

ABSTRACT

PT Suzuki Indomobil Motor is a company that is engaged in the vehicle industry. Automobile production processes require machines that are always operate in good condition, and one of them is robot welder. The robotic welder is a machine that will perform the welding to each car automatically. This machine has a very important role in the production process and most often damaged, especially on a production line YLO in welding department. This obviously raises the cost of major repairs, therefore it will require the calculation of the amount of the machine, the optimal age of the machine and also the optimal number of maintenance crew set to reduce the life cycle cost of the engine. The method to be used is the *Life Cycle Cost* (LCC) method and Monte Carlo simulation.

An appropriate treatment strategies are also needed for the machine against damage that can inhibit the production process. It is necessary for the determination of the Generic Maintenance Strategy to get proper treatment time intervals. In determining the Generic Maintenance Strategy, first conduct the failure mode analysis, the cause of the failure, and the effects in the event of failure on the machine so as to obtain the degree of criticality of the sub-system of the engine. Further, calculate the cost of preventive maintenance. The optimal preventive maintenance cost for the robot welder obtained during the analysis period (3 years) was Rp 14,182,600,237.48. Maintenance scheduling and maintenance activities can be performed on a regular basis and can be determined through the generic maintenance strategy. This can reduce the rate of engine damage that will have an impact on reduced life cycle cost.

Based on the *Life Cycle Cost* (LCC) method obtained the smallest total life cycle cost of Rp 42,719,073,124.61 by a combination of optimization of the number of maintenance crew is 2, the machine age is 9 years, and the number of machines is 15 units. Based on Monte Carlo simulation method obtained the smallest total life cycle cost of Rp 41,197,635,350.86 by a combination of optimization of the number of maintenance crew is 2, the machine age is 9 years, and the number of machines is 15 units. Based on Monte Carlo simulation method with the addition of 1 machine obtained the smallest total life cycle cost of Rp 45,590,220,994.51 by a combination of optimization of the number of maintenance crew is 2 and the 9 year life of the engine.

Keywords : Maintenance management, Generic Maintenance Strategy , LCC (Life Cycle Cost), Monte Carlo Simulation