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Skills and Techniques of Machine Repair Fitters

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Abstract: ***In this important understanding of machining, mechanical maintenance fitter occupies an important position. Machine repair fitters are mainly responsible for the processing and maintenance of various mechanical equipment, and use scientific control methods to restore mechanical properties. Therefore, we can see that the faults in machine maintenance need quick maintenance by fitters to solve various problems that often occur in machine maintenance. In this case, the fitter must master basic machine maintenance skills and use excellent information technology to assist in the installation of various machines. Therefore, this article gives a brief introduction to the machine fitters used for machine maintenance and shows how to increase their repair capacity to make machine maintenance more efficient. With the progress of scientific and the rapid increase in productivity, competition between enterprises is more and more intense. If enterprises want to maintain a high competitiveness and advantages, they need to focus on the research and development of core technology of their companies and improve core competitiveness. So in such a large background, many companies choose to focus on the development of their core business, and then they need other enterprises to complete their own non-core business resources. In such a development process, the logistics industry will gradually separated and then the third-party logistic enterprises show up.***

Keywords: machine repair fitter; Skills; skill.

1. INTRODUCTION

As a tool of the company's production business, the performance of mechanical equipment is directly related to its production function and product quality. With the development of science and technology and improve the productivity of machinery and equipment related to the continuous development of technology, people have a higher demand for maintenance machines. However, machine maintenance with only traditional knowledge is difficult to be carried out effectively. The maintenance and repair of mechanical equipment will damage the mechanical properties of mechanical equipment, thus affecting the development of business. Therefore, it is very important to study how to improve the technology and ability of mechanical maintenance equipment, which will become the basis of improving our mechanical maintenance technology and ability.

The so-called mechanical fitter is the person who controls and repairs the mechanical parts of the machine. Their main characteristics include the following aspects: a. Mechanical inspection, especially disassembly of equipment, repair of the interior of equipment, replacement of parts, grinding, grinding or polishing of all guide surfaces to overcome internal problems of the machine and improve the efficiency of the machine. b. Mechanical repair, maintenance of a certain part of mechanical equipment, and replacement of parts, in order to check the dissonance between parts, troubleshoot faults, and ensure the operation of machinery c. Minor repair, clean parts, inspect parts, replace parts and reorganize the entire equipment. d. Secondary maintenance mainly involves the separation and evaluation of equipment components and the repair and replacement of parts with wear problems through the cooperation of maintenance personnel and operators. e. Item repair: repair parts that cannot meet production requirements or parts in poor condition [1].

2. BASIC SKILL REQUIREMENTS FOR MACHINE REPAIR FITTERS

This paper proposes anomaly data detection algorithm based on wavelet Hidden Markov Model, aiming at the limitations of the existing wavelet for defining abnormal data (the point where the function or its derivative discontinuity is abnormal data) and the deficiency of the detection process. The algorithm is based on the most basic principle of wavelet decomposition, using the improved recursive wavelet decomposition algorithm that can be decomposed online to decompose the test data at a certain scale. If the decomposed wavelet coefficient is obviously different from the other wavelet coefficients, the abnormal point is considered to exist. The combination of wavelet and HMM effectively avoids the need to set the detection threshold in advance. Through verification, it can prove the validity of the wavelet-HMM-based anomaly data detection algorithm, and its anti-noise and practicality. Wenqian Jin's JIT inventory management cost analysis and implementation conditions based on Wal-

