Airport Ground Staff Scheduling - DTU Orbit (07/12/2018)

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Modern airports are centers of transportation that service a large number of aircraft and passengers every day. To facilitate this large volume of transportation, airports are subject to many logistical and decision problems that must continuously be solved to make sure each flight and passenger travels safely and efficiently through the airport. When an aircraft lands, a significant number of tasks must be performed by different groups of ground crew, such as fueling, baggage handling and cleaning. These tasks must be complete before the aircraft is able to depart, as well as check-in and security services. These tasks are collectively known as ground handling, and are the major source of activity with airports. The business environments of modern airports are becoming increasingly competitive, as both airports themselves and their ground handling operations are changing to private ownership. As airports are in competition to attract airline routes, efficient and reliable ground handling operations are imperative for the viability and continued growth of both airports and airlines. The increasing liberalization of the ground handling market prompts ground handling operators to increase cost effectiveness and deliver fast and reliable service. This thesis presents models and algorithms for general optimization and decision problems arising within ground handling. The thesis contains an introductory part which provide an overview of the ground handling environment and reviews a series of optimization problems from the specific perspective of airport ground handling. In addition, the thesis contains five scientific papers, which consider specific optimization problems within ground handling in detail. The considered problems range from generalized approaches to workforce planning, to highly detailed scheduling problems arising in the highly dynamic environment of airports.

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