# Integrated Workforce Scheduling and Flexible Flow Shop Problem in the Meat Industry

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**Abstract.** We address a problem from a meat company, in which clients' orders are processed in two stages: the meat is prepared on benches and subsequently allocated to conveyors to be packed in disposable trays. In an environment where machines are unrelated and food preservation constraints are given, the company has to take daily decisions on the number of working periods and their start times, the number of workers and their allocation to machines, and the scheduling of activities to satisfy the required orders. The objective of the problem is to minimize, in a lexicographic way: (i) the number of unscheduled activities, (ii) the weighted tardiness, and (iii) the total production cost. To solve the problem, we propose a multi-start random constructive heuristic, which tests different combinations of number of workers in the machines and for each combination produces many different schedules of the orders. The results of our computational experiments over realistic instances show that the heuristic is effective and can support the company on its daily decisions.

**Keywords:** Food industry; Two-stage flexible flow shop problem; Workforce schedule; Multi-start random constructive heuristic.