Mart. Through the JIT inventory cost of inventory management analysis shows that Wal-Mart's forward logistics and distribution system and flexible and efficient information network is how to effectively reduce the cost and out of stock cost and also achieve the best level of inventory investment. This paper also explains why it can not operate in China (Wenqian Jin, 2011). Ruize Sun's JIT design and design of JIT-based production and production of billboard distribution system is studied. JIT definition and thought, JIT electronic application and development, JIT principle and operation mode and JIT architecture are analyzed and analyzed Kanban management functions, types, rules, and implementation conditions (Ruize Sun, 2016). Yanchao LI's research on material distribution method of mixed-flow assembly line based on JIT procurement improved the application of material distribution method of punching and directing banner in mixed-flow assembly aine (Yanchao Li, 2013).Zhi Wei's SGMW factory logistics on-line distribution of the status quo analysis and optimization programs analyzes the comparison of line distribution and fuzzy distribution of the two distribution models. The paper comes to fuzzy distribution which will improve the overall efficiency (Zhi Wei, 2013). Jozsef Voros's process quality adjusted lot sizing and marketing interface in JIT environment analyzes the quality and efficiency issues existing in the JIT environment and analyzes the characteristics of the total cost of the demand function and proposes how to determine the optimal quantity of the contract (Jozsef Voros, 2016). Fardin Ahmadizar proposed a two- objective ambiguous bidirectional supply chain planning method for supply chain planning under the dual- objective ambiguity environment and made a JIT assignment for the supply chain (Fardin Ahmadizar, 2013).

Based on the concept of JIT, the paper selects the factory of Dongfeng Nissan Passenger Car Company, the main business of Zhengzhou Fengshen Logistics Co., Ltd., and analyzes the status quo of the logistics process in the factory where the factory is located, and finds out the problems existing in the process of delivery. The paper establishs optimization model to improve the lack of logistics and distribution process in the factory, and puts forward suggestions for improvement.

2.1 Machine repair fitters shall have the skills of mechanical operation

Mechanical fitter's daily, usually contact with some practical machine tool maintenance tools. It is important to integrate the basic mechanical properties of the machine resistance during machine repair, and at some point not to operate the machine maintenance tool as a whole. Under these conditions, it is necessary for the mechanical fitter to understand the essentials of each function of connecting the machine to machine maintenance and to perform all mechanical work according to current technical standards. This means that we need to have extensive experience in mechanical adapters and proficient mechanical knowledge. Also, in order to quickly find a repair machine. The fault point, when the machine is carried out complex maintenance work, the machine repair fitter will be required to maintain a calm and rational state of mind, to ensure that the machine can quickly resume operation.

2.2 Machine repair fitters shall be equipped with equipment maintenance skills

Machine maintenance personnel should not only pay attention to the comprehensive understanding of equipment maintenance skills, but also pay attention to the maintenance of daily mechanical equipment. They must use conventional techniques for machine maintenance to prevent the potential risk of machine failure at the source, so as to save the cost of machine repair and reduce the number of machine maintenance. In the use of conventional maintenance equipment, the main work is to combine basic tools to perform various machine performance, reflecting the local conditions of the lathe maintenance and repair. In some cases, when some components are damaged or aging, they must be replaced and installed in time to ensure the safety of the operator [2].

2.3 The Analysis of Status Quo in Acceptance

Acceptance is a process that the productfrom the supplier is confirmed whether satisfy the Dongfeng Nissan's contracting method, which is also known as the receipt business. However, the acceptance is not only the receipt, but also as the Dongfeng Nissan receipt window. As a supplier and the company's contact window,it represents the company's image. The normal operation of the vehicle and the efficiency of the unloading operation are the focus of the receiving business. When the abnormality is found, the monitor should be immediately reported and quickly corresponds to the exception.The acceptance process has the following problems:

(1)Quality: Zhengzhou Fengshen logistics co.,Ltd. is responsible for the acceptance of goods, but in normal circumstances, the inspectors are based on the receipt to determine the specific number of arrival consistently, which can not guarantee the quality of the arrival. For example, the arrival of the components were crushed or deformed, and there are abnormal parts into the situation, specifically in the arrival of the parts mixing with other

products, or the number in large differences. The above situation is mainly that the acceptance of the work are generally confirmed by the inspectors, and people can't do things always right.As a large number of goods in the central warehouse every day, the work of the inspectors is very heavy. What's more, the quality of the guarantee should be sure by the suppliers. Choosing a good supplier will reduce the product's defective rate.

