

CUTTING STOCK OPTIMIZATION PROBLEM FOR PRODUCTION OF CARTON BOARD BOXES

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Overview

In this optimization problem we develop models for the optimal planning of board boxes production. The objective is to minimize the trim loss cost and the number of patterns to be cut in the corrugator machine. Decision variables are: patterns to be cut, length of the patterns, paper rolls types and widths to be assigned, number of units to produce.

One mixed-integer nonlinear programming (MINLP) formulation of this problem is presented. This formulation corresponds to a non-convex MINLP having several constraints with bilinear terms. It was solved using GAMS/DICOPT solver.

By means of disjunctions, we obtain a second formulation which is a linear discrete one. For this case GAMS/LOGMIP is employed to solve it using the convex-hull algorithm, CPLEX and GUROBI as MILP solvers. Two model sizes are solved one with seven and the other with nine orders to illustrate the application of the models and compare their computational performance.

References

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