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Title:

Method of selecting internal transport technology in picking processes

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Drawings	75
Tables	31
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Keywords picking process, technology, internal transport, mathematical modeling, simulation modeling.

The doctoral dissertation examines issues related to the selection of internal transport technology in the picking processes. A methodology of selecting internal transport technology in the picking processes, supported by both mathematical and simulation models, was developed alongside four proprietary technology selection strategies. The layout of this dissertation results from the objective adopted and the research issues. In chapter one the research area was identified. General aspects of internal transport in warehouse facilities, the picking process and technologies used in warehouse processes were discussed. Means of internal transport were presented and discussed. In chapter two the issue concerning the internal transport technology selection was discussed. Particular attention was given to discussing the conditions of warehouse methodology selection available in the literature and the criteria of selecting internal transport technology, algorithms were presented. In chapter three the objective, research issues and the thesis were formulated. Chapter four is dedicated to the methodology of selecting internal transport technology in the picking processes. The author's methodology of technology selection was discussed in detail. The algorithm of internal transport technology selection procedure was presented. The application of the computer software was described. In chapter five of the dissertation mathematical modelling of transport selection in the picking processes was presented. Criteria, limitations and decision variables necessary to develop the mathematical model of internal transport selection in the picking processes were determined. Chapter six concerns the simulation modelling of proprietary internal transport technology selection strategies in one-sector warehouse facilities. Four strategies in several variants were simulated. In chapter seven simulation studies of internal transport technology selection were conducted based on developed strategies in three-sector warehouse facilities. Chapter eight focuses on the verification of the results obtained. The possibility and the validity of both the developed internal transport selection methodology in the picking processes as well as the implemented strategies of technology selection were discussed. The results of the research were discussed in the summary and an analysis of the level of advancement in achieving the objective of work was carried out. The solution of the problems formulated was assessed and the confirmation of the thesis of the dissertation was achieved.

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