(2)The errors of number: when the inspector do the acceptance of the work, there will be some wrong in inventory of the number of goods. The inspector will also receive a single scan into the warehouse, so if the number of errors is found in the acceptance, it will lead to the production of the production line. The acceptance of the goods and the goods to check and confirm the label, and then receive a single scan into the library, the information system will have the end of the end of the goods handling machine abnormalities, as well as the existence of non-satisfied parts into the confirmation of the problem, the information problem is a line of employees can not be resolved, But these potential risks will lead to the production line.

2.4 The Analysis of Status Quo in Warehouse Management

The warehouse management has its purposeand scope of application.Producting management refers to "thenecessary things, in the necessary time, sent to the necessary places and to ensure the necessary quantity to maintain the quality of supply".The warehouse management is carried out through the implementation of the cycle check, etc., to achieve the actual inventory and theoretical inventory inspection and grasp the lack of inventory, excess situation, in order to prevent the bad phenomenon like the lack of parts (the shortage of line parts). The warehouse management is applicable to the purchase of parts, semi-finished products and finished products (including stamping parts).

Firstly, the central warehouse of the existing problems are as follows: we should keep the parts have 8 hours of inventory in our daily life, which issafe inventory as well.There is a certain distance to the JIT zero inventory.Mainly the suppliers often don't arrive timely, so the reality must maintain a certain amount of safety stock. As the central warehouse is mainly placed in the domestic parts and the goods are more, so there will be too many goods and no place for them.Warehouse shelves are less and the space is not used enough. The goods are not standardized and the material level is not standardized, which lead to low transport efficiency.Forklift driver's work becomes difficult because it is not the best way to pick up.Transport path is not optimal due to the changes in Dongfeng Nissan operating plan, and the warehouse needs to make timely adjustments on the level. Of course, the current work is mainly by the workshop which is responsible for the operation Of the class to complete.But usually the class is also responsible for the delivery of goods and other issues.It is difficult to have time to complete the optimization of warehouse space, so that the material level can not make timely adjustments, and the transport path is not Optimal which lead to low efficiency.

Secondly, KD warehouse is mainly responsible for the import of pieces, but the current production of most of the parts of the car have been made in China, only a small number of parts need to import.The current situation in the KD warehouseis different from the central warehouse, because the central warehouse has more goods leading to confusion while KD warehouse is not sufficient in the use of space, less goods but largespace. Warehouse uses the CATS system while the system may cause people to waiting for too long and affecting efficiency when the operator to query the job situation because optimization is not timely. In addition, there are inventory errors, and the required shelves are over needed while some do not meet the demand situation, which is due to regional planning is not very reasonable, and not timely in accordance with the number of goods to make adjustments.

3. EXAMPLES OF SKILLS AND SKILLS TEACHING OF MACHINE REPAIR FITTERS

In general, when assembling and disassembling the corresponding mechanical maintenance modules, we must ensure that the complete maintenance procedures are carried out. In general, the control modules used to install and remove the lathe should include: spindle toolbox, pallet, slide, lathe, tool table, etc. According to this rule, teachers should help students fully understand the basic principles of machine repair and carefully consider the main points of machine installation and disassembly. Through intensive training, students will be able to better understand the basic principles of machine maintenance. In addition, teachers need to demonstrate the importance of close collaboration in the practical aspects of learning through learning to ensure that machine learning is enhanced when students and teachers interact. Therefore, teachers must first prepare the research materials required for training and then guide the students in each study group in a comprehensive assessment of the research basis. After

independent investigation, each investigation team should provide similar conclusions in the actual investigation [3].

