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*Publication date:*  
2019

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*

Lusby, R. M., Zhong, Q., & Larsen, J. (2019). *The Impact of Depot Location on Rolling Stock Scheduling with Maintenance Requirements*. Abstract from 30th European Conference On Operational Research , Dublin, Ireland.

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# The Impact of Depot Location on Rolling Stock Scheduling with Maintenance Requirements

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## Abstract

This work was presented at the 30th EUROPEAN CONFERENCE ON OPERATIONAL RESEARCH held in Dublin, Ireland between June 24th-26th 2019.

Rolling stock scheduling with maintenance requirements is a topic that has received increased attention in the literature. Rolling stock scheduling involves assigning compositions to a set of timetabled trips in such way that the provided capacity matches the forecast passenger demand and any unnecessary (de)couplings and or dead-heading movements are avoided. The inclusion of unit-specific maintenance restrictions further complicates this problem. Typically, the location of the depots, or places in the network where composition changes and maintenance occurs, are assumed known. The locations where maintenance can be performed naturally influence the maintenance possibilities and ultimately the quality of any resulting rolling stock schedules. Motivated by network expansion at the Chinese High Speed Railway, in this talk we consider the problem of selecting new depot locations. We extend a two stage Mixed Integer Programming approach for Rolling Stock Scheduling with Maintenance requirements to account for depot selection, and test the proposed methodology on real-life instances from the Chinese High Speed Railway.