

ABSTRACT

OPTIMIZATION OF TREATMENT ACTIVITIES BY USING RELIABILITY CENTERED MAINTENANCE (RCM II), MARGINAL ASSURANCE AND MODEL OF COST OPTIMIZATION BASED ON LEVEL OF RELIABILITY AT PT. PUPUK KUJANG'S NPK GRANULAR FACTORY

PT. Pupuk Kujang is a company that produce urea fertilizer which distributed and marketed to the agricultural areas around West Java Province. Besides that, PT. Pupuk kujang also producing compound fertilizer called NPK fertilizer which factory completely built at the middle of year 2009. NPK production system still have a high level of downtime, due to the existing treatments didn't consider the damaging characteristics and the age of the components, besides the high corrosive environment nearby. Because of that situations, the effective maintenance policy is required to minimize the cost and optimize the preventive maintenance schedule by using RCM II (Reliability Centered Maintenance) method's with qualitative and quantitative analysis. In addition, regular replacement need to be hold for the treatments of critical components. The replacement requires the certain amount of components that available in storage to be used at anytime.

Based on Pareto diagram, two subsystem from seven subsystem was elected with the highest level of disturbance, the subsystems are Recycle Crushing and Screening Section and Drying Section. From these subsystem, which were subjected to experiments for determine the proper treatment policy using RCM II method, model of cost optimization based on reliability value and marginal assurance method for combination of spare parts procurement.

The results of the analysis using RCM II method are 9 components with scheduled on-condition task, 2 components scheduled restoration task and 1 component scheduled discard task. Interval preventive maintenance time for critical parts which is gained from this observation are 100 hours for Chain Hammer M-003, Screen X-002, Bearing Crusher and Electromotor Dryer and 900 hours for Dryer Fan C-003. Optimal combination for spare parts procurement with marginal assurance method is for twice priode a year, with combination are 19 Screen X-002, 10 Chain Hammer M-003 and 14 Bearing Crusher and total cost for procurement is Rp 238.135.062,08.

Key Words : reliability, RCM, preventive maintenance, marginal assurance