An integrated purchase and production model for solar manufacturing

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Abstract

How to improve competitive edges to meet rapidly changing technological innovations
and dynamic customer needs is crucial for the survival and success of firms under a global
competitive market. Many firms realize that a good supply chain management is a necessity in the
intensive competitive international market. In consequence, it is important for a firm to provide
products with a lower cost and good quality at the right time and place to maintain a competitive
edge. In this paper, a joint replenishment model for multiple suppliers is developed using a mixed
integer programming (MIP) to determine the optimal replenishment time and quantity. The model
aims to solve the shortcomings of existing joint replenishment models and to increase the
performance and customer satisfaction of the replenishment system. The proposed model is
applied in a solar cell manufacturer to maintain a good integrated purchase and production plan.

Keyword：Integrated Model; Mixed Integer Programming (MIP); Purchase, Production, Solar Manufacturing.