

STAGING APPROACHES TO REDUCE OVERALL COST IN A CROSSDOCK ENVIRONMENT

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ABSTRACT

Crossdocking operations seek to move materials from inbound locations to outbound locations as quickly as possible. In some cases this can be achieved without intermediate product staging. However, in an environment with limited space, limited material handling resources, multiple operations and realistic scheduling needs, some short-term staging is required. The objective of this research is to determine what staging strategy is most appropriate in a crossdocking operation as a function of freight attributes (dimensions and number of different types of boxes), and container loading requirements.

The problem is described in mathematical terms and then a hybrid analytic/simulation approach is used as the basis of a cost analysis and analyzing operational performance of the different staging strategies. Staging strategies are evaluated with respect to average and maximum staging requirements, average crossdock flow time, outbound trailer cube utilization, and material flow system / space cost.