

## **Integrated Location-Allocation Planning in Multi Product Multi Echelon Single Period Closed Loop Supply Chain Network Design**

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**Abstract :** Environmental performance along with social performance is becoming vital factors for industries to achieve global standards. With a good environmental policy global industries are differentiating them from their competitors. This paper concentrates on multi stage, multi product and multi period manufacturing network. Single objective mathematical models for a total cost for the entire forward supply chain and reverse chain are considered. Here five different problems are considered by varying the number of facilities for illustration. M-MOGA, Shuffle Frog Leaping algorithm (SFLA) and CPLEX are used for finding the optimal solution for the mathematical model.

**Keywords :** closed loop supply chain, genetic algorithm, random search, multi period, green supply chain

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