Méndez *et al*. (2000) presente a new mathematical formulation for the non-cycling scheduling of multiproduct batch plants involving a unique processing stage with several units in parallel. They address the delicate balance between production cost and customer satisfaction, minimizing order delays and WIP inventory.

He and Hui (2008) presente a heuristic rule-based genetic algorithm for single-stage multi-product scheduling problems (SMSP) in batch plants with parallel units. These process model is approximated using recipes with fixed parameters and the task allocation phase is handled either via combinatorial methods.

Shi *et al.* (2017) propose an improved scheduling model for MMSP with parallel units. They decomposed MMSPs into two subproblems of unit assignment and order sequence. Similar rule bases were designed for the unit selection subproblem.

Petering *et al.* (2019) present methods for solving, the cyclic inventory control problem with multiple flexible batch supply and demand processes. The objective of this new problem is to minimize the average or maximum amount of inventory of a single item that is held during a cycle of given length in a buffer whose stock is replenished by multiple batch supply processes and consumed by multiple batch demand processes.

Zheng et al. (2023) propose a hybrid intelligent framework to track the real-time batch interface of multi-product pipelines. The batch injection judgment module is applied to determine whether there is a new batch of product injected into the pipeline.

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