An integrated rolling stock planning model for the Copenhagen suburban passenger railway - DTU Orbit (08/11/2017)

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A central issue for operators of passenger railways is providing sufficient number of seats for passengers while at the same time minimising operating costs. This is the task of rolling stock planning. Due to the large number of practical, railway specific requirements that a rolling stock plan has to take into account, rolling stock plans are often constructed in a step-by-step manner, taking some requirements into consideration in each step. This may make it difficult in the final step to produce a plan that is feasible with regard to all of the requirements and at the same time economically attractive. This paper proposes an integrated rolling stock planning model that simultaneously takes into account all practical requirements for rolling stock planning at DSB S-tog, the suburban passenger train operator of the City of Copenhagen. The model is then used to improve existing rolling stock plans using a hill climbing heuristic.Experiments show that the heuristic used in the integrated rolling stock planning model is able to produce feasible solutions within minutes of computation time starting from infeasible rolling stock plans. Furthermore, the heuristic is able to improve the economic attractiveness of typical rolling stock plans with an average of 2%.

General information

Publication information