

SUMMARIES

ARTICLES

Paulina Bielska: System Strengthening the Current Return Circuit of the Metro Line

The first part of the article describes the process of metro line power supply in 750 V DC system, beginning with the urban power grid, then regional supply points and traction substations and finishing with substations as a return circuit. The current return circuit has been presented as a component of metro line power supply for rail vehicles. Moreover, undesired phenomena accompanying the power supply system such as stray currents have been mentioned. A solution for the system strengthening the current return circuit which improves the power supply quality of the metro line has been shown. The developing of this system, its components, place and way of its assembly, as well as the impact on the supply system and its advantages have been presented. The final part of the article outlines tests of the system strengthening the current return circuit of the metro line which were carried out by the Electric Power Department of the Railway Research Institute. The outcomes of these tests have been presented in a graphic and verbal way.

Keywords: metro line, return circuit, strengthening system, stray currents

Łukasz John, Artur Dłużniewski: Electro-magnetic Compatibility Tests of the Rolling Stock

The article deals with issues concerning rolling stock research carried out at the premises of the Railway Research Institute's Test Track in Żmigród in the area of assessing radiated disturbances generated by the rolling stock, the level of conducted disturbances in the onboard low voltage power supply as well as AC and DC magnetic fields generated by electrical and electronic devices installed on the rolling stock taking into account permissible levels provided in the standards and other documents. The methodology of measuring radiated and conducted disturbances emission, as well as magnetic fields has been presented. Moreover the article outlines main sources of electro-magnetic disturbances that appear on railway premises and sources of radio-electric disturbances in the onboard power supply. In addition, exemplary results of normative measurements have been provided on the example of a diesel multiple unit. The method of assessing the uncertainty of measurements in tests of disturbances emission from the rolling stock has been described.

Keywords: electro-magnetic compatibility, radio-electric disturbances, rolling stock, methodology of measurements, magnetic flux density

Szymon Klemba: Comparative Analysis of Using Tractive Rolling Stock in European Countries

The article compares the level of using railway rolling stock of various tractions in European countries and describes how it functions in Poland. The scope of collected data, on which comparative analysis of using rolling stock in different European countries has been presented, has been outlined. The indicator characterizing the use of rolling stock has been defined and its value in various countries has been compared.

It is stated that the use of rolling stock, i.e. electric and diesel locomotives and electric multiple units is much lower than the European average. Possible reasons of the current rolling stock use have been pointed out. The conclusions of the article concern the quality of statistical data used. Moreover desired modifications of their storage have been shown so as to minimize the impact of their quality on drawing conclusions of phenomena they describe.

Keywords: railway transport, rolling stock, transport organization

Jacek Kukulski: Tests of Pairs of Rail Friction Shoes According to Existing Legal Regulations

The requirements of standards and existing legal regulations concerning stand tests of rail friction shoes for railway vehicles have been discussed in the article. The synthesis of assessment criteria in these regulations has been conducted. Moreover the research scope and technical parameters of the stand for pairs of rail friction shoes as well as measurement apparatuses of the Railway Research Institute used in these tests have been presented.

Keywords: pair of friction shoes, dynamometer bench, tests, legal regulations

Janusz Poliński: Intermodal Transport Subsystems. Part 5 – Terminals

The division of intermodal transport terminals and their requirements have been presented in the article. Particular elements of the terminal infrastructure and their role in the transshipment process of intermodal loading units have been characterized. There are described the following; the track layout, basic loading elements, sidetracks and car parks, administration and social buildings, technical and repair bases, check point as well as accompanying infrastructure and necessary utilities.

