ABSTRACT

Desin Racking System of Chemical Warehouse PT ABC usimg Multiple Knapsack Problem for Minimation the Invesrtastion Cost

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PT ABC is a company that operate in oil and gas processing. In 2016/2017 PT ABC implemented the RDMP (Masterplan of Refinery Development Program) program which aims to increase production capacity from 260 thousand barrel per day to 360 thousand barrel per day. This program resulted in demolition of warehouse land and warehouse reproduction in new location. In the existing condition of warehouse has overcapacity but inversely with utilization which only reach 29% so can still be increased until 80%. Overcapacity in the warehouse is shown by the gap between the capacity of the block stack and the number of stocks in the warehouse. The main cause of the problem that arises is the hall that is not in accordance with the provisions in this case is very important, so the product is placed on aisle or even stored in the front of the warehouse. This can disrupt warehouse activity such as manuvering forkliftt. The state of the block stack is already overcapacity, so the company using racking system. Determination of racking system in the new warehouse begins by choosing the type of rack that matches the product of chemical stacking, then combined with the use of Multiple Knapsack Problem to get the result of the combination of the number of high capacity, but get the lowest ivestation cost and cross-aisle cost. Calculation of rack combination using mathematical modeling linear programing, and the result is warehouse can increase storage capacity of 160% pallet position.

Keywords : chemical warehouse, racking system, multiple knapsack problem