

ABSTRACT

This research aims to analyze the performance of the Heater Kernel machine at PT. Langkat Sawit Hijau Pratama uses the Reliability Centered Maintenance (RCM) method. Analysis involves identifying critical components based on Maintenance Significant Item (MSI), Failure Mode and Effects Analysis (FMEA), and Logic Tree Analysis (LTA). The analysis results show that the Steam Pipe component has the highest Risk Priority Number (RPN) value of 384 due to the risk of leaks and high steam pressure, followed by Bearings with an RPN of 336. Based on Logic Tree analysis, the Steam Pipe and Steam Trap are in the Safety (S) category because risk of failure that impacts safety. In addition, reliability analysis shows that the Steam Pipeline has the highest failure rate with a failure rate of 0.0026 hours and a reliability of 0.00011 hours. Steam Trap and Fan components show the best performance with high reliability and minimal downtime. The evaluation concluded that the Steam Pipeline requires priority maintenance to reduce the frequency of failures, while the Radiator and Stator require optimization of maintenance procedures to reduce repair time.

Keywords: *Reliability Centered Maintenance (RCM), Failure Mode and Effects Analysis (FMEA), Risk Priority Number (RPN), Critical Components, Machine Reliability*