

ABSTRACT

PT UJ is a food industry company that has an important role to fulfill the nutritional consumption of the Indonesian people, therefore the company needs to carry out maintenance of its machinery and components so that production can run smoothly in accordance with predetermined targets. Preventive maintenance activities are very important steps to maintain the lifetime of the production machine. The existing maintenance activity implemented by the company is to do maintenance every 2 months, but with the implementation of maintenance policy it still has many obstacles, namely the increasing total maintenance costs and the high loss of revenue of the company. Therefore optimization is needed to improve engine performance at PT UJ in this research is a Homogenizer machine HL05 A.

The method used in this study is a genetic algorithm optimization method. The reason for using the genetic algorithm method is because the objectives to be found to find a solution are two constraints namely total cost and reliability. On completion, 3 types of fitness functions are used. Fitness 1 is a matching function by giving weight to the constraint. Fitness 2 is a function used by having a given budget limit. While fitness 3 is a match function that is used to provide required reliability or reliability that the company wants to achieve.

Found 3 preventive maintenance scheduling proposals for 24 months period. The first result using fitness function 1 produced a total cost of Rp 28.664.706 with a reliability value of 91, 78%. The second proposal using fitness function 2 produced a total cost of Rp 29.757.758 with a reliability value of 92, 47%. The third uses using fitness function 3 resulting in a total cost of Rp 30.796.328 with a reliability value of 92, 52%.

Keywords: Preventive maintenance, Optimization, Reliability, Total costs, Genetic Algorithms.