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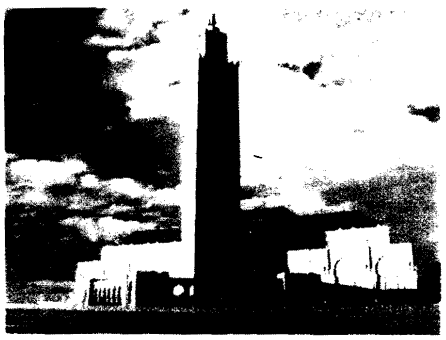

Book of Abstracts

collected by five regional depots. A vehicle routing problem is constructed for each regional depot, and the algorithm is applied to solve it. The experimental analysis shows a good performance of the proposed procedure. Computational results using real data show that the method outperforms real existing approaches to reverse logistics.
Keywords: Reverse Logistics, Vehicle Routing Problem, Waste of Electric and Electronic Equipment, Heuristics.

HANDLING SYSTEMS AND WAREHOUSE MANAGEMENT

OPERATIONAL RESEARCH MODELS IN WAREHOUSE DESIGN AND PLANNING

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Abstract: The design and operation of a warehouse involve many challenging decision problems. In this paper, a literature review on warehousing models is presented. Authors start with a hierarchy of decision problems encountered in setting up warehouse design and planning processes. Next, some operational research decision models and solution algorithms supporting decision making at each discussed level are presented. The aim is to link academic researchers and warehouse practitioners, explaining what planning models and methods are currently available for warehouse design and planning, and what are the future research opportunities.
Keywords: Decision Support Models; Warehouse Design and Planning; Warehouse Operations Management

ALGORITHMS FOR ON-LINE ORDER BATCHING IN AN ORDER-PICKING WAREHOUSE

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Abstract: In manual order picking systems, order pickers walk or ride through a distribution warehouse in order to collect items required by customers. Order batching consists of combining these – indivisible – customer orders into picking orders. In static (off-line) batching all customer orders are known in advance. In dynamic (on-line) batching customer orders become available dynamically over time. This paper considers an on-line order batching problem in which the total completion time of all customer orders arriving within a certain time period has to be minimized. It is shown how heuristic approaches for the static order batching can be modified in order to deal with the dynamic situation. A competitive analysis shows that every on-line algorithm for this problem is at least 2-competitive. Numerical experiments demonstrate that the choice of an appropriate batching-method can lead to a substantial reduction of the completion time of a set of customer orders.
Keywords : Warehouse Management, Order Picking, Order Batching, On-line Optimization

DCV ROUTE CONTROL IN BAGGAGE HANDLING SYSTEMS USING A HIERARCHICAL CONTROL ARCHITECTURE AND MIXED INTEGER LINEAR PROGRAMMING

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Abstract: Modern baggage handling systems transport the baggage at high speeds, on a network of tracks, using destination coded vehicles (DCV). In order to ensure the optimal routing of DCVs, in this paper we propose a hierarchical control framework. In this framework switch controllers provide position