

SUMMARIES

ARTICLES

Marcin Garbacz: Accelerated Material Weathering Used in Rolling Stock with Simulation of Sunlight and Weather Conditions

The article features the most crucial information relating to weathering tests with temperature, humidity, rain and solar simulation. The influence of weather parameters, particularly the sunshine, on the degradation of the material has been described. Moreover, available equipment to perform weathering laboratory tests have been presented. The problem of calculating time to carry out accelerated weathering laboratory tests transposed to natural weathering has been described and also the methods of mathematical correlations of weathering natural and laboratory tests results have been outlined. Finally, the kind of the most suited equipment to the planned tests included in the research project has been identified and the relevant standards which the tests will be based on have been reviewed.

Keywords: accelerated weathering, xenon-arc radiation, fluorescent UV lamps, coatings, plastics, textiles, research project, The Railway Research Institute

Magdalena Garlikowska, Piotr Gondek: Safety and Risk in the European Union's Railway System

The notions of risk and safety are closely connected, especially in the railway system context. The concept of European railway system safety whose essential element is risk and its analysis is presented in the paper. The development and improvement of safety on the railways has been described taking into consideration common assessment methods, common requirements and common safety factors. The assumptions and significance of the Safety Management System (SMS) has been outlined. Particular elements of this system have been shown as their correct functioning contributes to maintaining safety on the appropriate level by infrastructure managers and railway operators. Problems referring to the introduction of changes into the railway system and analysis of connected risk have been presented. Assessment criteria of the significance of the change have been identified. New solutions have been proposed as tools to support the implementation of the risk analysis process.

Keywords: safety, risk, risk management, change

Hubert Janicki: Thyristor Surge Protection System – Application and Test Methods

Selected issues concerning overvoltage appearing in traction substations during switching off short circuits have been characterised in the theoretical part of the article. Some equipment working in the traction substation, its functions and importance for the proper functioning of 3 kV DC power supply system has been presented. The process of switching off short circuits by DC high-speed circuit-breakers, its consequences and threats that it poses for the electric power supply have been described. The practical part of the article includes experiences and test results obtained by the Electric Power Department of the Railway Research Institute. The new research equipment applied during the thyristor surge protection system's tests and then the implemented tests have been presented, i.e. the method and results. Descriptions of tests are complemented with relevant illustrations, figures or a short interpretation of obtained results.

Keywords: thyristor surge protection system, railway traction power supply, DC high-speed circuit-breaker, short-circuit current

Janusz Poliński: Intermodal Transport Subsystems. Part 4 – Pocket Subsystem

The intermodal transport subsystem, the technology of which is based on the use of pocket wagon for transporting semi-trailers is presented in the article. Due to the special construction of the bodywork, these wagons may be applied to transport huge bodywork structures and swap bodies. The principles of transporting semi-trailers in pocket wagons, the technology of load operations, requirements for the road and track loading terminals have been described. The formulae to calculate minimum length of the loading track and time of load operations have been presented. The strengths and drawbacks of the pocket subsystem have been pointed out.

Keywords: intermodal transport, subsystem, terminals, railway wagons

Janusz Poliński, Krzysztof Ochociński: Contribution of the Railway Track & Operation Department of the Railway Research Institute to the Improvement of Rail Transport Accessibility for People with Disabilities

The activities of the Railway Track & Operation Department of the Railway Research Institute to improve rail transport accessibility for people with disabilities and persons with reduced

mobility have been presented in the article. These activities started in the 80s when the idea of universal design was not applied in Poland in designing new railway infrastructure and facilities. The most essential studies concerning the improvement of infrastructure accessibility and due to new technical solutions – easier access to board a train from the platform have been described. Numerous articles connected with accessibility written by the Department's employees have been listed and some problems that the disabled travellers using the railways encounter have been shown.

Keywords: railway transport, accessibility, transport of disabled people

Marek Sumiła, Krzysztof Tchórzewski: Polish Railways Facing the Implementation of New Radio Communication Network

The article outlines problems of implementing the GSM-R system in Poland. Firstly, the reasons that affect the common implementation of the GSM-R system in Europe have been pointed out. Then the difference of the GSM-R system on the background of mobile public network was explained and challenges resulting from the transition from the existing VHF 150 MHz network to the GSM-R system were presented. The final part of the article sums up the potential of the Signalling and Telecommunication Laboratory in the area of tests carried out within EU verification processes for such solutions.

Keywords: GSM-R, network migration, radio measurements

RECENT EVENTS

Magdalena Garlikowska: European Assessment Bodies' Cooperation on the CSM

The article presents information concerning establishing a cooperation consortium of European risk assessment bodies, as the Railway Research Institute is one of them. Problems discussed at the first meeting of these bodies' representatives, which was held in Valenciennes, France in September 2017, have been described. The role of an assessment body, such as the Safety Assessment Centre at the Railway Research Institute is, in the risk assessment process has been presented. Problems to solve in the nearest future have been identified in order to successively increase the railway market's safety level and efficiency.

Keywords: assessment body, risk, risk assessment, common safety methods (CSM)

Izabella Grzegorzółka: Scientific Seminars at the Railway Research Institute in the Third and Fourth Quarters of 2017

The series of seminars carried out at the Railway Research Institute concern vital problems of rail transport. They aim at broadening the knowledge related to innovative solutions and the possibility of their practical application as well as exchanging experience of new technologies development. This article points to the range of problems discussed during three seminars which were held in the third and fourth quarters of 2017. The lectures given in September referred to the needs to expand the Polish railway network, research, the implementation of non-filament light sources in railway signaling as well as operational tests of friction shoes pairs of the brake.

Keywords: scientific seminars, HSR, TEN-T, traction electrification, control-command and signaling, brake

Marek Sumiła: Participation of the Railway Research Institute at the 15th conference „Telecommunication and IT on the Railway”

The information concerns the 15th conference “Telecommunication and IT on the Railway” which was organized in Wisła by the Polish Chamber of Railway Equipment Producers and Railway Service Providers. During the conference the Railway Research Institute in Warsaw was granted a special award for providing directions and support for the Polish market of ITC railway systems' producers. The article also contains a summary of the Institute's representative's lecture on the development of mobile radio communication for railways.

Keywords: conference, IT, FRMCS

Iwona Wróbel: Participation of the Railway Research Institute in the Railway Congress 2017

The 7th Railway Congress, held in Warsaw on 23.11.2017 entitled „Agglomeration Railways versus the Development of Urban Centres”, was the seventh edition of the conference considered the most high-profile and prestigious event in the railway sector. The information includes topics discussed in panels. The Railway Research Institute held honorary patronage of this Congress, whereas the Institute's employees participated actively in expert debates. As in previous years, the Congress gathered around 700 experts, representatives of companies local and governmental authorities connected with the railway sector.

Keywords: railways, congress