A HEURISTIC APPROACH FOR SOLVING IRREGULAR PACKING PROBLEM

黃玟錫、吳泰熙,蕭育如

E-mail: 9018616@mail.dyu.edu.tw

ABSTRACT

PACKING AND CUTTING IRREGULAR OBJECTS ARE TASKS FREQUENTLY ENCOUNTERED BY THE INDUSTRIES, SUCH AS SHOES MAKING, TEXTILE, STEEL, CLOTHING, ETC. THE GREATER SAVING IN THE WASTAGE OF MATERIALS OF THE ABOVE-MENTIONED INDUSTRIES, THE LOWER THE TOTAL PRODUCTION COST. LOTS OF RESEARCH IN THE LITERATURE HAS BEEN DEVOTED TO DEVELOPING ALGORITHMS TO FIND THE OPTIMAL / NEAR OPTIMAL WAY OF CUTTING AND PACKING. IN THIS STUDY, WE PROPOSE A SIMULATED ANNEALING (SA) APPROACH FOR PACKING PATTERNS WITH IRREGULAR SHAPES IN A RECTANGULAR SHEET. IN ADDITION, THE SHEET ACCOMMODATING IRREGULAR SHAPES IS ALLOWED TO HAVE NON-RECTANGULAR SHAPE AND NON-UNIFORM QUALITY INSIDE. SEVERAL PARAMETERS CONTROLLING THE MECHANISM OF SA ARE ALSO TESTED THROUGH SOME EXPERIMENTS TO ACCELERATE THE CONVERGENCE OF THE SA ALGORITHM.

Keywords : SIMULATED ANNEALING, SA, CUTTING, PACKING, IRREGULAR PATTER

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