ABSTRACT

Semen Padang Corp is the oldest cement company in Indonesia, that has been operated since 1910. *Semen Padang Corp located in Indarung, Padang, West Sumatera. Indarung II plant is the oldest plant in Semen Padang Corp. Cement Mill Area is the most important area in cement plant. Cement Mill Area consists of four systems, Feed System, Grinding System, Separation System, and Dust Collector and Transportation System. Each system consists of some units and equipments. Equipment in the Cement Mill Area is a system that has the characteristics of repair rate and failure rate. RAM Analysis Method can be used to reduce the losses caused by RAM problems, find out the weakest point in the system, and identified critical systems or components. Cost of Unreliability is used as a method to see how much of the costs caused by RAM problem. The purpose of this research is to determine value of Plant Availability Factor, determine the throughput of Cement Mill Area, determine the value of the Cost of Unreliability, determine the equipment that cause performance killer, and find out the value of Plant Availability Factor after improvement.*

From this research, can be concluded that based on RAM Analysis, Cement Mill Area have analytical reliability value of 0,09% at 1416 hours, and 0,20% at 1416 hours with simulated reliability. Analytical inherent availability of Cement Mill Area is 95,969% and 96,072% with simulation apporach. Analytical operational availability of Cement Mill Area is 93,762% and 93,840%% with simulation apporach. The system have maintainability value of 36 – 72 hours. Based on cost calculation with Cost of Unreliability, there is a cost of active repair time at amount $4.278.184,04, and $5.161.719,54 amount of downtime, so ther is $883.535,50 of money waste, with 91,065 hours wasted for jobs other than active repair.

Based on the evaluations, the system performace could be improved by increasing the MTBF, decrease the MDT, reduce preventive maintenance duration, reduce waste, and create standby redudancy of the equipment that cause the large downtime. That equipment is Tube Mill, Inlet Water Pump, Outlet Water Pump, Starting Oil Pump, Lubrication Oil Pump, and Circulation Oil Pump. The results of the improvement shows that inherent availability increased by 1,43% from 96,07% to 97,5%, and the operational availability increased by 2,86%, from 93,84% to 96,7%.

For further research, RAM Analysis can be combined with other maintenance management methods such as Reliability Centered Maintenance, Life Cycle Cost, and Sparepart Management.

Keywords : Cost of Unreliability, Plant Availability Factor, RBD, Reliability