

ABSTRACT

Industrial Revolution was one of the events in the history of human civilization that managed to swiftly bring people to advanced modern world. One of contributors in this revolution was the use of steam engine as tools for heating and also powering mechanical devices to set in motion. Nowadays, steam can be generated through more sophisticated boiler machine. But, even the most sophisticated devices remain carrying risk that can not be ignored. This risk can occur due to a decrease in system reliability due to the influence of age and utilize. One of the activities to maintain the reliability of the system is with the activities of Risk Based Inspection (RBI). This activity is carried out by taking into account many factors, including the operating factor, material, environment, finance, and management systems. The main focus of the RBI is to prevent the occurrence of failure and decrease the risk that seriously impact both safety and financial perspective.

PT Kansai Prakarsa Coatings is an industry that specialized in the manufacturing of high quality resin and emulsion paint. In the production of this resin, fired boiler heater is used as heat and steam generator for the production process, using SB. 03 as identification code. Those boilers often become impaired, which can seriously interfere with the processing activity. To minimize the risk of the boiler, planning regular inspection schedule becomes very important.

In this study, analysis is conducted with guidelines of API 581 2008 edition Risk Based Inspection to calculating risk quantitatively. The object of research is components of boiler that are fire tube and tank. Through early identification using Failure Modes and Effects Analysis (FMEA), there are different types of failure scenarios that may occur in the components studied. Based on the analysis, it was found that the flame tube and tank is ranked at the medium-high risk level. As results from risk analysis conducted, it is revealed that fire tubes have moderate financial consequences. Also boiler tank have high probability of fatalities-related accident. Using RBI method, it is concluded that the next suggested planning of inspection can be done in 2018 for fire tube, and 2024 for boiler tank.

Keywords : Risk Based Inspection, Pipe, Tank, Boiler, Maintenance Interval, API 581