ABSTRACT

PT Pupuk Kaltim is the largest fertilizer manufacturer company in Indonesia. PT Pupuk Kaltim have five fertilizer plants, namely Kaltim-1, Kaltim-2, Kaltim-3, Kaltim-4, and POPKA. Kaltim-1, Kaltim-2, Kaltim-3, and Kaltim-4 consists of utility plant, urea plant and ammonia plant. While POPKA consists only urea plant. This five plant have total urea production capacity of 2.98 million tons /year, ammonia 1.85 million tons /year, and NPK fertilizers 500 thousand tons /year. The capacity can be achieved when the plant running for 24 hours and Turn Around (TA) every 2 years. Turn Around (TA) is maintenance strategy for doing preventive maintenance from the vendor and TA are done every 2 years for 21 days. However, this maintenance strategy is not effective because not all components were damaged when done TA, so have effect on occurrence of the unexpected shutdown. In the years 2003-2010 there have been unexpected shutdown of 13 days /year which is not according to the regulation of PT Pupuk Kaltim, that should be maximum unexpected shutdown of 11 days / year (RKAP-PKT). The impact of the unexpected shutdown is the loss of production of 1725 tons /day, thus give rise to inefficiency in the maintenance activities was done by PT Pupuk Kaltim. It is due to the loss of revenue as effect from loss of production, it is about Rp 276.000.000,00 /day.

In an effort to prepare and establish maintenance activities which aims for minimizing the occurrence of performance failures and maintain the function of system, then use one of the methods for determining maintenance strategy is Reliability-Centered Maintenance (RCM). To support maintenance activities, do the optimization of critical spare parts. Classification of spare parts performed by fast-moving and slow-moving items. Fast moving components are categorized into 2 components, includes non-repairable and repairable item. Non-repairable items have been using assurance level method and repairable items have been using scrap rate method. While slow moving items based on criteria of insurance spare.

Based on FMEA analysis using RCM, obtained the proportion of the components with maintenance task on recirculation subsystem, that is scheduled on-condition task of 6%, restoration task of 3%, discard task of 7%, failure-finding task of 1%, and no scheduled maintenance of 83%. While for maintenance intervals obtained based on maintenance task of component. Next step is the selection of critical subsystems, based on the total corrective maintenance cost of failure effect of RCM, which elected is separation rectification. After that, critical equipment can be determined by using a Pareto diagram, which selected is 2-S-304, 2-E-302, 2-C-303, and 2-S-303. After measuring spare part optimization, obtained total components which is calculated for critical spare part optimization is 54 units of 4 critical equipment. From 54 unit components, consist of two component of classifications, includes fast moving items with number of spare part optimization 179 ea and slow moving items with number of spare part optimization 10 ea and 2 sets. On fast moving item, consists of two types of components, non-repairable with the total of spare part 167 ea and repairable item with the number of spare part 12 ea.

Key Words : Reliability-Centered Maintenance, RCM II, Spare Parts Management, Maintenane Optimization, Spare Part Optimization, Assurance Level, Scrap Rate.