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Airport Check-In Optimization by IP and Simulation in Combination

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Abstract : The check-in area of airport terminal is one of the busiest sections at airports at certain periods. The passengers are subjected to queues and delays during the check-in process. These delays and queues are due to constraints in the capacity of service facilities. In this project, the airport terminal is decomposed into several check-in areas. The airport check-in scheduling problem requires both a deterministic (integer programming) and stochastic (simulation) approach. Integer programming formulations are provided to minimize the total number of counters in each check-in area under the realistic constraint that counters for one and the same flight should be adjacent and the desired number of counters remaining in each area should be fixed during check-in operations. By using simulation, the airport system can be modeled to study the effects of various parameters such as number of passengers on a flight and check-in counter opening and closing time.

Keywords : airport terminal, integer programming, scheduling, simulation
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