

## SUMMARIES

### ARTICLES

#### **Paweł Gradowski, Krzysztof Ortel: 15-year-activity of SITK RP Company Chapter at the Railway Research Institute**

The Board of the Company Chapter of the Association of Transport Engineers and Technicians of the Republic of Poland (SITK RP) operating at the Railway Research Institute shares brief information about the Chapter, i.e. its history as well as its objectives for the nearest term of office.

**Keywords:** SITK, company chapter, jubilee

#### **Ireneusz Mikłaszewicz: Tyred Wheel – a Special Accident Case**

This paper presents a special case of an accidental involving a wheel rim and a wheel without a tyre. Having conducted a thorough analysis of the case and the strength and metallographic tests performed, it was concluded that the direct cause of the accident case was a loose rim of a wheel without tyre, displaced while passing through a turnout, causing the freight wagon to derail. The analysis was carried out on the basis of post-accident documentation, while the tests were performed in accordance with the PN-84/H-84027/06 standard and UIC Charter 810–1:200.

**Keywords:** accident event, rail crossover, tyre, wheel tyre

#### **Janusz Poliński: Automatic Coupling of Rolling Stock. Part II – European Coupler for Freight Rolling Stock**

Despite many years of work on developing the design of the automatic coupling, the activities carried out in Europe, did not lead to the widespread elimination of the screw coupling with buffers. Until the First World War, the work was purely theoretical, and between the wars various manufacturers tested their own designs. Due to shortage of good designs, the UIC was unable to agree on a solution for European railways. In 1935, the Soviet Union decided to introduce the SA-3 coupler, and the replacement process continued until 1956. After the Second World War and the reconstruction of European railways after the devastation of the war, it was not until 1956 that the UIC set up the "Automatic Couplings" committee. Work in this area was carried out in both Eastern and Western Europe. Efforts to develop a European automatic coupling, led to the development of three designs for rail freight rolling stock. These were designated solutions: AK69, C-AKv and Z-AK, for which only limited areas of application have so far been found. The

anticipated successive reductions in greenhouse gas and pollution emissions, provided the basis for an increased role for the railways in the future of European transport. For this reason, a great deal of work has been launched on the design of the automatic digital coupling (DAC), which will soon replace the screw coupling. This section of the article outlines the European activities of the past, as well as the status quo of the current work, which should culminate in the widespread use of DAC coupling to connect rolling stock.

**Keywords:** rail transport, automatic coupler, digital automatic coupling (DAC)

### RECENT EVENTS

#### **Marta Łyszcz, Aneta Świetlik: Vth International Conference Modern Trends of Fire Protection in Rolling Stock**

Brief information has been presented on the 5th International Conference "Modern Trends in Fire Protection in Rolling Stock", organised on 10–11 May 2022 by the Railway Research Institute. The proceedings of the conference were divided into four sessions. The meeting concluded with a panel discussion, during which participants were able to ask questions. The conference became another meeting of international experts in the field of fire safety of rolling stock.

**Keywords:** fire safety, rail vehicles, extinguishing systems, standard EN 45545, fire tests, fire resistance barriers

#### **Janusz Poliński: Research project "Construction and Testing of Innovative Freight Cars"**

The information describes the results of a project by the Federal Ministry of Transport and Digital Infrastructure to build and test innovative freight wagons. Four wagon prototypes (a heavy-load platform, a container wagon, a chemical product tanker and an articulated wagon for car transport) use innovative components and equipment, affecting safety, freight quality, structural viability, reduced maintenance costs and noise reduction. Based on the final study, the results of the trials and tests were presented. Without the introduction of innovative freight rolling stock, the railways will not be able to take over the transport of freight from less environmentally friendly modes of transport.

**Keywords:** rail transport, testing of freight wagons, innovative freight car

### **Agata Pomykała: International Conference „2nd International Workshop on High-Speed Rail Socioeconomic Impacts”**

The information contains a synthetic description of the issues discussed during the international scientific and technical conference on the social and economic aspects of the development of high-speed rail (HSR). Topics discussed at the conference related to the results of recent research, analysis and quantification of the effects of investments in high-speed railways on both the economy and society. Active participation in the conference was attended by a representative of the Railway Research Institute, Agata Pomykała, who presented the experience related to the operation of the first high-speed trains in Poland.

