

Solving multi-objective planning model for equipment manufacturing enterprises with dual uncertain demands using NSGA-II algorithm

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ABSTRACT

In the paper we have established a multi-objective planning model. This model can solve the dual uncertainty demand problems of number and delivery time when orders are emergent or are modified for equipment manufacturing enterprises. We used scenario analysis methods to deal with our customers' urgent orders and order revisions. A fuzzy interval analysis was used to describe delivery time requirements, and a random interval analysis was used to describe the quantity of customer demand. The multi-objective production planning model proposed in this paper can solve the objectives pursued by the enterprise to meet the maximization of customer demand and minimization of costs. The NSGA-II genetic algorithm is used to solve the model. Finally, the model is solved by example simulation. Through the input of a large amount of data and the analysis of the operating results, it verified the applicability and effectiveness of the model.

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