Application research of automation technology in mechanical engineering

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Abstract: With the continuous progress of science and technology, automation technology has become an indispensable part of mechanical engineering. The application of automation technology makes the production process of mechanical engineering more efficient, accurate and flexible. Through automation technology, enterprises can reduce production costs, improve product quality, shorten product development cycle, and improve market competitiveness. Therefore, it is of great practical significance and practical value to study the application of automation technology in mechanical engineering. In this regard, this paper studies the application of automation technology in mechanical engineering for reference.

Key words: automation technology; Mechanical engineering; Application; Research

I. The application significance of automation technology in mechanical engineering

1. Help to improve production efficiency

The most significant and important function of mechanical automation is that it can efficiently achieve automatic control and processing of production workflow. This function can significantly improve production efficiency, reduce labor costs, and ensure the accuracy and consistency of the production process. Mechanical automation products excel in the precision and flexibility of the control of the production process, enabling efficient production management. In addition, the application of mechanical automation technology can also achieve high-precision control and monitoring in the production process to ensure the overall level of the product. The precision and flexibility of mechanical automation technology make various parameters in the production process can be precisely controlled, thus ensuring the quality and performance of the product.

2. It is conducive to optimizing the working conditions of manufacturing

The generation and development of mechanical automation is a knowledge-intensive and technology-intensive integration of innovative engineering changes. This kind of mechanical automation products can significantly reduce the pressure and burden of the staff, and liberate them from the cumbersome and heavy traditional handicraft industry. The production and development of mechanical automation products has brought great optimization of the operating environment for the machinery field, greatly improved the working conditions, and accelerated the automation of the entire field of machinery manufacturing. This has created an excellent environment for promoting the achievement of the four modernization indicators in the production field, and laid a solid foundation for the sustainable development and progress in the production field.

3. It is conducive to improving equipment safety

The function of mechanical automation also includes many aspects such as monitoring automaticity, alarm processing automaticity and system protection automaticity. In the actual production work, if there are various electrical problems such as voltage instability, short circuit or overload transportation, the corresponding control and protection measures can be carried out through the automatic control system, and the operation of the automatic system can effectively reduce the occurrence of the body and personal accidents of the staff. At the same time, it also plays a positive protective role for the production equipment, reducing the failure and equipment damage in the operation process. With the continuous development and application of machine automation, most mechanical equipment will use some electronic parts, which can reduce the loss and loss caused by each part of the equipment during long-term operation, therefore, can enhance the stability and effectiveness of machine automation products. This method can effectively protect the performance of the equipment, reduce the probability of failure, and extend the service life of the equipment.

II. The application countermeasures of automation technology in mechanical engineering

1. Actively update the working concept

In the process of the introduction and popularization of mechanical engineering automation technology in the future, it is often necessary to pay attention to the update of the concept in order to better achieve the optimal development and provide reliable support for it. On the one hand, enterprises should recognize the necessity of its application, pay attention to its positive impact on mechanical engineering, and clarify its differences from traditional machining. On this basis, it can also provide the necessary conditions for the introduction of automation technology, especially to improve the investment of capital, which will have a positive impact. This requires the managers of relevant machinery processing and manufacturing enterprises to strengthen their learning, not only to master the knowledge of automation technology, but also to visit those advanced enterprises as much as possible to see the new changes they have brought after the introduction of automation technology. This also makes him more determined to introduce the automatic control system. On the other hand, the update of the concept should also pay attention to the technical level, to establish a new technical concept, and encourage the relevant personnel to have a higher sense of innovation; It can provide a strong ideological support for the application of automation technology, but also can

timely grasp the problems and defects in the traditional machine processing and manufacturing mode, so as to better innovate at the technical level. The update of this concept, whether in management or in technology, should be closely related to the actual situation of the company; Promote the introduction of automation technology, can form a stronger matching effect, avoid being too casual, only pay attention to the surface of its use, it is difficult to form a new automatic production mode of mechanical engineering. At the same time, it is also necessary to strengthen the relationship between automation technology and mechanical production and manufacturing process, so that they cooperate with each other, so that it can play a maximum role. The combination of automation technology and mechanical production and manufacturing process, as far as possible to avoid only focusing on the scientific nature of automation technology, ignoring its practicality and practicability.

