

Research on mechanical manufacturing and automatic production based on green energy saving concept

Yufurze, Anselidin Maihemuti

Wuhan University of Science and Technology, Wuhan 430081, China

Abstract: With the continuous improvement of China's economic level, machinery manufacturing industry has entered the rapid development of it, under the concept of resource conservation and environmental protection, machinery manufacturing industry should promote the harmonious development of human and nature, to achieve sustainable and healthy development. Machinery manufacturing and automated production need to promote the rational allocation of resources, implement the ecological environmental protection goal, introduce the important idea of green energy saving. Based on this, this paper will focus on the mechanical manufacturing and automated production based on the concept of green energy saving research.

Key words: green energy saving concept; Mechanical manufacturing and automated production; Research

I. Mechanical manufacturing automation and green energy saving concept

Machinery manufacturing and automation is a new type of production process, which can effectively improve production efficiency and ensure the quality of machinery production. Its development is closely related to modernization. Machinery manufacturing automation technology, high safety, widely used, machinery manufacturing automation and traditional machinery manufacturing is more intelligent, the equipment has automatic identification of failure, suspend work and repair failure and other functions, the previous machinery manufacturing can only be applied to industrial fields, modern manufacturing is suitable for electronic computer industry, can improve the work efficiency of staff. The development of accounting can promote the improvement of productivity, promote the change of life and production, with the gradual enhancement of the utilization efficiency of mechanization, integrated power is also widely used in the manufacturing industry, effectively improve production efficiency and improve production methods. Automation of machinery manufacturing industry can be widely used in the field of life, change people's production mode, but automated production will reduce labor, increase the demand for energy, affect waste emissions, bring pollution to the ecological environment.

The concept of green manufacturing, is oriented to the environment, based on traditional technology, combined with modern green manufacturing, materials science, energy science and other technologies, comprehensive consideration of the environmental impact of production to achieve the modernization of the model. The concept goal of green manufacturing is to reduce the impact of product design and waste product treatment on the environment, and coordinate the economic interests of enterprises and society. In terms of resource utilization and environmental pollution, green manufacturing technology can achieve optimization and control compared with traditional manufacturing technology, effectively reduce pollution, and reflect the concept of sustainable development.

II. The advantages of green energy saving concept analysis

The concept of green energy saving includes energy saving and environmental protection, product innovation and other concepts, energy saving and environmental protection is the main feature of technical design, environmental protection as the main entry point, reduce the consumption of energy materials. For example, in the choice of engine, low energy consumption and the quality of operation are considered to reduce the pollution caused by the use of the engine. In machinery manufacturing and automation, the application of energy-saving design concept needs to realize the development of new operating models and design health products that meet the requirements of environmental protection. Low energy consumption materials need to meet the requirements of energy saving, production should be infiltrated into the concept of energy saving, to meet the use of environmentally friendly materials, reduce resource application and consumption. In the automation of machinery manufacturing, the concept of energy conservation should be reasonable, so that environmentally friendly materials can be applied. The energy-saving design concept also includes the advantages of environmental protection and advanced production technology, which can realize the scientific and reasonable process and ensure the popularization of environmental protection in the mechanical manufacturing process. Under the concept of automation of machinery manufacturing, new and environmental protection processes such as forging and pressing should be actively applied to reduce energy consumption. Green manufacturing process contains the content of process and technology, compared with the traditional process, consumables will be reduced, for example, less cutting, dry cutting technology will consume less than the traditional forging cutting 30%-70% of consumables, but also can effectively improve work efficiency.

III. The value of green energy saving concept in mechanical manufacturing and automated production

Under the new era background, the development of machinery manufacturing and automation has a new goal, to keep up with the development of The Times, to create a suitable concept. With the progress and development of energy-saving technology, machinery manufacturing and automation technology have gradually established an environmentally friendly production mode, and the application of energy-saving concepts can also improve environmental protection effects. The innovation and development of energy-saving technology

provides a driving force for the development of automation. Machinery manufacturing and automation technology is the key to the progress of manufacturing industry in the new era, and plays an important role in the high-quality development of our country. In the implementation of energy-saving concept, the development of machinery manufacturing and automation can play a certain role in protecting the environment, and can provide support for new development and manufacturing. Energy saving concept is the foundation, China is currently in a new development to make it, the need to build energy saving function, into a new stage of development. The concept of green energy saving is the guarantee of machinery manufacturing and production, and it is of great significance to the realization of new development. Machinery manufacturing and automation are facing important opportunities for development, the need to adjust the direction of development, establish a new focus, adapt to the requirements of The Times, for the manufacturing industry to provide new development goals.

