

OPTIMIZATION OF USABLE LEFTOVER CUTTING STOCK PROBLEMS USING FUZZY APPROACH

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Abstract. The objectives of this paper are to analyze different linear optimization models for the One-dimensional Cutting Stock Problem and, by using a fuzzy classification approach, determine the reutilization of the leftovers from the cutting process. The optimal solutions of the proposed linear models are obtained from Simplex Method. The fuzzy classification system is a collaborative decision-making tool, which analyzes uncertain parameters in the manufacturing process in order to determine, according to the given objective, the most appropriate cutting pattern, also classifying the results provided by different linear optimization models. The comparison of the results allows to infer the most appropriate model to use according to the specifications of the problem to be solved. Results are obtained from a case study, in a packaging company, located in the state of Paraná, Brazil, which aims to select the best cutting pattern for two different scenarios: one with concentration of leftovers on standardized objects, and the other on non-standardized objects.

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