In the three diagrams, (a) is the signal to be detected, the abscissa is the sampling point, and the ordinate is the signal amplitude; (b) is the wavelet decomposition in a certain scale, the abscissa is the sampling point, and the ordinate is the wavelet coefficient amplitude; From the three figures (b), it can be seen that the abnormity of the wavelet coefficients at the location of the anomaly is significantly different from that of the normal signal. In the three figures (c) are the detection results, the abscissa is still the sampling point, the ordinate is the detection result, "1" indicates that the data is normal, and "0" is abnormal. Among them, all abnormal points are detected in Figure 1-(c), and there are no missed detections and false detections. The accuracy rate is 100%. Figure 2-(c) has a misdetection at the initial stage. The accuracy rate was 99.93%; Figure 3-(c) also had a false detection in the initial stage with an accuracy of 99.9%. Therefore, we can see from the above three groups of detection results that the detection algorithm based on Wavelet-HMM can detect the outliers in the signal more accurately and have good anti-noise ability.

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The method of kanban management is a transfer in the same process or before and after the process of logistics or information flow. JIT is a pull-management approach, which requires information from the last process through the flow of information to the last process of transmission of information, and the carrier of this information is called Kanban. JIT is impossible without a Kanban. Therefore, JIT production methods are sometimes called kanban production methods. Once the master productionplan is finalized, production orders will be issued to each production workshop. And then, each production workshop will issue production orders to each process in front of it. Finally, corresponding instructions will be issued to the warehouse management department and purchasing department. The delivery of these production instructions is done via Kanban (Zhanqi Du, 2005).

In the entire kanban system, the production line can quickly pass replenishment information to ensure that the warehouse on the material information transmission, timely response and line edge inventory control. As shown in the Figure, the warehouse is the starting point and the end point of the entire distribution system, and the distribution staff will be delivered to the warehouse after the card.You need to wait until the next delivery time, and then complete the production line of centralized distribution.The staff of the production line need to attach the material on the kanban into the kanban box at the same time.As the demand for information release, they also need to return the empty empty containers. Through the close cooperation between the two systems, you can achieve small batch, multi-batch delivery of punctuality (Junrong Pan, 2016).

According to what we know, Zhengzhou Fengshen Logistics Co., Ltd. is generally by oral or opinion box to feedback staff work in the problem, which is not an efficient and standardized feedback mechanism. The views of employees should be conveied to the top leader timely. There should not have communication barrier between the upper and lower employees in order to enable the company to provide customer more satisfied services. Working in front of the staff is the driving force behind the development of the entire enterprise.

A subordinate department of Zhengzhou Fengshen Logistics Co., Ltd. Zhengzhou factory logistics department is a comprehensive technical department. For a third party logistics enterprises, high quality and efficient service is very popular with customers. The technology department is a very critical sector because its optimization of the overall layout directly affects the productivity of the customer's company. The best placement of the parts into the entire plant layout is something that the technology department needs to consider. But in reality, the warehouse material design and adjustment of the location of the squad leader is responsible for the operation. I think this should be the responsibility of a dedicated technical department, so as to from the macro point of view to control

the entire plant logistics distribution process.

