

10.18686/cstm.v2i1.3864

Analysis on Safety Technology Inspection of Hoisting Machinery in Construction Engineering

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Abstract: As a large-scale construction machinery, the crane is widely used in enterprise production, construction and other processes, and greatly improve the efficiency of production. With the wide application of hoisting machinery, its mechanical accidents occur frequently, which brings hidden danger to people's life safety. In the following, the author according to his own work experience, on the safety of hoisting machinery inspection and technology talk about his own point of view.

Keywords: Hoisting machinery; Safety technology inspection; Countermeasure

1. Type selection and installation of construction lifting machinery

1.1 Option

When enterprises purchase construction cranes, they should first of all take into account the scope of their use, work frequency, utilization rate, rated lifting weight and other factors, and select the construction cranes suitable for their requirements of the work level. According to the technical parameters, market research is carried out. When the equipment arrives, the unboxing inspection and acceptance shall be conducted to check whether the random technical materials are complete, whether the random accessories, tools and accessories are consistent with the checklist, and whether the equipment and accessories are damaged, defective, etc., and the records of unboxing inspection and acceptance shall be made.

1.2 Selection of Installation Units

The service mode of manufacturing, installing and debugging is formed by selecting qualified manufacturers for the installation teams of construction cranes. In addition, the selected installation entities shall be professional teams with "Special Equipment Installation (Maintenance) Safety Accreditation Certificate" issued by the provincial quality and technical supervision departments, and shall be qualified for installation with the corresponding hoisting capacity.

"Special Equipment Installation (Maintenance) Safety Accreditation Certificate"

2. Rules and regulations on the administration of the use of construction cranes

2.1 Safety management rules for construction cranes

In order to ensure the safety operation of construction cranes, it is necessary to have perfect management rules and regulations, so that operators can follow the rules and managers can abide by the laws. We shall improve and implement special equipment organization and management institutions, allocate strong professional management teams, and maintain relative stability to meet the requirements of management.

2.2 Emergency measures and rescue plans for special equipment accidents

In accordance with Article 31 of the Regulations on Safety Supervision of Special Equipment, a unit using special equipment shall formulate emergency measures and rescue plans for special equipment accidents. The special equipment user unit shall set up an emergency rescue leading group led by the unit leader, mainly by the special equipment safety management department, and cooperated by relevant departments, so as to clarify the responsibilities and assign the responsibility to the person. According to the use of special equipment, the unit can judge the possible failure, the dangerous situation, accidents, formulate the measures suitable for the characteristics of the unit's construction lifting machinery. The measures shall include the principles for handling accidents of construction cranes, the procedures, methods and procedures to be adopted in case of emergencies, the duties of the personnel of relevant departments, the division of work and cooperation, etc., and shall be regularly organized in-situ drills.

3. Inspection items of lifting machinery

Hoisting machinery plays a role of load-bearing in the process of application. Once a safety accident occurs, it will bring great harm.

Therefore, it is very important to inspect the hoisting machinery to ensure its normal and efficient operation. In the inspection process, the main detection items are summarized as follows:

3.1 Safety device detection

The safety device of the hoisting machinery mainly comprises: 1) a position limiter, comprising a lifting height limiter, a stroke limiter, a buffer, a deflection adjustment and a display device, etc.; 2) a lifting weight limiter; 3) a lifting moment limiter; 4) a wind proof device, comprising a rail clipper, a rail clipper, an anchoring device, a wind proof iron shoe, a wind proof cable, etc.; 5) an overspeed protection device, etc. These safety devices are damaged, invalid, or disassembled, lack of safety devices, etc., which can easily cause safety accidents. In the inspection process, it is necessary to ensure that the inspection method of each safety device is correct and effective.

3.2 Physical and chemical testing

Physical and chemical properties of the crane detection mainly detect the physical properties, chemical properties, process performance of the crane, and its chemical composition, mechanical composition analysis, so as to realize the overall detection of the properties of crane materials, and observe whether the strength and hardness of crane mechanical materials meet the national standards. Through analyzing the inclusions, crystal grain size and intergranular corrosion of crane metal material, the inspector can judge the quality of crane preliminarily.

