Weekly planning in the broth and cream industry with several channels

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Abstract

This paper deals with a real planning problem of a company in the food sector. This company produces mainly fresh cheese, broths, creams, vegetable desserts and soy products among other products. The company has a production line for each family of these products. The problem refers to the soy dessert line, but it can be generalized to the others. Normally the process consists of uperization (UHT), filling tetra – briks, and boxing (filling boxes with tetra-briks). Each line consists of two identical channels. Each request (order) can be made on one channel or both. Specifically, the problem consists in establishing the weekly planning of the orders, that is, production order and the channels that it occupies each order. The objective is to maximize weekly production and reduce production time. It takes into account the setups times between the different orders, maximum time and maximum production between cleaning operations, etc. A formulation of the problem is proposed. The model has similarities with route problems although it also has some notable differences. A Multi-Start tabu search method is proposed. This heuristic method is compared with commercial software (CPLEx and Localsolver) in real and pseudoreal instances.

Keywords: scheduling, several chanels, tabu search, MIP

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