

A VNS Algorithm for the Integrated Production and Distribution Problem

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Production distribution planning is the most important part in supply chain management. In this work, An NP-hard production-distribution problem for one product over a multi-period horizon is investigated. The aim is to minimize the sum of three costs: production setups, inventories and distribution. The objective is to determine, for each period, the amount produced, the inventory levels and the delivery trips. To solve this difficult problem, we propose a bi-phase approach based on a Variable Neighbourhood Search (VNS). This heuristic is tested on 90 randomly generated instances in the literature, with 20 periods and 50, 100, 200 customers. Computational results are presented, that show that our approach is competitive and even outperforms existing solution procedures proposed in the literature.