A Model for Integrated Production-Packaging Systems

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Abstract

The problem of determining the economic packaging frequency of jointly replenished items has received a lot of attention from researchers. This problem is usually encountered while packaging the products after completing manufacture. Nevertheless, production batch quantities certainly influence the manufacturing cycle time of products and hence the economic packaging quantities for jointly replenished items. Therefore, realizing the importance of the relationship between production batch quantities and packaging quantities of jointly replenished items, a mathematical model is developed in this paper for determining the economic production and packaging quantities in a multi-stage production system. The basic criterion considered for optimizing the production and packaging quantities of jointly replenished items is the minimization of total system cost per unit time (TSC). The TSC consists of setup cost for production, packaging setup cost, inventory cost of production and production and inventory of packaged items. An example problem is solved to illustrate the model.