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Rail Transport— Systems Approach

 Springer

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Dynamic Optimization of Railcar Traffic Volumes at Railway Nodes

Aleksandr Rakhmangulov, Aleksander Sladkowski, Nikita Osintsev,
Pavel Mishkurov and Dmitri Muravev

Abstract A major direction in the development of modern world transport systems involves the concentration of freight and traffic flows within international transport corridors and transport nodes in terminals and hubs. The changing role of rail transport is taking place under these conditions. Increased structural complexity and irregularities in cargo and railcar traffic volumes have been observed, despite the higher levels of transport equipment and technology standardization, the increased container transport volumes and consequent reduction in the cost of intermodal operations, and the interaction between different modes in transport nodes. This is largely due to the increasing need for cargo owners to lower logistics and warehouse costs, which is achieved by reducing the size of freight shipments and ensuring their uniform delivery. Moreover, privatization of the railway industry in certain countries and the sale of rolling stock to operating companies have made the coordinated management of rail fleets more difficult. The demand for improved efficiency of railcar traffic volume management in the case of complex structures is especially relevant for large railway nodes, particularly the transport systems of industrial enterprises. Here, the application of traditional approaches to the management of transportation processes involving individual elements of traffic flow (trains, railcars, locomotives) and transport infrastructure (railway stations, loading areas, rail hauls) leads to additional transport costs as a result of the increased length of time that railcars are located at the railway node. The aim of this study, therefore,

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