Green energy saving concept applied to the whole process of manufacturing, can realize the rational allocation from the source, to achieve the rational application of materials, human resources, energy and other resources. In the field of machinery manufacturing automation, the promotion and application of the green concept will affect the process of modernization of the manufacturing industry, reduce the problems between economic development and ecological protection, promote economic sustainable development, and realize the improvement of China's energy development and ecological governance.

IV. Based on the concept of green energy saving machinery manufacturing and automated production research

1. Optimize the design process

In order to ensure the implementation and application of the concept of green energy saving, mechanical production technology and management personnel should be combined with energy-saving design, operation of the production process and production equipment, determination of production efficiency, and implementation of high efficiency. At the same time, it is also necessary to carry out reasonable planning of the design according to the actual production, and realize the optimization of the overall configuration structure. For example, reduce and simplify unnecessary parts, so as to achieve the optimal design of mechanical equipment. Green manufacturing process is an important part of the application of green technology in the field of mechanical design. The green design of mechanical products and the implementation of material design scheme are closely related to the selection of manufacturing process. In the practice of production, the field of mechanical manufacturing has gradually formed a diversified green process and green technology, which can select different kinds of manufacturing processes through the refinement of the processing environment. The application of green technology can refine the goal of environmental protection, so that the manufacturing process can maintain low energy consumption, low pollution and high efficiency. For example, in the cutting process, the chemical components in the cutting fluid, such as sulfur and phosphorus, are detrimental to the health of workers and the pollution of the environment around the factory is more serious. Under the new production concept, dry cutting technology can be used instead, which does not have the application of cooling lubricants, which can reduce the generation of harmful substances and pollution problems. For example, in the manufacture of port machinery and equipment, cold-rolled sheet will be used, its production process is more impetuous, the steel plate needs to achieve the ultimate hardening standard, in the processing process, need to pay attention to the work between stages, improve the quality of mechanical production. In the actual production process, the operation of the equipment needs the support of energy, the more parts of the equipment, the greater the friction, therefore, the more simple the structure of the equipment should be chosen to achieve the goal of energy saving. The production environment should also be more standardized, because the automatic production will be affected by reading, temperature, ventilation, etc., the need to manage the environment, for the manufacturing process, methods, energy consumption, environment, rationalized Settings, improve the efficiency of energy use.

2. Coordinate ecological and economic benefits

The application of green technology is still in its initial stage. In order to realize the manufacturing and production of green machinery, the state should strengthen the support of policies and improve supporting facilities. At the stage of production links, more reasonable planning should be carried out, combined with the manufacturing and management of mechanical equipment, and the application of production equipment with good performance, efficient operation and stable structure should be implemented. Based on the green energy-saving design scheme, it is necessary to choose the right materials, strengthen the use of clean energy, and choose less polluting materials. Improve the ecological efficiency, reduce the cost of pollution treatment, and promote the quality of machinery manufacturing products. Pollution in the production process will hinder the process of sustainable development, and it is impossible to achieve the low-carbon development of manufacturing. Specifically, under the guidance of the concept of energy saving, the manufacturing design should choose low energy consumption, pollution-free materials, control the recycling of materials, etc., in automated production, for scrap materials, it is also necessary to rationalize the treatment, can not be discarded at will to pollute the environment, the whole process needs to implement the principle of environmental protection. Machinery manufacturing and automated production of infrastructure, can achieve production efficiency and energy saving effect play, through improving infrastructure energy saving, enhance the effect of energy saving. In machine manufacturing and automated production, the use of engines can reduce fuel consumption, pollutant emissions, and improve the running speed. According to the requirements of green energy saving concept, the production process also needs to be improved. Resource utilization needs to be further improved. In a comprehensive view, it is necessary to reform the industrial structure of the machinery manufacturing industry first, in the process of production technology reform, it is necessary to do a good job of product research, reduce the destruction of the original function of the product, make the product structure innovative optimization, reduce the difficulty of production, and improve the

efficiency of resource utilization.

