

Abstract

PT. XYZ is a manufacturing company that manufacturing in military and commercial heavy equipment products. One of the equipment used to support the production activities of PT. XYZ is a Huron MU 6 milling machine to fulfill every components needed for excavators, ships, and other heavy equipment. Huron Machine has the most frequent damage in PT. XYZ. It can be caused by several factors, including a machine that has exceeded its optimal limit. In determining optimal machine life and optimal maintenance crew of the Huron machine, in this study case is using Dynamic Life Cycle Cost (DLCC) with Monte Carlo simulation. Life Cycle Cost (LCC) value is obtained from the sum of sustaining cost and acquisition cost. Failure Mode Effect and Analysis (FMEA) is used to identify the failure mode and determine its effect on system operation, then weibull shape factor (β) and scale factor / characteristic life (η) are used as inputs to be simulated with monte carlo to obtained the probabilistic Huron engine's Mean Time to Failure (MTTF) for further analyze getting future maintenance costs. Based on the calculation of DLCC, the smallest total LCC value obtained is Rp. 574,070,461 with optimal engine life is ten years and the optimal number of maintenance crew is one person. Based on the results of the Monte Carlo simulation, the value of the MTTF Huron engine is 391.7 hours with future maintenance costs which must be prepared in the amount of Rp. 270,710,759

Keywords - Maintenance, Mean Time to Failure (MTTF), Dynamic Life Cycle Cost (DLCC), Monte Carlo Simulation, Failure Mode and Effect Analysis (FMEA).