

ABSTRACT

PREVENTIVE MAINTENANCE PROGRAM DEVELOPMENT USING RELIABILITY CENTERED MAINTENANCE (RCM II) AND AMMONIA PLANT OVERALL EQUIPMENT EFFECTIVENESS (OEE) CALCULATION AT PT. PUPUK KUJANG 1A

PT. Pupuk Kujang is a company that engaged in the production of fertilizers where the company manufactures various kinds of fertilizers such type of ammonia, urea, and granular. To produce according to production targets, company supported by machinery and equipment at each stage of the process and must be operated effectively and efficiently. To operate the machinery and equipment effectively and efficiently, company needs a good maintenance system. The method that used is Reliability Centered Maintenance II by combining qualitative analysis covering Failure Mode and Effect Analysis (FMEA) and RCM II Decision Worksheet. Another method used is the calculation of Overall Equipment Effectiveness (OEE) and the Six Big Losses to identify the factors that causing the decline in the effectiveness of production machines.

From the results of the determination of critical systems, Loop and Refrigeration System was selected as the critical system that will be discussed further in this study. Then determined an effective maintenance task and time interval policy in accordance with the characteristics of the damage by using the method of Reliability-Centered Maintenance and calculation of Overall Equipment Effectiveness (OEE) of the Ammonia Synthesis Converter engine which an equipment of the Loop and Refrigeration System.

Based on the results of using RCM data processing on equipment at the Loop and Refrigeration Systems, obtained 66 scheduled on-condition, and 2 scheduled intervals restoration . While each treatment equipment vary according to the task obtained. Difference in cost of maintenance when using the company's policy of preventive maintenance is 49% smaller when compared with the corrective maintenance policy. OEE calculation on Ammonia Synthesis Converter engine is used as a research object, the value of OEE for the engine in 2012 was 71.64%. This value is quite far from the criteria set by Japanese Institute of Plant Maintenance (JIPM), namely 85%. Of the six big losses, it is known that the most influential factor to the decline in the effectiveness of Ammonia Synthesis Converter engine is idling and minor stoppages as big as 60.98% of the total losses.

Keywords: RCM II, Decision Worksheet, FMEA, qualitative analysis, failure, maintenance intervals, OEE, effectiveness, Six Big Losses