Exploration of the safety management and maintenance of machinery manufacturing and processing equipment

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Abstract: With the rapid development of the economy, various industries are also rapidly growing and progressing, and the machinery manufacturing industry has also made greater breakthroughs. If various industries can achieve the goal of automatic production of machinery, mechanical equipment will be a crucial factor. The machinery manufacturing industry has a lot of room for development, and machinery manufacturing technology has also made tremendous progress. If the machinery and equipment produced by the machinery manufacturing industry become more and more excellent, it needs to try to meet the production needs of all walks of life, and improve the quality of manufacturing equipment. The current problems in the process must be solved, such as equipment failure, safety management.

1. Introduction
In the process of the country’s economic development, the machinery manufacturing industry is one of the important components, which has an important impact on the economic development. In the production process of the machinery manufacturing industry, large-scale machinery and equipment are necessary production tools. The operating efficiency of large-scale machinery and equipment not only affects the work efficiency of the entire industry, but also has an important impact on the quality and quantity of the machine produced. In other words, the production effect of mechanical processing equipment is the production effect of mechanical manufacturing. However, in the actual operation process, mechanical processing equipment has problems in safety management and maintenance, and these problems have a negative impact on the production of enterprises. If these problems cannot be solved, it will affect the efficiency of the enterprise, hinder the progress and growth, and it is also detrimental to the development of the entire industry. Therefore, sufficient attention should be paid to the safety management and maintenance of machinery manufacturing and processing equipment. [1]

2. Current status of safety management and maintenance of machinery manufacturing and processing equipment

2.1. Lack of sound equipment protection system
In the daily production of the mechanical processing industry, there is a common phenomenon in its equipment, that is, the structure of the equipment is extremely complex and the equipment is expensive. Therefore, when the equipment is sold, the equipment must be explained in detail, so is the operation method. When an enterprise purchases equipment due to production needs, it is necessary to formulate a complete equipment management system, regulate and restrict the behavior of operators, and use the product description of the production equipment as the basis. Standardized management of operation behavior ensures maximum production efficiency of machinery and equipment. However,
after investigation, it is found that many companies have not formulated relevant regulations or even basic protection systems. They just rely on the operator’s previous experience to operate. With the time passing, mechanical equipment will have some problems. Even hidden dangers affect the performance and adversely affect the safe operation of the equipment.

2.2. Implement the equipment protection system
Because the production cost of a piece of mechanical equipment is high, when the equipment is sold, there will be a detailed operation and instructions. After receiving the equipment, the enterprise should also formulate a series of regulations to protect the equipment. However, in the actual production process, it is not easy to implement this protection measure to implement these into specific work. First of all, in the development process of the enterprise, the managers of the enterprise pay more attention to the production efficiency and economic benefits of the enterprise, and pay more attention to the short-term economic benefits, so they hope that the equipment can always be in working condition. If the mechanical equipment fails, the manager also hopes to maintain the mechanical equipment while allowing the mechanical equipment to perform production operations. Secondly, the relevant operators are not able to manage the production equipment well. Regardless of whether it is equipment maintenance or repair, they have not done their work properly. They only focus on the production of mechanical equipment, and want the production equipment to continue to generate economic benefits. It can be seen that it is not easy for companies to maintain and manage production equipment.

2.3. Low quality of personnel
Because of the rapid development of the domestic economy in recent years, the rapid advancement of science and technology, and the continuous upgrading of machinery and equipment, there are also higher standards and requirements for production personnel. However, at this stage, the domestic machinery industry does not have uniform requirements for relevant personnel, so the technical level of each operator is different. In addition, many companies do not have strict recruitment standards for employees. Many new employees do not receive relevant technical training after entering the company. They do not know advanced technology, and have no relevant work experience, so they start to work.

2.4. Poor security awareness
Insufficient safety awareness is one of the problems in the use of machinery manufacturing equipment. The advancement of science and technology promotes the upgrading of machinery and equipment, improves the production efficiency of machinery and equipment, the production is more efficient and safe, and the product quality has been improved. However, in the process of management and maintenance, there are many safety issues. The main reasons for this phenomenon are the following. The first is not to pay enough attention to safety issues. Secondly, the relevant operators have weak safety awareness. Enterprises pay attention to the economic benefits brought by the efficiency of production, and they pay too much attention to the production benefits when formulating the production system. The relevant operators have a low level of understanding of machinery and equipment, and cannot judge the safety hazards in the production. If a safety problem occurs, the safety of employees and the efficiency of production will be adversely affected. The whole process is shown in the figure below.
3. Relevant measures to solve the safety management and maintenance of machinery manufacturing and processing equipment

3.1. Increase the importance of safety management and maintenance of machinery manufacturing and processing equipment
Firstly, the company has increased the promotion of safety management and maintenance in its daily work, formulated relevant safety operation standards, and enhanced the importance of all staff for the safety management and maintenance of processing equipment. Secondly, it can carry out regular management and maintenance work for machinery manufacturing equipment, conduct routine inspections on the equipment before work, and make sure that there is no quality problem before the equipment enters the working mode. Thirdly, it can increase capital investment in equipment safety management and maintenance. Only by enabling equipment to obtain high-quality overhaul and maintenance can the service life of the equipment be increased.

