The Development of Machinery Manufacturing And the Application Analysis of Artificial Intelligence

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Abstract: Mechanical manufacturing and artificial intelligence (AI) are important applied technologies in the new era, and they are also part of the market structure. Under the background of the modern information technology, large-scale machinery manufacturing has undergone tremendous changes. Enterprises have begun to use AI technology and discard traditional manufacturing methods, and improve work efficiency. AI is a digital system with an important guiding role for machinery manufacturing. Enterprises should skillfully apply AI technology to promote the machinery manufacturing.

1. Introduction:
In recent years, due to the changes in information technology, many new technology industries have emerged, and AI is the most prominent among them. Cloud computing and the Internet have promoted the innovative development of machinery manufacturing. Machinery manufacturing is the pillar of the primary industry and an inseparable part of the diversified market. In the perspective of technological development, manufacturing enterprises should focus on planning the penetration and application of AI, integrating multiple types of technologies, and building an integrated model. It can improve production efficiency and quality, and ensure enterprises obtain good economic benefits.

2. Background
At present, the machinery manufacturing industry is deeply integrated with various technologies, especially AI. It uses robots as the linker of production to carry out large-scale and large-volume manufacturing, improve the level of technicians, and achieve high production efficiency. However, there are still some interfering factors in the intelligence of the machinery manufacturing industry. Traditional automatic integration mainly pursues production of machines, and replaces traditional workers with robots. While in the application of AI, it enhances the flexible production of machines, which is essentially human-machine collaboration. Therefore, in an informationized environment, robots can perform dangerous, complex, or even repetitive tasks with system instructions, and reduce manual pressure and obtain more creative opportunities. In recent years, enterprises have gradually begun to experiment with the application of AI in machinery manufacturing, guiding robots with computer systems, without considering the low efficiency of manual labor, and maximizing the quality with the current market demand.

3. Analysis of production characteristics of machinery manufacturing industry
The machinery manufacturing industry is a pillar of the market economy, and it promotes the entire society. The main business of machinery manufacturing is to process various mechanical products. At the same time, it has three major features, namely dynamics, complexity, and individualization.
Dynamics are mainly manifested in mechanical production. The ultimate goal is to meet the diversified needs of the market, and the social environment is constantly changing. The mechanical manufacturing industry should continue to innovate and change, and rationally adjust design and production. Regardless of the type of mechanical products, there are a large number of complicated parts and drawings. In actual applications, complicated parts often cause more problems, and the production is complicated. It will also increase the chance of manufacturing problems. In addition, it is necessary to investigate and analyze the customer’s demand and preference, which means that mechanical products are differentiated mainly with customers.

4. The significance of AI for machinery manufacturing

4.1. Improve production efficiency and reduce labor density
In the mechanical manufacturing, the application of AI technology can directly solve some technical problems, and abandon the traditional low-efficiency production equipment, establish a standardized production belt, realize the transform from automation to intelligence, and greatly improve the efficiency and accuracy. The characteristic of AI emphasizes the application of intelligence in actual manufacturing. If it is put into production by a large margin, it can reduce the demand for labor. For some jobs with high risk factors, it can be replaced by intelligent robots. Safety and security can also increase the total value of production efficiency, achieving two goals at one time. In the current market environment, only the introduction of intelligent technology and equipment can achieve precise and high-efficiency production and obtain good economic benefits.

4.2. Promote production flexible to accurately predict the market
In the traditional machinery manufacturing industry, most enterprises pay more attention to the standardization and mechanical products with extremely high standards for quantity and quality. With the continuous innovation and development of AI, it has penetrated into various industry systems, and the machinery manufacturing industry has been affected. Nowadays, customers’ demand for mechanical products is increasing. If standard production methods are still adopted, the requirements of diversified customers cannot be met. However, the emergence of AI technology completely breaks this situation with a positive role. At the same time, in a high-standard market environment, the scientific application of AI technology can effectively predict the future market trend and adjust the machinery manufacturing industry. The analytical data can provide some reference for production, thereby realizing the comprehensive planning and effective control. Management of manufacturing mainly covers the following aspects, namely the mechanical production belt, material supply, conveyor chain, etc., to control each link and step in a targeted manner and reduce manufacturing costs and obtain the greater good. AI technology is rapidly changing the pattern of traditional production. Through big data and AI systems, it is possible to accurately predict the specific planning of machinery supply and demand, production, and distribution after the market structure changes, and establish a new production system. It can enhance the intelligence and integration of the machinery manufacturing industry to adapt to a wide range of market trends. The following is the latest analysis of AI structure, as shown in the figure:
4.3. **Strictly control product quality and realize comprehensive monitoring**

Product quality is an important condition for judging the competitiveness of enterprises. For some traditional enterprises, the supervision and control of product quality are still very difficult because employees cannot be standardized and the traditional machinery and equipment are backward. Besides, information collection and system monitoring cannot be realized, and product quality cannot be effectively guaranteed. Not only can the parts be refined but it can also achieve high-quality product testing, feedback, and improve product quality. For some unqualified products, follow-up processing will be carried out. Under the information technology system, the market competitiveness will also gradually improve.

