

MULTIDIMENSIONAL STOCK CUTTING PROBLEM AND A NEW SOLUTION APPROACH

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ABSTRACT. *In this study, linear programming and integer programming methods and their application areas are discussed, and these methods are implemented to stock cutting problem. In the application a new approach is used on solution of two dimensional stock cutting problem and performance of new method is compared to the other methods. The aim of application is to obtain minimal leakage with fastest solution by using sizes, quantities of resource and target stocks, plotting the layout on screen.*

Keywords: Data stock cutting, Linear programming, Integer programming

1. **Introduction.** Humankind always wanted and planed to make the best in his works for centuries. Sometimes we see these efforts as a worker lifts up maximum load with fixed force and sometimes as reducing friction of planes [1].

New optimization techniques had been developed after World War II. Using high speed computers for mathematical analysis to achieve optimum values has helped too much. Numerical techniques have removed some difficulties of calculus [3, 9-11].

A simplex method for solution of linear programming had been developed by G. B. Dantzig in 1947. This method is a revolution in optimization world. R. Bellman had developed dynamic programming model and solution in 1950. H. Kuhn and A. Tucked worked on non-linear programming model by reformulating optimization requirements which had been suggested by Karusk for restricted problems [2].

One Dimensional Stock Cutting Problem. Stock cutting problem is an integer programming problem of linear programming which has to produce integer solutions. It is used commonly to reduce waste in industrial operations thus using sources more efficiently. First we consider one dimensional stock cutting problem. In one dimensional stock cutting problem, the aim is to place objects having different sizes in an optimal way