

Determining Inventory Replenishment Policy for Major Component in Assembly-to-Order of Cooling System Manufacturing

Authors : Tippawan Nasawan

Abstract : The objective of this study is to find the replenishment policy in Assembly-to-Order manufacturing (ATO) which some of the major components have lead-time longer than customer lead-time. The variety of products, independent component demand, and long component lead-time are the difficulty that has resulted in the overstock problem. In addition, the ordering cost is trivial when compared to the cost of material of the major component. A conceptual design of the Decision Supporting System (DSS) has introduced to assist the replenishment policy. Component replenishment by using the variable which calls Available to Promise (ATP) for making the decision is one of the keys. The Poisson distribution is adopted to realize demand patterns in order to calculate Safety Stock (SS) at the specified Customer Service Level (CSL). When distribution cannot identify, nonparametric will be applied instead. The test result after comparing the ending inventory between the new policy and the old policy, the overstock has significantly reduced by 46.9 percent or about 469,891.51 US-Dollars for the cost of the major component (material cost only). Besides, the number of the major component inventory is also reduced by about 41 percent which helps to mitigate the chance of damage and keeping stock.

Keywords : Assembly-to-Order, Decision Supporting System, Component replenishment , Poisson distribution

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