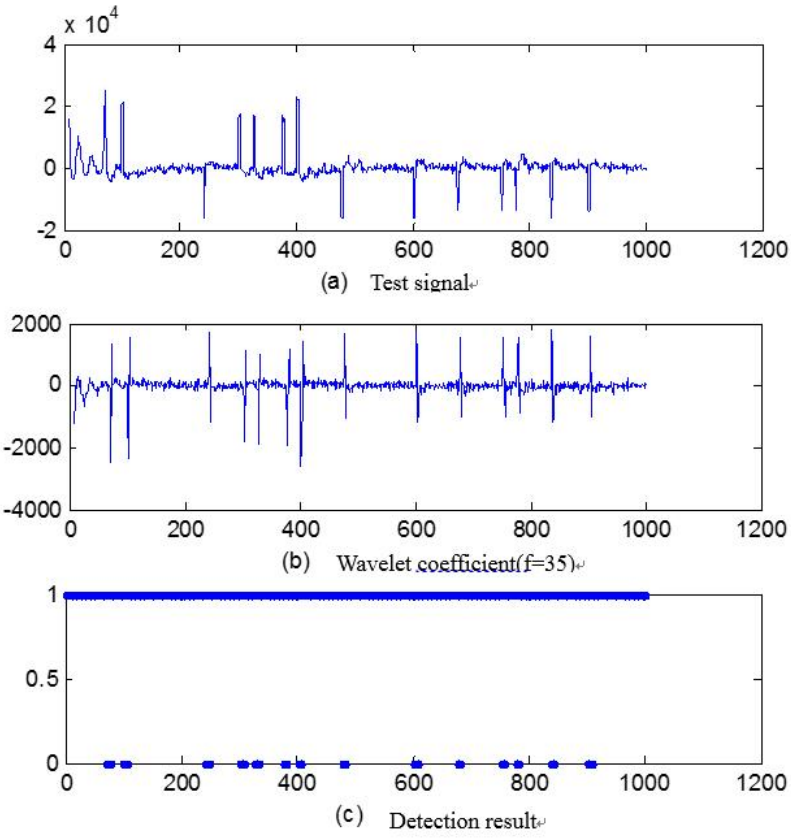

Figure 1: Electrode regulation system signal and test result

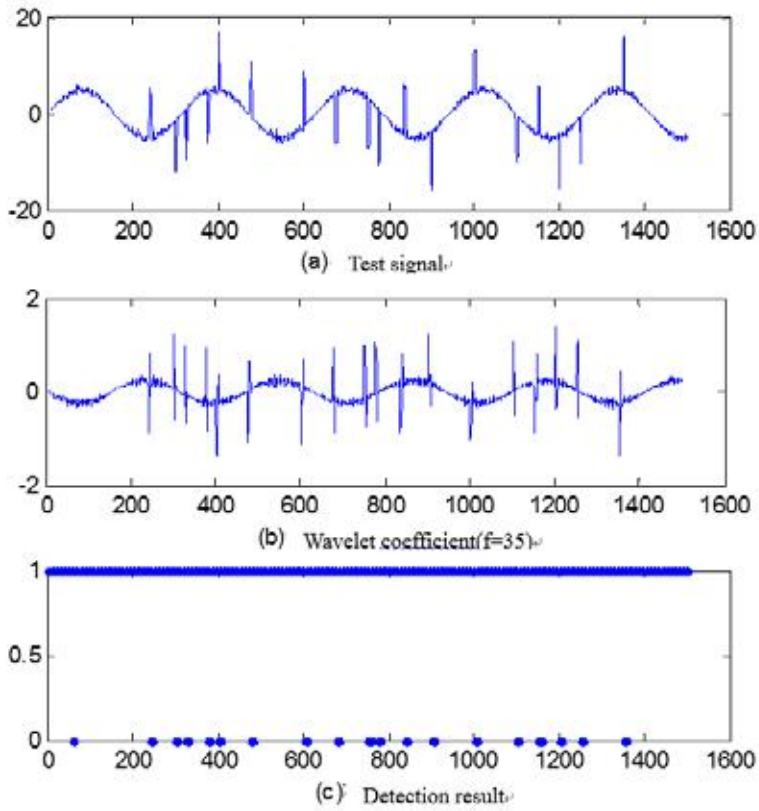

Figure 2: Sine signal and test results

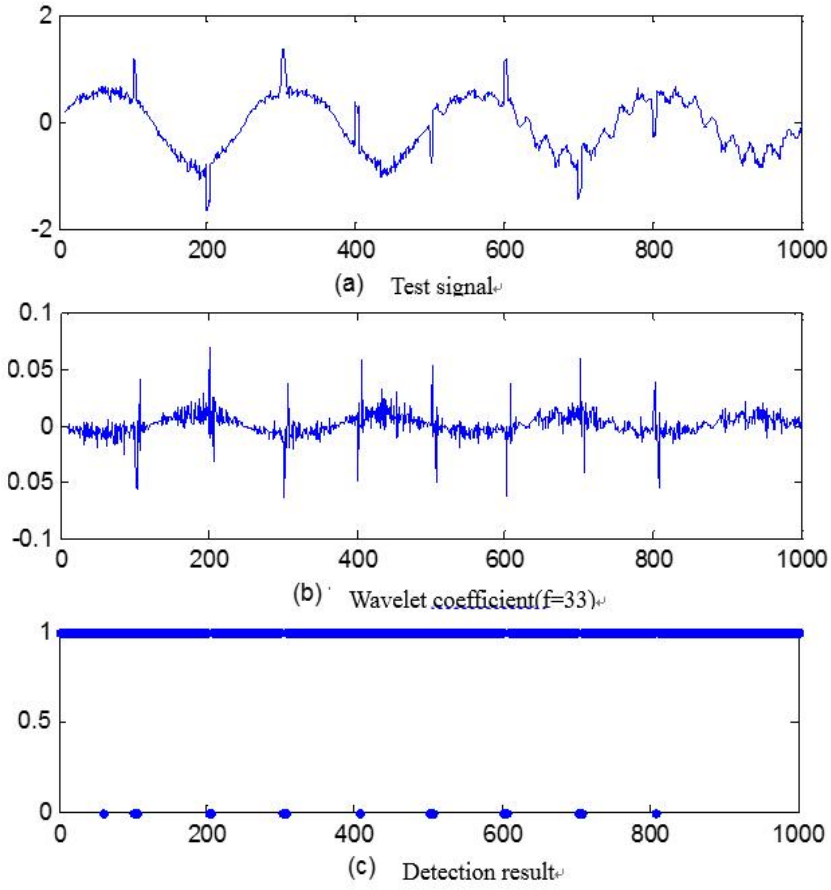

Figure 3: Alex model signal and test results

4. WAYS TO IMPROVE THE SKILLS AND SKILLS OF MACHINE REPAIR FITTERS

In recent years, IT technology has been able to fully implement the maintenance of machines and lathes, the original working mode of the machine repair fitter has been changed, on this premise, as the machine repair fitter, we must quickly adapt to the current trend of technological change, improve our own professional and technical knowledge. Machine maintenance skills should be used sparingly in daily work to maintain valuable machine tools and control them. And the non-scheduled maintenance of procedures, these maintenance and procedures will continue to accumulate our knowledge of machine tools, gradually improve our skills and experience.

5.1 Machine repair fitters should formulate scientific training objectives

Through the study of the past maintenance methods, we can find that, in the long run, the machine maintenance skills and abilities have little change. The same level of mechanical equipment does not work very well. The main reason for this problem is that the objectives of science education are not set in the training process of machine fitters, so the purpose of educational activities is ineffective, and the skills of popular machine fitters are also ineffective, and have not been effectively improved. Therefore, it is necessary for us to strengthen the training of machine fitter skills, improve the skills and abilities of machine fitter, establish scientific educational objectives, in order to provide excellent guidance for machine fitter. Specifically, it can be divided into three training links. The first step is to set goals. Whether it is educational institutions or machine maintenance