

Binary Programming for Manufacturing Material and Manufacturing Process Selection Using Genetic Algorithms

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Abstract : The material selection problem is concerned with the determination of the right material for a certain product to optimize certain performance indices in that product such as mass, energy density, and power-to-weight ratio. This paper is concerned about optimizing the selection of the manufacturing process along with the material used in the product under performance indices and availability constraints. In this paper, the material selection problem is formulated using binary programming and solved by genetic algorithm. The objective function of the model is to minimize the total manufacturing cost under performance indices and material and manufacturing process availability constraints.

Keywords : optimization, material selection, process selection, genetic algorithm

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