3. The development of supporting facilities technology

Advanced technology and supporting facilities are the driving force for the development of machinery manufacturing industry, and it is necessary to pay attention to innovation at the scientific and technological level, rational application of advanced technology, optimization of design schemes, and realization of green and sustainable development. For example, strengthening the technical strength of research institutions and realizing the research of colleges and universities in related aspects. The application of green technology needs to focus on the training of talents, integrate advanced science and technology into every link and every level of mechanical design, and then promote the promotion of green design concept. Equipment failure and tool wear is inevitable, to achieve efficient energy-saving design, you can apply modern design concept, the introduction of intelligent equipment, tools, to promote energy saving and development. For example, fans and pumps, as commonly used power distribution facilities in the manufacturing industry, can increase frequency conversion function on this basis to achieve energy consumption reduction and production efficiency improvement. Enhance the design ability of practitioners, improve and optimize management work. Intelligent management system can also promote the integration of energy-saving design concept into the entire production practice. For example, in the design of mechanical products, it is necessary to consider the recycling and utilization of mechanical products after scrapping, the application of green technology can reduce environmental pollution, consider the production of mechanical products in all aspects of manufacturing, to achieve the secondary use of disassembled parts, so that the parts of the product produce use value. The parts of mechanical products need to be classified for recycling, the toxic and harmful parts are harmless treatment and then recycled, at the same time, the production standards of mechanical products should be unified, to facilitate the replacement efficiency of parts in the maintenance process, and then effectively extend the service life of parts.

4. Development of new environmental protection materials

With the progress of scientific and technological research and development and practical application, some mechanical manufacturing materials have revealed more disadvantages and do not meet the national environmental protection policy. Therefore, we should pay attention to the development and selection of new materials, invest more research and development costs, encourage the investment of technical personnel, design high-quality environmental protection materials, and improve the application quality of mechanical equipment. The choice of green materials is an important part of mechanical product design, taking into account the more complex requirements of raw materials, it is necessary to fully consider the selection of raw materials. The design of material program, the selection of raw materials, the content of material transformation and recycling, etc., need to be synchronized with the design of mechanical products, which is also an extension of mechanical design in the material link. It is necessary to screen the feasible materials according to the needs of material performance and mechanical design scheme, make a list of materials, and then further screen the materials according to environmental protection standards and needs to reduce the pollution of the materials.

All in all, the implementation of the concept of environmental protection has gradually become the focus of the development of The Times, the manufacturing industry as an important pillar of China's economic benefits, the need to keep up with the pace of The Times, pay attention to the implementation of the ecological concept in the production process. Green energy saving concept as a resource utilization, environmental pollution, social benefits of the harmonious development of guidance, but also an important way to achieve sustainable development, therefore, machinery manufacturing and automation in the field of production, need to vigorously promote green technology, improve the overall quality of industry development.

References:

- [1] Yan Yang. Research on the penetration of energy-saving Design Concept in Mechanical Manufacturing and automation applications [J]. Internal Combustion Engine and Accessories,2021(05):160-161.
- [2] Xiaofeng Lan,Zhoucheng Lu,Xiaoxiong Mei. Application of Energy-saving Design Concept in Machinery Manufacturing and Automation [J]. Southern Agricultural Machinery,2019,50(06):162+182.
- [3] Yuzhong Zhang. Necessity analysis of Introducing energy-saving Design Concept into Mechanical Manufacturing and Automation Design [J]. Digital Communication World,2018(12):122.
- [4] Hongye Li,Ruipeng Li,Jianyong Tang. Effective Application of Energy-saving Design Concept in Mechanical Manufacturing and Automation [J]. Heilongjiang Science,2018,9(18):54-55.