ABSTRACT

PT XYZ is a company engaged in steel production in Indonesia. Hot Rolled Coil, the product with the largest production capacity in the company, experienced a loss of production opportunity due to the limited availability of raw materials so that the production target could not be achieved. Therefore, it is necessary to design a policy for the availability of HRC raw materials using the Material Requirement Planning method and the Lot Sizing Mixed Integer Linear Programming (MILP) technique.

The first step to solve the problem is to calculate the actual total cost of inventory, which consists of holding costs, ordering costs, and shortage costs. The next step is to calculate the order lot sizing with limitations such as the quantity ordered by domestic suppliers must be larger than oversease suppliers and the number of orders from domestic suppliers is limited to a maximum of 108,247 tons. The lead time used for domestic suppliers is one period before production and for overseas suppliers is three periods before production.

The calculation results for HRC's raw material inventory policy show that it has a total inventory cost of \$32,643,110, compared to the actual condition of \$395,272,500 which decreased by 92%. In addition, there is a frequency of ordering proposals, namely by placing orders to domestic suppliers as much as 12 times and to foreign suppliers as much as 11 times and PT XYZ experienced a significant reduction in production opportunity loss due to the supply of raw materials that meet the needs of production targets.

Keywords-Inventory Policy, Lot Sizing, MILP, MRP, Raw Material