

A Mixed-Integer Linear Programming Model for the Cutting Stock Problem in the Steel Industry

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Abstract

A mixed-integer linear programming (MILP) model is proposed for solving a one dimension cutting stock problem (1D-CSP) in the steel industry. A case study of a metallurgical company is presented and the objective is to minimize waste in the cutting process of steel bars, considering inventory constraints and the potential use of the resulting leftovers. The computational results showed that an optimal solution was always found with an average improvement in waste reduction of 80%80%. There was no significant difference when comparing results between the complete model and the model without inventory constraints.

Keywords

Cutting stock problema, Mixed-integer linear programming, Steel bars, Industrial application