



## **AUTOMATION OF TECHNOLOGICAL PROCESSES AND SYSTEMS IN MANUFACTURING**

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### **Abstract**

With the continuous emergence and development of high-tech industry, more and more fields began to try automation technology, and under the promotion of automation technology has made extensive achievements. In this paper, the concept and components of mechanical automation technology are analyzed through the practical application of automation technology in the field of mechanical manufacturing.

**Keywords:** Automation, mechanical engineering, technology, manufacture.

### **Introduction**

Mechanical automation technology refers to the integration of automation technology into production in the process of mechanical manufacturing, in order to gradually improve the efficiency and quality of mechanical manufacturing. With the continuous progress of automation technology, the automation technology at this stage has been able to make the whole process of mechanical manufacturing to maintain sustainability and safety, on the basis of reducing the cost of input, so that mechanical manufacturing can meet production needs and practical needs. With the application of mechanical automation technology more and more widely, it is necessary to further improve the mechanical automation technology and process, combining with the existing technical characteristics, to provide continuous power for the modern mechanical manufacturing industry.

### **Main Part**

The main components of mechanical automation technology are program unit, control unit, sensor unit, formulation and related action unit. These are composed of a variety of structural units with integrity and systematisms, and have complete management performance for the overall working system. Among them, the program unit can centralize the management of the whole working system, which is an important component of the whole mechanical automation system. The control unit plays the role of management and regulation in the process of the system playing a role, and becomes the regulation guarantee part in the whole automation system.





Sensor unit can effectively adjust the work content of automation system under the condition of ensuring its own work efficiency. So that the corresponding signal command can be accepted. Finally, the unit of action plays an external role. This unit can be positioned effectively according to the needs of the system and help to improve the functional value of mechanical automation technology.

As far as the current technology is concerned, the most widely used control system still belongs to the computer aspect. Before the development of this control system, the relevant technicians have adaptively matched other production aided processes according to the operation cycle of the computer [1]. The role of these auxiliary links in various aspects was evaluated, and the production quality and efficiency driven by mechanical automation technology were comprehensively evaluated. Before the formation of Automatic Integrated Control System (AICS), many assistant technologies operated independently in a small scale [2]. And there is a specific set of procedures, as shown in Figure 1.

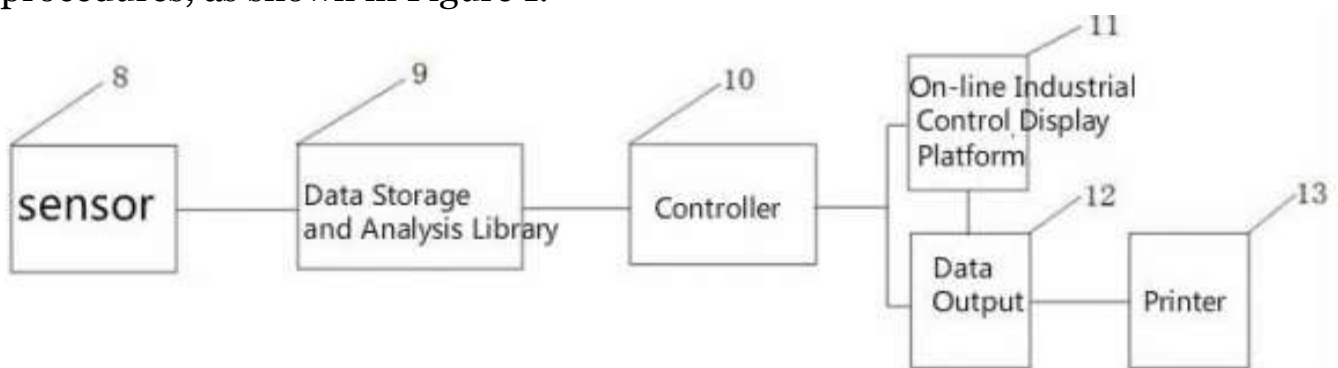


Figure 1 - Running procedures for assistive technology

Although production time can be reduced to a certain extent, there is still a lack of necessary means for cost reduction. The computer integrated manufacturing system (CIMS) combines each technology well in different degrees, which makes the information platform and data types combine with each other, so as to ensure the stability of assistant technology. From a macro point of view, computers can also effectively improve efficiency through the mutual adjustment of manufacturing systems to ensure sustainable development of enterprises. The computer integrated control system can also be analyzed from the aspects of electronic information and modernization. These include electronic information, modern management, advanced material realization, mainly including computers, new automatic sensors and other components, as shown in Figure 2.

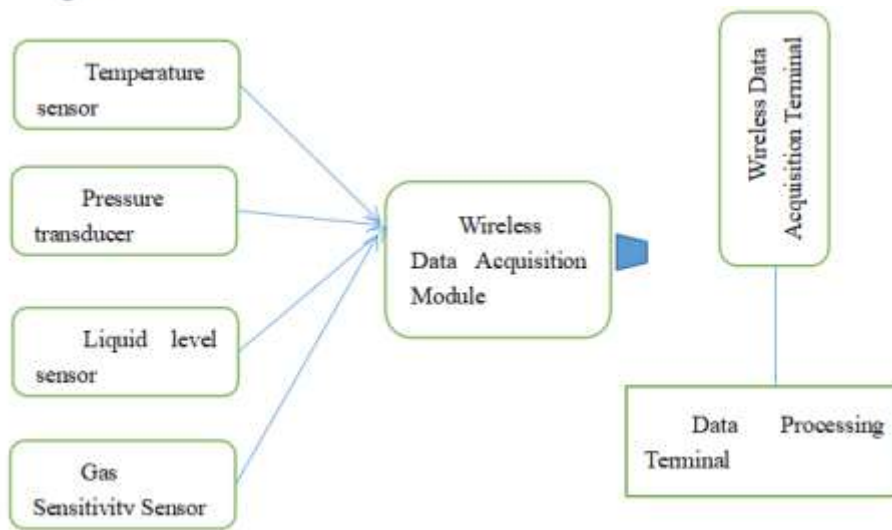


Figure 2 - Analysis of Computer Integrated Control System

These components regulate each other, promote the improvement of labor efficiency, and form a stable and reliable system. Starting from the integrity, the product cycle type planning can further shorten the development and manufacturing cycle, so that the work efficiency can be effectively improved and unnecessary waste of resources can be avoided.

With the rapid development of science and technology, more and more intelligent technology has begun to integrate into the basic research of mechanical automation technology. This laid an important foundation for the innovation and development of machinery manufacturing industry. For example, in the implementation of man-machine integration technology, intelligent technology is needed to play a role in ensuring the safety and convenience of man-machine interaction [4-8]. In the process of conceiving mechanical manufacturing process, logical reasoning and analysis judgment are also needed to be carried out effectively. Under the condition of convenient communication mode, the efficiency of mechanical manufacturing work can be improved, so that the mechanical manufacturing work can be transformed to the direction of intellectualization. In addition, intelligent technology also has the characteristics of integrating mechanical manufacturing, automation technology and artificial intelligence technology, which can effectively enhance the ability of technical analysis and environmental judgment. In the actual process of studying mechanical automation technology, it is also necessary to integrate relevant intelligent systems, through the process analysis and actual of mechanical manufacturing.



## Conclusion

With the deepening trend of global economic integration, the use of automation technology in the machinery manufacturing industry will be more and more, and the scope of application will continue to increase. The use of mechanical automation technology in an enterprise will directly affect its comprehensive competitiveness. In addition, mechanical automation technology is also related to the production and sales of enterprises and related production quality, so it is necessary to enhance the importance of the application of mechanical automation technology in production.

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