workers themselves, they need to study the skills of mechanical maintenance and set training goals according to the actual work needs, which can effectively improve their skills and abilities. The second is to have the fitters themselves sort out valuable learning materials and develop appropriate training plans to ensure that they can learn according to the educational objectives they have set. The third is to combine their own actual training content, focus on learning their own not fully mastered content.

5.2 Machine repair fitters should carry out regular maintenance training of mechanical equipment

After various types of mechanical equipment run for a long time, some internal components of the equipment will appear certain aging. At this stage, mechanical maintenance is unable to detect the hidden danger of the existing machine failure, which will lead to the safety of the operator and cause mechanical damage. Therefore, mechanical fitter must be aware of the importance of daily mechanical maintenance, to ensure that the daily maintenance of equipment conforms to the basic principles of the state, and must be maintained in accordance with the current maintenance and management rules, so as to achieve the overall effect of maintenance machine, can find out the root cause of machine failure. So, we can see that. In the actual machine maintenance, mechanical maintenance has a very high position. During the training of mechanical maintenance, close cooperation between teachers and students is needed to avoid missing some important training points in mechanical engineering. When the machine repair fitter is limited to grasp the simple operating principle, it is difficult to correctly deal with the complex machine maintenance. At the same time, teachers should use flexible teaching methods to encourage students to "innovate with mechanical maintenance technology" and ensure that they master all aspects of maintenance technology.