5. **The development of machinery manufacturing and the application of AI**

5.1. **Establish a complete production-related structure and give play to the advantages of AI**

For machinery manufacturing enterprises, the establishment of intelligent production and management systems can maximize production efficiency and obtain sustainable economic benefits. In the current fiercely competitive environment, enterprises should proceed from reality, thoroughly explore and analyze the application of AI in machinery manufacturing, and meet the fundamental needs, formulate a complete operation plan, and improve the level of intelligent production. In addition, science and technology are now in a stage of rapid development, and machinery manufacturing is relatively weak. Therefore, enterprises must do a good job in technological reforms, fully grasp the characteristics, integrate AI systems, and complete production tasks in an orderly manner with instructions to achieve the sound development. At the same time, it is necessary to continuously improve the production management structure and promote the innovation and change.

For example, in the actual manufacturing, enterprises can establish a special “AI control system” and divide it into multiple sections, which include mechanical component data, processing and manufacturing, product performance testing, and customer expansion. First of all, relying on the intelligent system to collect and scan the product of each mechanical part, and carry out large batch inspections, and integrate the data, then arrange a batch of robot. The big data will automatically transmit the operation, and the robots will automatically follow and independently analyze whether the product quality meets the standard. For product quality inspection, AI will also conduct coverage inspections and test one by one according to the label, and predict the manufacturing supply and demand of tools and import all data into the central control system for later query. In addition, the enterprise needs to set up a connection layer to specifically control the production of the workshop,
and the corresponding staff will interact with business, and use the computer as the medium to optimize the corporate structure. Finally, the AI system conducts a full range of analysis, judges the situation in each link, and updates the plan for production problems, so as to efficiently complete the tasks. The following will summarize the forecasts of machinery manufacturing.

5.2. Match market orientation and innovate production structure
The emergence of AI technology has changed the route of machinery manufacturing enterprises with development opportunities. Therefore, in a complicated market environment, companies must change the traditional artificial production structure, actively introduce a variety of information technology methods, build an integrated production model, and realize the sustainable development. AI is different from general technical forms. Its main characteristics are digital, intelligent, and efficient, and it is a new concept at the technical level. Manufacturing enterprises should make in-depth explorations and use AI to enhance product quality and effects, provide personalized services, and meet customer needs.

For example, in the production link of the workshop, the management department first needs to use the AI system to test the key processes, and evaluate the components from multiple levels such as splitting, assembling, and processing. After that, it needs to import the customer’s data, analyze the main demand points, and specify the most systematic and complete production plan. With the support of data, production will automatically follow the set steps led by intelligent systems. In addition, in order to realize the sharing of information resources between various departments of the enterprise, the technical department can use “smart technology” to design an “internal common platform” to transmit data and information of mechanical production, thereby improving the management efficiency.

It is also possible to form an “Intelligent Machinery Manufacturing Research Institute”, introduce a variety of new technologies and develop different types of mechanical products. The first step is to collect different production to strengthen the link between AI and manufacturing. Next, it can enter the production research of core components, strengthen capital investment, and realize the innovation.

5.3. Strengthen the training of professional and technical talents
Under the vision of Internet integration, in order to speed up the machinery manufacturing enterprises, enterprises need to set up special talent training bases, strengthen the training of professional technical staff, and introduce some talents to improve the internal staff structure of the enterprise. At present, data surveys show that the brain drain of machinery manufacturing technology is relatively serious, and directly affecting the intelligent manufacturing. Therefore, it is necessary to change the form of production, vigorously apply AI, and build an “Internet + mechanical manufacturing” system.

For example, enterprises can sign “talent training” cooperation agreements with major vocational colleges specifically for smart manufacturing students, conduct pilot training, conduct targeted education, improve professional knowledge systems, and arrange internship tests in workshops. Based on the comprehensive results, it can will select and build a high-tech and high-quality professional intelligent manufacturing talent team. In addition, enterprises can also establish big data systems to automatically collect workshop manufacturing, optimize corporate service mechanisms, strengthen supervision of product quality, and enhance safety assurance.

6. Conclusion
To sum up, in the era of intelligence, manufacturing enterprises must accelerate their pace of innovation, deeply integrate new technologies, and realize the sustainable development of manufacturing. Therefore, enterprises need to deeply analyze industry trends, explore technology application and industrial manufacturing, grasp the core of AI, create a high-quality and technological production chain, and use AI technology to improve product quality and optimize basic functions and provide efficient and intelligent services, expand the market space, and fully reflect the advantages of AI technology in the machinery manufacturing industry, thereby enhancing the market competitiveness of enterprises.
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