3.3 Non-destructive testing

(1) Ultrasonic testing. Ultrasonic testing is a means to detect the internal defects of hoisting machinery, such as the existence of inclusions, white spots, cracks and so on. By using ultrasonic testing, the quality of mutual angle weld and metal material inside the hoisting machinery can be accurately detected, thus eliminating the hidden danger of safety of the hoisting machinery. (2) Electromagnetic detection. When using electromagnetic testing, the inspectors can check the wire rope, eddy current film, eddy current cracks and so on of the hoisting machinery through electromagnetic testing, so as to find out whether there are cracks, cracks, uneven density, eddy current over the standard phenomenon, and eliminate them in time.

4. Strengthen the countermeasures for the safety inspection of hoisting machinery

4.1 Establish a sound safety testing management system

The construction of a sound safety management system is a prerequisite for strengthening the safety inspection of hoisting machinery. The establishment of hoisting machinery system should be based on the actual application environment and methods of hoisting machinery, clearly stipulate the standards for the safety inspection of lifting machinery, and make detailed written provisions on its inspection data and operation specifications, so that the inspectors can have rules to follow and evidence to follow in the inspection process, and can effectively improve the detection effect.

4.2 Strengthen the skills training of inspectors

The safety inspectors of hoisting machinery must be strictly selected. First of all, it is necessary to train the inspectors in the professional knowledge of hoisting machinery and safety testing and inspection technology and skills to ensure that the inspectors can inspect the equipment in accordance with the standards stipulated by the state. The management personnel of the relevant departments shall conduct professional assessment of the inspectors and select the personnel with excellent assessment results to inspect the equipment. The professional assessment is divided into two aspects: professional knowledge testing and practical operation testing, which better ensures that the inspectors have excellent knowledge and technology. Organize professional knowledge training, exchanges, and inspection comparisons to improve inspection capabilities. In this way, we can better participate in the inspection of hoisting machinery.

5. Safety risk control of lifting machinery

5.1 Strengthen equipment maintenance

To establish a sound maintenance system for hoisting machinery and equipment, maintenance personnel need to continuously improve their professional quality. According to the operation of the machinery, through certain detection methods, check and understand the technical status of the machinery, find the existing problems, defects and hidden dangers, and arrange the repair plan in a targeted manner, so that the equipment has reliable performance in the process of use and ensure the safe operation of the equipment. In addition, in the daily maintenance work, the operator should carry out daily cleaning of the machinery and pay attention to the safe use of protective devices, so as to reduce the hidden danger of harm to equipment and people.

5.2 Improve the regulatory mechanism

According to the current national standards for construction hoisting machinery, enterprises should formulate practical on-site inspection methods. After the hoisting machinery is installed and before use, on-site inspection specifications and on-site operation and maintenance

requirements must be formulated. Set up a hoisting machinery safety management organization, which is responsible for the inspection, supervision, technical services, management and guidance of the entire company's hoisting machinery, and has the right to enforce the law on the management of the company's various projects and projects in use hoisting machinery, so as to effectively ensure that the relevant national and local safety laws, regulations and systems are truly implemented within the enterprise. First of all, it is necessary to strengthen the monitoring of equipment. All hoisting machinery must be approved by the company before it can be used, so as to avoid hoisting machinery and leasing companies that do not have the conditions for use to enter the company. Secondly, in terms of the installation and acceptance of the company's hoisting machinery, the tripartite acceptance system is implemented, that is, the installation unit is qualified for self-inspection, the company's large machinery and equipment supervision department is qualified for re-inspection and the local special inspection department is qualified for inspection and acceptance, and all qualified can be used only after it is qualified. In addition, equipment supervisors must pay attention to daily inspections, discover potential safety hazards in a timely manner, and strengthen the safety supervision and inspection of equipment on the construction site.

6. Conclusion

In order to reduce the occurrence of safety accidents of hoisting machinery, every employee must strictly abide by the safety operation procedures of hoisting equipment. Construction enterprises should regularly conduct safety inspections on hoisting machinery and equipment to avoid the occurrence of failure of hoisting machinery and equipment but still in use. The relevant regulatory departments should inspect the machinery production enterprises, fundamentally prevent the non-compliant hoisting machinery and equipment from entering the market, and seriously deal with the manufacturers of illegal production of lifting machinery and equipment. From the management personnel to the operators who install and disassemble the hoisting machinery and equipment, they must continuously improve their comprehensive quality and improve their operation level to gradually reduce the safety accidents of hoisting machinery.

References

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