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Title: Risk assessment model for rail transport in the context of implementing interoperability on the railway system in Poland

Pages	171
Figures	16
Tables	18
References	116
Supplements	0
Appendixes	0

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The dissertation is devoted to the issue of carrying out risk assessment in the railway transport in Poland. Special attention was given to risk assessment carried out as a result of changes in the railway system introduced by railway undertakings, infrastructure managers, entities in charge of maintenance of railway vehicles and producers of railway products. Railway system in Poland is subject to intensive changes caused by investments in modernization of railway lines, purchase and placing in service of new types of railway vehicles. As a result, it comes to modernisation and construction of new structural subsystems. The changes of technical nature are accompanied by changes in functional subsystems and above all in the subsystem: "Maintenance" and "Operation and Traffic Management".

Based on the review of literature it was found a research gap at the interface between the Safety Directive and the Interoperability Directive and it was possible to specify the challenges facing the Polish railway system applying Commission Regulation No 402/2013 defining a common safety method for risk evaluation and assessment. The thesis proposes a holistic model of risk assessment, which considers both technical, operational, organisational, human factor aspects and the issue of risk at the interfaces between structural and functional subsystems.

The thesis presents the tasks of actors in the Polish railway system during the implementation of interoperability, identifies sources of risk during the implementation of tasks by four basic categories of participants in the transport process, analyses progress to date in the implementation of interoperability and problems associated with risk management.

The dissertation presents statistics aggregated by the President of the Railway Transport Office on the number of implemented changes in the railway system and the number of risk assessments carried out as a result of considering the changes as significant. The small number of situations where the entity making the change carries out the full risk assessment process, i.e. applies safety measures and involves the Assessment Body, has led to the conclusion that changes in the current risk assessment model are needed.

The dissertation also presents examples of inadequate and incomplete risk assessment process, which resulted in railway accidents to be investigated by the State Commission for the Investigation of Railway Accidents. In the penultimate chapter of the dissertation, the holistic model of risk assessment was verified and examples of its application in Polish conditions were presented. It was shown that using the model will allow to maintain safety at an acceptable level.