

SUMMARIES

ARTICLES

Andrzej Aniszewicz: Portable Laser Device for Measuring Geometrical Dimensions of Wheelsets, Brake Discs and Rails

The article describes a portable laser measuring device Calipri C40 used at the Metrology Laboratory of the Railway Research Institute. The scope of application is presented, examples of measured objects and measurement results of their geometric parameters are shown. The advantages of using this modern measuring device, which can replace several less accurate hand-held mechanical measuring devices, have been outlined. Attention has been drawn to the high measurement accuracy, mobility and independence from the power supply, as well as the possibility of measuring geometrical parameters, e.g. railway wheelsets, in an efficient and quick manner, also in the customer's repair shop. It has been emphasized that the measuring instrument is particularly dedicated to measuring parameters of wheelsets, rails and brake discs in repair and production conditions.

Keywords: measurement, laser measurements, wheelset, bogie, wheel, running gear, wear of wheelsets, rail, rail head, brake disc

Jacek Kukulski: Concept of Expanding the Dynamometer Test Stand with the Use of Pressure-Controlled Brake Calipers

The article features the work carried out as part of the internal project, including the research extension of the brake friction pair test stand. This goal was achieved by building a pressure measuring system and a converter for the value of the set force in braking systems (compacts) controlled by air pressure. One of the reasons for undertaking this project were the current barriers limiting the research capabilities of the test stand in conducting some tests. Prior to the implementation of the new solution, a standard arm brake system with a force sensor installed between the brake calipers was used for the tests. The new system also tests compact braking systems in which pressure sensors cannot be built. Moreover, it allows increasing the simulated disc brake lining pressure to 100 kN.

Keywords: dynamometer tests, clamping brake unit, friction pair

Danuta Milczarek, Izabela Tarka: Emission of Toxic Gases Emitted during the Combustion of Materials Used Rail Vehicles

The article presents the results of research on the impact of heat radiation intensity on the thermal distribution of non-metallic materials used in the construction of rail vehicles. The results of tests carried out within the internal project entitled „Emission of toxic gases emitted during the combustion of materials as a function of heat radiation intensity using the FTIR detection method” were used in the research. Combustion products and their emission rate during a potential fire of rail vehicles were analyzed. The times of the most intensive emissions of respective gases were determined, which allowed estimating the safe evacuation time.

Keywords: railway, fire safety, fire behavior, test methods, toxicity, FTIR, rail vehicles, heat radiation intensity

Małgorzata Ostromięcka: Rail Flash Butt Weld – Testing and Quality Control

The article presents the issues of control and quality assurance in rail welding. The methodology performed at the Railway Research Institute based on the requirements contained in PN-EN standards, qualification tests of welded rail joints has been described. Different types of weld tests have been outlined, including: visual tests, geometric measurements of roughness, magnetic particle and penetrant examination of welds, tests of breaking, micro- and macro-structures observations, hardness tests, fatigue strength tests. Requirements for respective tests and technical conditions for track welding have been presented.

Keywords: rail joints, approval tests, flash butt welding

Janusz Poliński: Implementation of Rail Baltica Project in Poland, Lithuania, Latvia and Estonia with Extension of the Line to Finland

The article presents information on the implementation of the Rail Baltica construction project from Warsaw to Tallinn in which Polish, Lithuanian, Latvian and Estonian railways have been involved. The 850 km line will allow trains to run at 200–250 km/h and freight trains 120 km/h. The line is scheduled to be launched in 2026. Finland seeing the need to extend the line to Helsinki has also joined the project. Currently, the most advanced construction and modernization work is carried out in Poland and Lithuania. Most project work has been completed in Latvia and Estonia, which al-

lows infrastructure investments to start. Finland and Estonia are considering building a 90-kilometer tunnel under the Gulf of Finland. A preliminary study has already been carried out, specifying the cost of the project to be over EUR 15 billion and the duration of the investment for about 15 years.

Keywords: rail transport, railway infrastructure, Rail Baltica

Jolanta Radziszewska-Wolińska: Standardization of Tests and Requirements in the Field of Fire Safety of Passenger Rolling Stock

The development of European standardization in the field of providing travellers and train crew with the required level of safety is presented in the article. This development is fostered by the increasing fire hazard of rail vehicles. Plans and advanced verification of the EN 45545 series of standards have been described in detail.

Keywords: fire properties of materials, fire barriers, EN 45545-1-7

Iwona Wróbel: Directions of Changes in Polish Transport Infrastructure, with Particular Emphasis on Rail Transport – Part I

The article deals with the role of transport infrastructure in the socio-economic functioning of the country as well as the directions of activities undertaken by the state in its development in the coming years. On the basis of the amended Transport Development Strategy until 2030, a diagnosis of the condition of transport infrastructure has been presented, as well as goals and future initiatives have been outlined, which are expected to be implemented in each mode of transport. Part I of the article features the trends of changes in the railway infrastructure managed by the national manager company, i.e. PKP Polskie Linie Kolejowe S.A., in relation to strategic programmes developed for railways in Poland. Two government programmes to be implemented by 2023, the 'National Railway Program' and the 'Assistance in financing the costs of railway infrastructure management, including its maintenance and renovation', have been described.

Keywords: infrastructure, railway lines, transport system, development programmes, infrastructure investments

RECENT EVENTS

Andrzej Kowalski: Participation of the Railway Research Institute in the 13th International Railway Fair TRAKO 2019

The note shows the significance of the Railway Research Institute's participation in the 13th International Railway Fair TRAKO 2019, held in Gdańsk on 24–27 September, 2019, for promoting its offer as well as its potential to support public and private entities in the processes of the rail transport modernization and development. Special attention is drawn to the Railway Research Institute's engagement in the organization and conducting of the Fair accompanying event, i.e. Changing Polish Railways Conference.

Keywords: international rail fair, railway transport, promotion

Jolanta Radziszewska-Wolińska: 5th International Conference "Modern Trends of Fire Protection in Rolling Stock"

The information concerns the cyclical, international conference on fire safety of rail transport. The 5th International Conference "Modern Trends of Fire Protection in Rolling Stock" organized by the Materials and Structure Laboratory of the Railway Research Institute is scheduled to be held in Warsaw on May 20-21, 2020.

Keywords: fire safety, rail vehicles, active and passive protection measures, extinguishing systems

Iwona Wróbel: Participation of the Railway Institute in the Railway Congress 2019

The Railway Congress held on 13 November 2019 was the 9th consecutive edition of the conference, recognized the greatest and most prestigious in the railway sector. The course and problems raised by experts in the discussion panels have been described. The Railway Research Institute took the honorary patronage of this event and the Institute's representatives Andrzej Massel and Jan Raczyński participated in the thematic debates.

Keywords: railways, congress