ABSTRACT

PT. LEN INDUSTRI that run in manufacturing industry with a dynamic market characteristic, cause many production planning changes in every ordering period. Beside it production with a long and continuous linking system, cause different scheduling and quantity demand depand upon each component's variety. This condition make it hard to plan an optimal material requirement planning and PT.LEN INDUSTRI still arrange it's material necessity traditionally, that not always able to handle every problem that may occur, so overstock or even stockout often happen. Because of that an optimum material requirement planning that able to give information about cost, scheduling and lot quantity to arrange material necessity is needed to minimize costs that may occur.

PT. LEN INDUSTRI can handle that problems by applying *Material Requirements Planning* (MRP) system, this system can arrange and control inventory by considering each material's connection, so it can increase effectivity in arranging material necessity. MRP system consist of four steps, that are netting, lotting, offsetting and exploding. Lot sizing is calculated using Wagner-Within Algorithim that suitable in dynamic characteristic and able to determine a minimum controllable cost policy in every production period, so an optimum material requirement planning that able to handle cost, scheduling and lot quantity problem can be formed to support production activities. All MRP's steps are performed using software application so that all the computation proses easier.

Aplication make the counting process faster and able to give output information faster, that will be use to process material requirement planning decision withdrawal. From counting result by the MRP application, using MRP with lot sizing Wagner-Within algorithm can minimize material necessity 10% for assembly's and sub-assembly's level and 10,1% for raw material, and can reduce total raw material cost to Rp185,998,095.67 or 23,32% from the existing method.

Therefore, applying material requiremet planning sistem (MRP) with lot sizing Wagner-Within algorithm in planning material requirement is better than the existing method that used by PT. LEN INDUSTRI, beside that MRP process using software application can give many benefits by making the counting process easier than manually. But in determinig final decision, it needs matured considerations based on PT. LEN INDUSTRI policies.

Key Words : MRP Aplication, Material Requirement Plannning, MRP, Lot Sizing, Wagner-Within Algorithm