

**Author:**

**Barbara Kondracka**

**Title:**

**A model for the evaluation of the technological process of wagons operations at a railway station**

Pages	156
Figures	46
Tables	13
References	162
Supplements	0
Appendixes	0

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The dissertation concerns issues related to the technological process of operations of freight wagons at nodal railway stations (i.e. marshalling yards, shunting yards). The correct implementation of the technological process of wagon operations greatly impacts the reliability, safety and timeliness of the services provided in terms of receiving, shunting or marshalling and assembling, e.g. train sets, wagon groups or individual wagons. Undoubtedly, these types of processes require appropriate staff preparation and proper organisation and management to improve the efficiency of wagon turnover on the railway network.

Railway stations as nodal elements of the railway network, have a significant impact on the functioning of the rail transport system. Any disruption caused by incorrectly organised work at these points causes congestion and consequently disrupts further areas of the railway network, including the transshipment points. At the same time, the well-organised operation of such points makes it possible to ensure the rhythmicity of traffic on the network and compensate for disturbances originating from other system elements. Therefore, there is a search for tools to support the assessment of technological processes of operations of wagons or groups of freight wagons carried out in nodal railway stations, including tools that allow comparison of organisational or technical-technological solutions carried out in stations with different characteristics in terms of workload or wagon turnover efficiency. Therefore, research in this area was undertaken in the dissertation.

The dissertation aims to develop a decision-making model for assessing the implementation of the technological process of operations of freight wagons at nodal railway stations. The developed model is the main element of the author's RCPAM method proposed within the dissertation as a decision support tool for decision-makers in decision-making concerning, among other: the study and analysis of station operation taking into account diagnostic criteria or the assessment of the adaptation of a given track layout for the realisation of technological processes resulting from railway station operation. Thus, the dissertation provides a decision-support tool for the evaluation of the completion of technological processes in nodal railway stations (e.g. shunting, marshalling) in the context of: adaptation of the designed track layout to the size of the station operation, evaluation of the organisation and management of freight wagon operations processes. Thus, the research conducted in the dissertation fills the research gap in decision support in the assessment of technological processes at nodal railway stations and fits in with the needs of business practice.

The dissertation is divided into 7 chapters containing theoretical considerations, the development of the method and its practical application. The theoretical part presents the literature research, indicates the research gap, and systematises the issues related to technological processes of freight car operations at railway stations, including methods and tools supporting the organisation of these processes. The practical part of the dissertation includes the developed decision-making model for the evaluation of the technological process of wagon

operations, which is an element of the proposed RCPAM method of decision support, together with an algorithm and simulation model. The simulation model developed in the FLEXIM environment enables the verification of the method for evaluating the technological process of freight wagon operations at the railway station. The work concludes with a summary and discussion of the results obtained. Directions for further research are also presented.