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A Metaheuristic for the Layout and Scheduling Problem in a Job Shop Environment

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Abstract : We propose an approach that jointly addresses the layout of a facility and the scheduling of a sequence of jobs. In real production, these two problems are interrelated. However, they are treated separately in the literature. Our approach is an extension of the job shop problem with transportation delay, where the location of the machines is selected among possible sites. The model minimizes the makespan, using the short processing times rule with two algorithms; the first one considers all the permutations for the location of machines, and the second only a heuristic to select some specific permutations that reduces computational time. Some instances are proved and compared with literature.

Keywords : layout problem, job shop scheduling problem, concurrent scheduling and layout problem, metaheuristic
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