Brake Operation Monitoring Device Based on the Automatic Control

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Abstract. In order to achieve to ensure the safety of person and equipment, to ensure the quality of products and services, easy to achieve management and so on, there are some work needs to be done according to certain steps or processes in many industries. In the general power plant and power system and nuclear power plant, chemical industry and occasions where have the large risk of operation, especially in the whole process of system operation management especially for operation personnel in strict accordance with the certain steps or process to complete the operation on the power industry, nuclear industry, electrical brake operation and plant technology .

1.There is no doubt that various cases that result from dropping out and skipping items have took place in the process of operation. For example, at three mile island in America ,the worst nuclear accident happened in American history. Otherwise, the worse accident occurred in the boiler, urbine and generator damage accidents, such as small as equipment stoppage caused by the wrong operation personnel, affecting the output unit. It is surprising that only a small mistaken caused serious economic loss. Therefore, operation in the thermal power plant, electric power system transformer substation, power users, a process system operation enterprise, the operation of nuclear power plant and so on, belong to the low rate of fault-tolerant operation that don't even allow a little error. Correct execution is the management goal and benefit target of the enterprise.

2.In some specific industries, which in turn right execute the command of the operation, guaranteeing the safe operation of the system equipment and personal safety. In electric power system, especially in the nuclear power plant, electric brake operation and the valves of process system, every step to operators operating requirements is very strict. Currently lots of operating systems developed in the power system are used to guarantee the electrical brake operation that is correct, which are roughly classified into two kinds, one kind is electronic five prevention operating system, the other kind is operation ticket (operating sequence table) which automatically generates system. However, both do not realize the purpose of following steps, identifying state of equipment, conducting operation and monitoring safely and efficiently in the fundamental and physics .

3.This paper introduces the need to solve a technical problem is to provide a monitoring system and method of operation that will reduce the dependence on operating and guardian. In that case, it will enhance the reliability of the monitor.

Therefore, this paper provides an operation monitoring system used to monitor at least one of the steps involved in the implementation from the scheduled operation sequence in the table . The operation monitoring system includes information acquisition device configured to obtain from the operation of the object to be operating information and checking device that is namely configured as device based on operation sequence table, which can judge whether object information and expected operating object of the current operation step can match the corresponding information.

4.This paper provides a kind of monitoring on at least one of the steps involved in the implementation of the method from the scheduled operation sequence in the table . The method

includes operating information accessed to the source from the operation of the object and the way that can judge whether object information and expected operating object of the current operation step can match the corresponding information ,which is based on the object information and operation sequence table. It is efficient to determine whether the operator operates to the appropriate object in time so that it will make the operator perform all the steps correctly according to the requirements of operation sequence table by achieving object information from information acquisition device , and checking the device to determine whether information matching.

5.The operation monitoring system also includes a remote monitoring system configured for remote monitoring that was carried out on the action object, which is described from remote monitoring system for information acquisition device object information mentioned in the operation.

6.Moreover, remote monitoring system includes the human-computer interaction interface described in the information acquisition device which is described from human-computer interaction interface for mentioned action object information. Information collection device is configured to collect the execution information relating to the operation steps of execution. Besides, the second memory is configured to store information. Information can be achieved from the remote monitoring system for the operation object. In other words, operation object information can be collected from the remote monitoring system of human-computer interaction interface.

7.In addition, the operation monitoring system includes the display that can display control device which is configured as described according to the operating sequence table specified in the order and control operation sequence table described steps involved in the text and graphical representation in the above screen display in turn, and licensing device checking the device to determine whether described object information and the current operation step expected operating objects match the corresponding information. it is described in the licensing device that the device allows operator to perform the operation steps of instructions. At the same time, it will allow the display control device to perform control as it is shown on the display of text and graphic representation of a procedure, otherwise the error will reveal and it will ban display control device to perform control as it is shown on the display of text and graphic representation of a procedure.

8.Conclusion

The safe device of electrical brake operation can be used to switching operation of the power system in electric substation ,electrical brake operation in coal-fired power plant , isolation switch operation in thermal power plant, isolation operation in nuclear power plant system and other industries which need guardian and operation people to conduct correct operation tasks, such as chemical industry and oil industry.

Obviously when the expected operation objects in current operation steps and object information match the corresponding information, license device will allow to perform the operation steps of instructions, and allow the display control device to perform control to display the script for the next steps on the display and graphical representation, otherwise the error message will appear and it can ban display control device to perform control to display the script for the next steps on the display and graphical representation. Through the step in the process of decision information does not match the signal, it will also ban display information about the next steps, which will be able to have operators force correctly execute every steps in sequence.

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