A model for transfer baggage handling at airports

This work deals with the handling of baggage from passengers changing aircraft at an airport. The transfer baggage problem is to assign the bags from each arriving aircraft to an infeed area into the airport infrastructure. The infrastructure will then distribute the bags to the handling facilities of the corresponding outbound flight. We present a static mixed integer model for the transfer baggage problem. The objective combines efficiency and quality criteria in a weighted linear function; minimizing the number of missed bags and transportation time, while ensuring a fair distribution of the workload and robustness. The model can be solved with a commercial MIP-solver. Furthermore, the use of the model in the dynamic environment during daily operations is introduced. The model includes two different approaches for increasing the robustness of the generated solutions. The uncertainty of the input data is studied and future approaches for improving robustness are discussed. The presented solution approach runs successfully as part of the operation control systems at Frankfurt Airport since 2008.

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