5.3 Machine repair fitter should expand the theoretical knowledge of machine repair fitter

If you want to improve the skills and ability of machine repair, machine repair fitters should also expand the theoretical knowledge of maintenance. In particular, the following areas:

5.3.1 Machine repair fitters should master the knowledge of mechanical drawings

Each device is manufactured according to the corresponding equipment drawings. Therefore, we are familiar with the content of mechanical drawings, for the maintenance and repair of machinery and equipment to lay a good foundation. That is to say, it is necessary for us to strengthen the practice of mechanical design and repair, and improve the successful review of mechanical drawings. By studying mechanical design, the machine repair fitter can fully understand the internal structure of the machine, and lay an excellent foundation for machine maintenance and repair. In this way, the machine repairman can determine the location and cause of the failure, and develop the appropriate maintenance plan to ensure the safe and reliable operation of the machine.

5.3.2 Machine repair fitters should master the knowledge of electronics and automation

With the rapid development of science and technology, such as information equipment, electronic equipment. Advanced technologies such as automation and automation are gradually being applied to machinery and equipment. This technology not only improves the performance of the mechanical equipment, but also increases the internal complexity of the equipment, thus further increasing the requirements for machine maintenance. Therefore, only after understanding these aspects, the machine repair fitter can better repair the machine and accurately eliminate the failure of mechanical equipment. If the machine repair fitter for these aspects of the understanding is not deep enough, when the equipment appears electronic, automation and other problems, it is difficult to find and solve these problems. Therefore, in order to better repair mechanical functions, mechanical fitters need to know more information about electronics and automation. At the same time, when training the machine repair fitter, the company needs to obtain some knowledge about the equipment, and convert it to the training content of the machine repair fitter. Meanwhile, machine fitters can also train themselves through the Internet, books and other methods. In practice, these aspects of knowledge is important, because only enough knowledge of these can improve the efficiency of equipment and maintenance.

5.3.3 Machine repair fitters should master the knowledge of transmission

The mechanism is composed of several mechanisms, such as power mechanism, transmission mechanism, executive mechanism and interlocking control mechanism. The device can work properly through four mechanisms. Among them, the transmission mechanism is the most sensitive to the problem that affects the machine efficiency. Therefore, mechanical fitters need to know more about transmission mechanisms so that they can better understand the design features of mechanical equipment and the precautions for using them. When the mechanic knows how to repair the equipment, appropriate safety measures should be established for these areas to reduce the possibility of equipment problems depending on the nature of the area. At the same time, if there is a problem with the machine, the fitter can accurately locate the problem through observation and evaluation, and use appropriate methods to solve the problem and minimize the problem, so as to ensure the correct operation of the

equipment. Transmission mechanism is a good maintenance basis [4].

5.4 Machine repair fitter should be closely combined with machine repair fitter practice and basic principles

With the advent of the new era, the practical work of the machine fitter has increased the complexity of the initial work. Therefore, the most important thing is to integrate their skills, in order to find a more appropriate operating principle, in order to be able to carry out accurate repair and maintenance of complex and diverse machines. In the daily training in this field, teachers should guide students to learn the basic methods and principles of increasing mechanical maintenance skills, so that they can understand the key points of operation in machine repair, and prevent the actual operation of machine repair fitters from contradicting the principle. For example, in the point of image analysis, in order to achieve the purpose of machine maintenance, the machine repair fitter to the need to maintain a comprehensive inspection of the machinery. If the machine fails, it must be combined with the high frequency of failure causes, in order to achieve the purpose of comprehensive maintenance. In the case of repairing machines and handling machines, the operation in question must be tightly linked to the machine and repaired in conjunction with existing tools and design requirements in order to perform the operation without deviating from the existing machine. After continuous training and practical operation, machine repair fitters can not only accumulate a variety of practical experience, but also learn more points that have not been mastered, in order to be able to better mechanical maintenance, better response to the sudden failure of machinery, so that machinery can better run.

