the rapid development of mechanical design and automation technology.

3.3 Intelligence of Man-Machine Integration

With the development of the times, mechanical manufacturing and its automation technology are bound to be intellectualized. At the present stage, the intellectualization of mechanical manufacturing automation has been preliminarily realized. As mentioned above, the intelligence of machinery is embodied in the automatic diagnosis, alarm and protection of machinery. But at this stage, most of the mechanical operation still depends on manual operation, which can not be completely separated from human resources for the time being. And mechanical failure problems are waiting for people to discover actively, or machine automatic alarm person to repair, people and machinery are not too much related, each is the theme. But talent is the ultimate user of mechanical automation products. All its functions are to serve and facilitate people, so it should be more humane and intelligent. Intelligent mechanical automation, which integrates man and machine, shortens the distance between man and machine and further improves the advanced functions of machinery. It is not only to simply replace manual work, but also to realize the mental ability of machinery. Intelligent mechanical automation can improve the efficiency of enterprises, promote the development of enterprises, and optimize enterprises to a greater extent. For the allocation of production resources, in the man-machine intellectualized mechanical automatic control system, we can actively analyze, summarize, screen and integrate data to achieve more active mechanical automation. At the same time, human-machine intellectualization can imitate various biological mechanisms and develop various mechanical automation products. The development of human-machine intellectualization will promote the development of mechanical design, manufacturing and automation.

3.4 Sustainability

As mentioned above, mechanical automation improves mechanical performance, prolongs production life, improves enterprise efficiency, and also makes great contributions to social production. However, mechanical automation requires more energy and resources than traditional mechanical applications, and mechanical automation often causes a series of environmental problems. Under the strategic policy of sustainable development in China, mechanical design and manufacturing and its automation must reduce the environmental problems brought about by its development, and improve the resource utilization rate of mechanical automation, and follow the sustainable development line that is in line with modern environmental protection and resource saving.

4. Conclusion

With the development of the times, mechanical automation has gradually kept pace with the development of the times, and is also slowly transiting to modern production. Because modern

mechanical automation design and manufacture is of higher quality, reliability, more functions and lower energy consumption, mechanical automation is an ineviTable trend. However, with the progress of the times and the development of science and technology, the miniaturization, virtualization, intellectualization and sustainability of mechanical design and manufacturing and its automation are also ineviTable trends.

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