Keywords: intermodal transport, subsystems, terminals, wagons

Janusz Poliński: Governmental Programme “Accessibility Plus”

The article deals with the goals of the governmental programme „Accessibility Plus” worth 23 billion zlotys, which will be implemented in 2018–2025. The first dimension of the programme is to introduce the problem of accessibility into all public policies, the planning practice as well as the implementation and assessment of the functioning of the state. The second dimension concerns investments (in construction, transport, technology) in existing infrastructure, space, means of transport, websites or common services. Therefore the scope of work has been defined in eight areas, i.e. architecture, transport, digitalization, education, health, culture, competitiveness, coordination. The Ministry of Investment and Development is the coordinator of the project. Particular tasks will be assigned to relevant ministries, central offices, local governments and private entities. The programme will be carried out in cooperation with non-governmental organizations and business representatives.

Keywords: accessibility of infrastructure, persons with disabilities, PRM, rail transport

Ryszard Skóra, Jacek Kukulski: Test Possibilities of the Railway Research Institute’s Buffing Stand

Test possibilities of the Railway Research Institute’s buffing stand which is used to examine a railway vehicle’s behaviour in the moment of crash are presented in the article. This buffing stand serves to carry out complex strength tests of freight wagons and passenger carriages and their subsystems while running with a defined speed. The article also outlines the buffing stand’s test scope and technical parameters.

Keywords: stress measurements during crashes, railway buffer, wagon

INFORMATION ON EVENTS

Marta Łyszcz, Aneta Świetlik: 4th International Conference “Modern Trends of Fire Protection in Rolling Stock”

The Fourth International Conference Modern Trends of Fire Protection in Rolling Stock, organized by the Railway Research Institute, took place in Warsaw on 18.05.2018. The conference was divided into three sessions. During the first one there were discussed changes in EN 45545 EU standard and challenges facing rolling stock manufacturers. There were presented, inter alia, the railway station resilience in case of pyro-terrorism act. The second session featured cooperation of security services with railway operators. A lecture on Fire Compliant Composite Flooring Review: Past and Present was delivered. The third session concerned problems of fire

protection paint systems and innovative upholstery materials that comply with fire and maintenance requirements. The conference was completed with a discussion panel during which the participants could ask questions.

Keywords: fire protection, EN 45545 EU standards series, fire tests, fire barriers, advanced technologies

Iwona Wróbel: Railway Research Institute Present at the 6th Polish Infrastructure Congress 2018

This news item features the course and topics at discussion panels at the 6th Polish Infrastructure Congress held in June 2018. This event was an opportunity of various specialists’ and practitioners’ meetings as well as the exchange of opinions concerning current program of transport infrastructure development and future plans in this area. Two directors of the Railway Research Institute attended the panel of experts and presented the stance on the effectiveness of infrastructural investments and possibilities to employ innovation in transport.

Keywords: transport infrastructure, congress

INFORMATION ON PUBLICATIONS

I.M.: Threats in Track Superstructure

Rail transport safety is connected with the ability to recognize and assess emerging threats and the knowledge how to counteract them. The author based on his long scientific and professional experience in the railways area. The monograph consists of the introduction, nine chapters and afterwords. Notions and methods related to risk are discussed in the publication. The classification and topology of defects in railway superstructure are presented. Examples of defects and damage development as well as levels of existing threats are outlined. Methods of detecting threats in railway superstructure and their assessment are described. Solutions to reduce threats including counteracting against disasters are suggested. Special attention is drawn to the significance and need to carry out research to decrease the emergence of threats. Connections between various kinds of threats in the track superstructure are listed.

The monograph is dedicated to those who deal with problems of transport safety, particularly to track superstructure engineers and technicians as well as academic teachers.

Keywords: track superstructure, safety, threats, risk

Janusz Poliński: Cargo Operations in Railway Transport

The monograph entitled “Cargo Operations in Railway Transport” continues the monograph series published with-

in the Railway Research Institute's Railway Track and Operation Department. Basic components of cargo operations, i.e. loads, packaging and loading units, means of rail transport to carry them as well as loading machines and equipment are described in seven chapters. Technological processes of cargo operations relating to reloading, preparing the load

for transport, servicing loads on the joint of different gauge tracks are presented in detail. The annex includes definitions of basic notions, explanation of acronyms and abbreviations used as well as other explanatory notes.

Keywords: railway transport, transport of cargo, reloading