5.5 Machine repair fitters should strengthen safety operation training

For mechanical equipment, it contains not only the complex internal structure, but also many components that increase the size and weight of the equipment. Therefore, the lack of knowledge and skills of machine repair fitters will not only affect maintenance and repair, at the same time, non-standard. Maintenance also poses a danger to the operation of the machine and the life of the operator. For example, in 2017, due to the renovation of the base facilities, Shenhua Shendong Company had an anomaly in the operation of a sandblasting equipment during the maintenance. After the two employees cleaned the iron sand, one of them climbed on the top of the sandblasting machine alone and wanted to check it. However, the other employee started to operate the equipment without carefully checking the equipment after going out. Causing the employee, who was checking the top of the sandblast machine, to break his index and middle fingers. Therefore, it is necessary for the machine repair fitter to be aware of the hidden safety risks in all aspects of mechanical maintenance, at the same time to improve the skills and abilities of the machine repair fitter, and improve the safety training in equipment maintenance and repair.

5.6 Machine repair fitters should pay attention to the innovation and transformation of mechanical equipment

The innovation of mechanical equipment is mainly reflected in the optimization of operation tools, especially for some old machinery. In the current situation, many companies are introducing large CNC machine tools, which replace the original manual machine tools. After the replacement of the above machines, some of the old machines are not suitable for the installation of new CNC machine tools, so it is necessary to make the necessary innovation. In particular, in the actual work of retrofitting old components, the teacher must instruct the students in each class to dismantle, replace and repair the machinery. For example, the actual process of replacing or repairing machinery should determine whether the machinery is currently at risk of aging and therefore whether to replace it. Therefore, the machine repair fitter to combine the existing spindle equipment performance. To replace the original headstock and other key equipment, and eliminate the occurrence of other equipment.

5. CONCLUSION

This paper firstly summarizes the machine repair fitter, and then analyzes the basic skill requirements of machine repair fitter from the aspects that machine repair fitter should have the skills of mechanical operation and machine repair fitter should have the skills of equipment maintenance, and then analyzes the example of the skills and skills teaching of machine repair fitter. Finally, the paper puts forward some suggestions for machine repair fitters from the following aspects: machine repair fitters should develop scientific training objectives, machine repair fitters should carry out regular mechanical equipment maintenance training, machine repair fitters should expand theoretical knowledge, machine repair fitters should closely combine with machine repair fitters practice and basic principles, machine repair fitters should strengthen safety operation training and machine repair fitters should pay

attention to innovation and transformation of mechanical equipment Ways to improve skills and techniques.

In other words, if the mechanical equipment is working properly, the fitter only needs to perform effective inspection and maintenance to ensure that the equipment can operate safely. If we want to improve the ability of machine fitter, we should define the goal of scientific education, effectively improve the learning of machine fitter, strengthen basic training, improve the basic skills of using machine and improve theoretical knowledge, strengthen the safety training of machine fitter, improve the safety awareness of machine fitter.

Zhengzhou Fengshen Logistics Co., Ltd. as a third- party logistics companies to provide customers with first- class logistics services. Of course, the companies also need to continuously improve their productions, reduce costs, in order to have a better competitive advantage. From the papert in in-plant logistics cycle distribution process shows that if they pursue a punctual system of in-plant logistics, which means the pursuit of "zero inventory" status, they need to use the method of circulation distribution than the traditional method of material distribution more effective and more in line with JIT concept. In the real distribution process, there will still be a certain amount of inventory either line or warehouse. The use of such replenishment methods will increase the efficiency of delivery, reduce inventory costs. It is a good choice for Zhengzhou Aeolus Logistics Co., Ltd.

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