

## ABSTRACT

*PT Sanbe Farma is one of the largest pharmaceutical companies in Indonesia. One of the largest products produced by Water for Injection is infusion fluid that is processed through Plant Large Volume (LVP). Products produced by LVP are irrigation solution, alkes, and infusion. PT Sanbe Farma has to produce the needs of a number of hospitals to fulfill the needs of patients in need of infusion fluids, thereby increasing the need for productivity and the use of high technology facilities and machinery. The R125 filling machine has a high number of failures which is 184 in 2017 so the machine doesn't work optimally. So to solve this problem the company has to do maintenance activities on the R125 machine filling. The purpose from this method is for knowing the optimal age of this machine and the number of the maintenance crew needed. Besides, for determining the value of Reliability, Availability, and Maintainability on this machine. The method used is life cycle cost (LCC) method to know the age of machine and the number of optimal maintenance crew. Other methods used are Reliability, Availability, and Maintainability (RAM) Analysis.*

*Based on the LCC method, the lowest total of value is Rp 1,759,855,453,09 with the machine's optimal life for nine years and the number of maintenance crew of 2 persons in one shift. For calculation of RAM analysis using reliability block diagram (RBD) modeling, the system has a value of 39.26% reliability at 160 hours based on analytical approach. Inherent availability value of 97.89% and operational availability of 96.03%. based on Word Class Maintenance Key Performance Indicator (KPI), indicator of leading and lagging availability has reached the target of indicator given.*

*Keywords: Life Cycle Cost, Reliability, Availability, Maintainability, Word Class Maintenance Key Performance Indicator*