A Simulated Annealing Heuristic Approach to Irregular Shapes Packing/ Cutting Problem

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ABSTRACT

Packing and cutting problems arise in many industries such as clothing, furniture, steel, shipbuilding, and footwear. Hence any savings in the utilization rate of material used can result in a big reduction in the production cost. Lots of research in the literature is, thus, devoted in finding the optimal way of cutting or packing patterns in the given plates. Since it is almost impossible to find the real optimum for the packing/cutting problems, developing heuristic approach for the problems is therefore more appropriate than exact methods. In this study, we propose a simulated annealing (SA) approach for packing patterns with irregular shapes. Extensive efforts have been spent in finding the best clustering policy among parts. Several parameters controlling the mechanism of SA are also validated through some experiments to accelerate the convergence of the SA algorithm. An empirical data from a footwear company in Taiwan is adopted to test the effectiveness of the proposed algorithm.

Keywords : simulated annealing ; SA ; cutting ; packing ; irregular pattern

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