

LOCATION PROBLEM FOR MANUFACTURING SCRAPPED/WASTE
MATERIALS RECYCLING CENTERS

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ABSTRACT

Recycling has been being an important topic for a long time and more and more people have started to realize the necessity. In despite of different social environments, governments encourage people to care about daily life recycling concerning natural resource crisis and environmental pollution.

Recycling in a manufacturing system needs more attention due to the huge amount of scrapped/waste materials; however, the recycling situation in manufacturing is more complex than daily life because of the potential cost and global economy environment.

The main objective for manufacturing business is to make profit; recycling makes sense for a profit organization only if it is cost effective. For manufacturers, one important part of recycling cost is transportation, especially when most manufacturing companies are struggling under the current economic situation, and they trash scrapped/waste materials to bring up the profit.

This paper proposes a recycling system isolated from the manufacturers, focusing on collecting valuable scrapped/waste materials. Given the recycled material market situation, minimizing the cost is critical to keep the recycling profitable. Among the different parts of the cost, transportation cost is not affected by recycling technology.

This study solved one manufacturing scrapped/waste materials recycling center location problem based on a hypothesis that State of Missouri plans to build a recycling system mainly for the manufacturing industry of Missouri.

This paper presents two models whose objectives are to maximize profit; the first model was verified by data from past and the second model predicts the future situation based on forecasted data with the help of a basic grey system forecasting model.