ABSTRACT

Non-metal material is one of the raw materials used by PT. XYZ in the production of the EC-725 helicopter fuselage parts, this material has an expiration date, so it is quite complex to implement an optimal inventory policy for this non-metal material. The root of the problem in the non-metal material policy is due to the gap between the purchase and use of materials so that the remaining material that is not included in the production process is stored in a storage warehouse so that it expires. This raises the cost of expired material and makes the total cost of non-metal material inventory to be high.

The method used in this final project is a deterministic multi-items EOQ. This multi-items EOQ applies the purchase of materials together in one order so as to reduce the cost of ordering materials. This EOQ is a simple method to implement and the demand for non-metallic materials at PT. XYZ is deterministic because this request is based on a contract with the client and can be known beforehand. This multi-item EOQ is also proven to optimize the total inventory cost by the relevant previous discussion.

Based on the results of the calculation of the proposed inventory policy by using this deterministic multi-items EOQ, it can eliminate costs caused by expired materials. Order costs can be reduced by 76% compared to the existing policy. Savings costs can be reduced by 63% when compared to the existing policy.

Based on the calculation, deterministic multi-items EOQ can eliminate expired non-metal materials so that there are no costs caused by expired materials and can optimize total inventory costs by 19% compared to existing policies related to non-metallic materials. Fluctuations in demand and ordering costs do not affect the outcome of the solution using a deterministic multi-items EOQ. But changes in the age of the material can affect the yield. If the material age is below 8 months, this deterministic multi-items EOQ solution is not optimal to apply.

Keywords— [expired, inventory, Economic Order Quantity, raw material]