**Keywords:** transportation, railway, air transport, high-speed railway, socioeconomic aspects

### **Agata Pomykała: 13th International Conference TRANS-BALTICA: Transportation Science and Technology**

This information deals with the 13th International TRANS-BALTICA conference, during which issues related to the operation of vehicles and systems, infrastructure and safety, passenger and freight transport technology, logistics and environmental protection in rail transport were discussed. The leading topics of the conference included research and innovation, sustainable transport development, including freight transport.

**Keywords:** transportation, public transport, road transport, rail transport, air transport

### **Agata Pomykała: 13th International Trade Fair for Transport Technology and Mobility INNOTRANS 2022**

The information relates to the 13th InnoTrans International Trade Fair for Transport Technology, where the latest solutions in the field of rail infrastructure, rail vehicles and city and intercity buses were demonstrated. Products and services offered for potential use in the construction and development of rail transport were presented within five thematic blocks: transport technology, railway infrastructure, public transport, equipment and interior design of public utility facilities, tunnel construction. During the fair, also the Railway Research Institute presented its offer.

**Keywords:** transportation, public transport, international fairs, InnoTrans

### **Agata Pomykała: 26th International Scientific Conference Transport Means–2022**

The information relates to the 26th International Scientific Conference Transport Means 2022, during which issues

related to the design and operation of vehicles, systems, infrastructure elements and the prospects for the development of passenger and freight transport, safety of transport systems and environmental protection were discussed. The leading topics of the conference included the directions of research and development of innovation, sustainable development of transport, including freight.

**Keywords:** transportation, public transport, road transport, rail transport, air transport

### **Marek Sumiła: Participation of the Railway Research Institute in the 13th Conference “Development of Polish Railway Infrastructure”**

This information gives an account of the conference “Development of Polish Railway Infrastructure”, to which representatives of the Railway Research Institute were also invited. The first part of this information presents the main objectives of the conference and introduces the invited guests. In the second part, the author of the speech, M. Sumiła, presented the main theses devoted to the future rail radio communication system FRMCS.

**Keywords:** conference, modern technology, FRMCS

### **Iwona Wróbel: Kolej Plus Program and Projects Conducted at the Railway Research Institute**

The information describes the objectives and assumptions of the Railway Plus (*Kolej Plus*) Programme intended for local government units to support the process of preparation and implementation of railway investments enabling and improving passenger transport by rail at the regional and interregional level. The process of selection, qualification and assessment of applications by the railway infrastructure manager is presented. Projects from the basic and reserve lists, including those implemented by Railway Research Institute, which were finally included in the Railway Plus Programme, were listed.

**Keywords:** government program, infrastructure investments, transport availability

## INFORMATION ON PUBLICATIONS

### **Andrzej Soczówka: Transformation of Urban Electric Transport in Ukraine after 1991**

The information describes a scientific monograph, published in December 2021 by the Scientific Publishing House of the Railway Research Institute, dedicated to the transformation of urban electric transport in Ukraine between 1991 and 2020. The monograph, prepared by a Polish-Ukrainian

team of authors, deals with the transformation of urban electric transport systems in Ukraine after 1991. It is the first comprehensive study of its kind in Poland, as well as one of the few in the world literature. The subject of the study is the changes that occurred in the metro, tram and trolleybus networks in Ukraine over the past 30 years. The monograph contains the most important information about Ukraine and the legal acts regulating public transport in the country, an outline of the history of urban electric transport, the directions of transformations of metro, tram and

trolleybus networks after 1991, quantitative and qualitative transformations of rolling stock fleets and a description of the rolling stock in operation. A separate chapter is devoted to the problems of passenger rail and the possibility of integrating it into the public transport system in major agglomerations, together with the author's methodology for a preliminary route analysis based on maps and satellite images.

**Keywords:** urban electric transport, Ukraine, transformation, tram, trolleybus, metro, regional railway