3.2. Implement the equipment inspection system and strengthen equipment management

3.2.1 Establish safety management and maintenance. In the daily production of enterprises, machinery and equipment manufacturing and processing enterprises must communicate mechanically with other
departments. It needs to understand the problems in the daily use of the equipment, and sets up a special equipment management department based on the statistics to conduct regular evaluation and management of mechanical equipment. [4] Secondly, enterprises should create relevant equipment management standards in accordance with relevant laws and regulations, such as specific operating standards for machinery and equipment, strengthen standard use of equipment, reduce malfunctions caused by improper operation and reduce the probability of mechanical processing equipment failure, reduce the repair and management costs of mechanical processing equipment to achieve the purpose of improving the production efficiency of the equipment. As shown in the table.

| No. | Checkpoint                | Content                  | Ways  | Cycle               | Process mode                  | Maintenance                      |
|-----|---------------------------|--------------------------|-------|--------------------|--------------------------------|----------------------------------|
| 1   | Compressed air, protective gas fittings and joints | Check for leaks | Visual | Weekly | Fasten or replace joints | Inspection (operator) handling (maintenance) |
| 2   | Tooling fixture           | Check for wear or damage | Visual | Weekly | Repair or replacement   | Inspection (operator) handling (maintenance) |
| 3   | Guide rail, slider        | Grease                   | Regular | Once every 3 months | 004#lithium grease | Maintenance staff |
| 4   | Thread rod, nut           | Grease                   | Regular | Once every 3 months | 004#lithium grease | Maintenance staff |
| 5   | Reduction box             | Grease                   | Regular | Once every 3 months | 004#lithium grease | Professional |
| 6   | Gear rack                 | Grease                   | Regular | Once every 3 months | Butter                      | Maintenance staff |
| 7   | bearing                   | Grease                   | Regular | Once every 3 months | Butter                      | Maintenance staff |

3.2.2 Improve mechanical equipment management system and maintenance. In the actual production process, a complete equipment management system should be formulated according to the needs to achieve the purpose of real-time equipment management. In addition, it is necessary to work out a complete duty schedule, and there must be a dedicated person to monitor the equipment every day, discover and solve the problems in the equipment in time. Finally, it is necessary to adopt the management method of the responsibility system and assign responsibilities. In this way, every employee can clarify his own job responsibilities and reduce the shirk of responsibility when failure occurs. In addition, a reward and punishment system must be formulated to commend and reward outstanding and responsible staff. Punish personnel who do not operate in accordance with relevant regulations to reduce equipment failure problems caused by non-standard operation.

3.3. Optimize the ideology and consciousness of related machinery and equipment management and maintenance personnel
In the current actual production, the relevant operators of the enterprise lack the understanding of the maintenance and safety management of machinery and equipment. In response to this problem,
companies must organize relevant operators to conduct training, and conduct regular inspections and management. Because the management and maintenance technology of mechanical processing equipment is constantly improving, it is necessary to update and improve the management and maintenance methods of machinery, and the relevant machinery management personnel must improve and perfect the technology. [5] Enterprises should pay attention to the cultivation of talents, strengthen the training of safety management and maintenance personnel, conduct knowledge competitions on the hidden dangers of mechanical processing equipment and maintenance and other related work, and improve the management awareness and maintenance level of operators. In addition, it is necessary to carry out safety ideological work on related management personnel and fully understand the safety information of related machinery. It is difficult for relevant operators to ignore the safety management and maintenance of machinery in the subconscious, and increase their sense of responsibility.

3.4. Enhancing the use management of equipment
When using the equipment, it is necessary to supervise the efficiency of the equipment, directly manage the equipment, and strengthen the management of the equipment. This is also the most direct and effective way to protect the safety of the equipment. In the actual operation process, a board is placed next to each machine. The board is marked with standard operation procedures, monitoring time, and information such as the person directly in charge. It must be recorded when the equipment is monitored and managed. Regular maintenance is carried out on each equipment to ensure the safety performance of each equipment and reduce the probability of equipment failure. In addition, the company should formulate a suitable production plan, so that the equipment cannot be overloaded. This will not only cause excessive loss of the equipment itself, but also reduce the service life of the equipment. If the equipment fails, the relevant operator should immediately stop the mechanical equipment, and report the failure to the professional repairer.

3.5. Improve maintenance technology and safety management
Because the structure of each equipment is extremely complex, it is necessary to ensure scientific maintenance and management, only in this way can the quality of maintenance be guaranteed. [6] When repairing machinery and equipment, enterprises must carry out special handling and record faults for future reference by maintenance personnel. Relevant maintenance personnel should improve and upgrade their own maintenance and management, only in this way can they handle the malfunctioning mechanical equipment well and complete the equipment maintenance.

4. Conclusion
According to the above description, in the safety management and maintenance of machinery manufacturing and processing equipment, the relevant operators must strictly abide by the relevant rules, improve their own maintenance and management level, and improve their professional quality. During the operation of the equipment, the existing safety problems are discovered and solved in time, which improves the quality and effectiveness of the production and ensures the smooth completion.

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