2. Clarify the development direction of mechanical engineering

The development of mechanical engineering automation technology still has a long way to go, the road ahead is tortuous, the future is bright, only by following objective laws, down to earth, in order to find a characteristic development road. With the development of automation technology, the traditional manual work will gradually be replaced, the relevant personnel should be combined with their actual situation and the degree of automation, the reasonable development. China's automation development and the international advanced level there is still a big distance, therefore, we need to foreign advanced machinery manufacturing theory and technology research, gradually reduce the distance, at the same time according to their own actual situation, out of a characteristic development road. Of course, enterprises should also do a good job in the daily training of staff, based on market demand, reform the traditional training system and content, make full use of the advantages of talent training, update the relevant content, and make the training hardware facilities more perfect. So that more staff can early access to machine automation, and have a strong interest in it, so as to improve their own quality and professional standards, so that the development of enterprises has been continuous improvement. At the same time, we should pay attention to the importance of practical work, so that theory with practice, for scientific and technological innovation and development to provide an inexhaustible source of talent. In addition, the state should also increase the investment in science and technology, the use of various policies and measures to further optimize and improve the industrial chain, so that the system and standardization of automation technology have been further improved, enterprises should also work out a set of perfect development strategies according to their actual situation. Under the guidance of automation development, in order to meet the development needs of new technology, it is necessary to innovate the traditional management concept, management model and management method. Must stand in the realistic point of view, fully aware of the importance of science and technology in the market competition, can effectively improve the degree of automation, but also improve the efficiency of automation. Make full use of the advantages of automation technology in mechanical engineering, take it as the basis for development, fully promote the development of information technology, and then use information technology to provide more technical support for industrial automation. Therefore, the development of mechanical engineering automation into a complete virtuous cycle body, industrial design, industrial manufacturing and management and other work are done well, from a number of perspectives, in the process of accelerating the development of traditional industry, you can also take some effective measures to promote the transformation of industrial structure, and gradually enhance the soft and hard strength of mechanical engineering. It plays a positive role in promoting the development of our country's manufacturing industry.

3. Pay attention to mechanical engineering technology innovation

It is necessary to innovate and optimize from the technical level, which is also the focus, only technology is more innovative and feasible; In order to better provide services for the machining and manufacturing process, to solve the constraints on the current technical level. In the process of innovation and optimization of automation technology, we must consider some problems and deficiencies existing in the current machining and manufacturing, and take it as the purpose of research, so as to be able to solve these problems through more advanced technical methods to ensure that the automatic production of mechanical engineering is more convenient and efficient. At the same time, it can also ensure flexibility and accuracy. From the current machining manufacturing process, in order to better realize the overall optimization of the entire machining production process, the research and development and innovation of automation technology should focus on improving the automatic monitoring system and collaborative management system. From the future direction of the development of mechanical engineering automation, the innovation of technical methods should be the primary goal of integration needs, which is also a main feature of mechanical engineering processing and manufacturing, and should be carried out collaborative research in practice with the use of information technology as the center. Promote the overall and coordinated effect of machine processing, can better meet the current increasingly complex production work, to ensure that the use of automation technology is more reliable. In addition, in the future development of mechanical engineering automation, we should also pay attention to the research of artificial intelligence, and actively introduce intelligent technology to help the original automatic control mode, so that we can better play our own role. In the process of research and application of intelligent technology, the demand for information database is also getting higher and higher, which requires relevant departments to strengthen research, as far as possible to improve the accuracy of various decisions, reduce the probability of error. Through the use of intelligent technology, not only can improve the production efficiency of mechanical engineering, but also can realize the automatic processing and maintenance of some failures, the effect is more significant. Of course, from the current national strategic needs for sustainable development, the future innovation and development of automation technology must also pay attention to the need for a low-carbon environment, so as to promote the effective and orderly use of relevant technology, due to the previous energy consumption of larger problems have been better treated, thereby improving the cleanliness of the machine tool.

4. Improve the mechanical automation supporting facilities

In the industrial field, with the development and application of automation technology, not only the fineness of products has been achieved, but also the improvement of product quality has been achieved, and it also helps enterprises to better control the cost of products. The automation process, program control technology and numerical control technology introduced into the machine processing production, is a huge revolution, it is compared with the conventional processing methods, greatly improve the efficiency of production. The system does not need a lot of manpower operations, can achieve a better human resources management effect, is an enterprise based on the fierce market competition necessary for a measure. The automatic integration equipment is characterized by convenience, lightweight, used in the field of machinery, can bring great convenience for the management and maintenance of the overall production process, and the equipment also has the ability of self-locking. In the production process, there is no need to increase the management and maintenance of personnel, nor to monitor the machine in real time, which can ensure the efficiency and stability of machine processing and production. The equipment integrates many advanced processes to achieve complete automatic operation, so as to better ensure the production accuracy of products; Under the premise of ensuring production capacity, energy saving and consumption reduction can be achieved. In addition, the introduction of automatic equipment in mechanical engineering can save the tedious work in the past, reduce the manual workload of poor technology, so that employees have more energy to deal with products, so as to effectively ensure the quality of products. It can be seen from this point that the sound mechanical engineering automation support equipment can not only improve the efficiency and quality of production, but also ensure the efficient and stable machine processing production under the premise of reducing costs, and further promote the innovation and development of automation technology.

Summary

All in all, automation technology has been widely used in mechanical engineering and has important role and practical value. In the future, with the continuous progress of science and technology and the needs of social development, the application of automation technology in mechanical engineering will be more extensive and in-depth. Therefore, the research and application of automation technology should be strengthened to promote the sustainable development and innovative progress of mechanical engineering. And try to start from the following links: actively update the working concept, clear the development direction of mechanical engineering, pay attention to the innovation of mechanical engineering technology, improve the supporting facilities of mechanical automation, and then improve the mechanization level of mechanical engineering.

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