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عنوان مقاله:

A Hybrid Meta-heuristic for the Dynamic Layout Problem with Transportation System Design

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خلاصه مقاله:

Improving performance of the plant layout requires careful consideration of various factors including changes in flows between departments over time and design of transportation system. This paper primarily presents a comprehensive dynamic layout design model which involves the design of facilityplant layouts problems based on a multi-period planning horizon. The presented model integrates layout and transportation system design via considering more realistic assumptions, such as takingaccount of fixed-position departments and distance between departments that endanger each other. Inaddition, specific criteria such as capacity, cost and reliability of facilities are considered in transportation system design decision. The combinatorial nature of the problem necessitates using ameta-heuristic approach to deal with this issue. Therefore, an efficient hybrid meta-heuristic based onvariable neighborhood search (VNS) and simulated annealing (SA) is proposed to design a proper dynamic layout for a specific planning horizon. The validity of the superiority of the proposed solution method is proven through comparing with all of the other solution methods upon the original modelavailable in the literature. Finally, an extensive computational results lead to the conclusion that theproposed method outperforms other existing methods. In addition, solving an example from the dynamic layout design of a home appliance manufacturer demonstrates the efficiency of the proposed model and solution algorithm in terms of solution quality to solve real-world instances

کلمات کلیدی:

Dynamic Plant Layout Problem , Transportation System Design , Hybrid Meta-Heuristic , Variable Neighborhood Search , Simulated Anhnealing

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