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***Stanisław Gago: ICT for Rail Transport in Poland***

The aim of the article is to present the impact of the global development of IT and logistics systems on the planning and development of the ICT network for the needs of rail transport in Poland. The PKP PLK company is currently implementing the process of building a teletransmission network, primarily for the needs of the ERTMS system.

According to the author, the railway ICT network should be planned in such a way as to ensure the current and future needs of all railway companies in the field of data transmission, enabling, in the field of ICT services, the expansion of these companies to other types of transport.

Keywords: ICT networks for railways, network logical model, physical network model

***Władysław Koc: Analysis of the Effectiveness of Determining the Horizontal Curvature of a Track Axis Using a Moving Chord***

The paper addresses the issue of determining the horizontal curvature of a railway track, noting that it is most often done indirectly – on the basis of measured sags from a chord stretched along the track. Further use of this method would not be justified if there were a direct method for determining the curvature. Therefore, the assumptions of the method for determining the horizontal curvature from “Archives of Civil Engineering”, iss. 4/2020, are presented. This method is based on changes in the slope angles of the moving chord in the Cartesian coordinate system. Two important details are examined: the influence of the length of the chord on the obtained values of curvature and the possibility of determining the location of border points between particular geometrical elements. The analysed variants resulted from the type of transition curves used. It has been found that the length of the chord does not play a significant role in determining the curvature and does not limit the application of this method. At the same time, attention is drawn to the precision of determining the nature of the curvature and its compliance with the theoretical course on transition curves. The analysis shows that, in the moving chord method, it is possible to determine the location of the border points between the individual geometrical elements, but the required chord length must be adapted to the type of transition curve.

Keywords: railway, horizontal curvature, moving chord, analysis methodology

***Małgorzata Ostromecka , Andrzej Aniszewicz: Assembly Strength Tests of SB4-type Spring Clips***

The article discusses the results of assembly strength tests carried out on SB4-type spring clips. Increases in the “b” and “f” dimensions were observed and the tests were extended to include measurements performed after ten and fifteen assemblies and disassemblies of the spring clip. Special emphasis has been placed on the ability to interpret the obtained results of the clip’s measured clamping force in relation to the applied measurement methodology.

Keywords: rail fastening, spring clip, dimensional measurements, assembly strength test, clamping force

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*Janusz Poliński, Krzysztof Ochociński: **Impact of COVID-19 on the Functioning of Passenger Rail Transport***

The article presents an overview of the transport situation on Polish railways during the first and second waves of the CO-VID-19 pandemic. The emerging trends in the use of rail transport are characterised. In order to meet market needs, rail transport should be open to any technical solution that reduces the possibility of horizontal transmission of infections to, both, travellers and transport workers. Examples are given of measures which improve safety during transport in this respect, as a fundamental condition for the systematic return of travellers to the railways.

Keywords: ail transport, COVID-19, passenger rail transport

*Agata Pomykala: **Railway Infrastructure Access Rates in the Context of the COVID-19 Pandemic***

Railway infrastructure access rates, as an important element of the costs affecting the services offered to railway clients, are an object of interest in the context of transport sustainability and the promotion of railway transport. The pandemic caused by the SARS-CoV-2 coronavirus has spawned a crisis that has affected the railway sector in a significant way. In October 2020, the European Commission published a Regulation establishing measures for a sustainable rail market in view of the COVID-19 pandemic. The European Commission's initiative of introducing a Regulation allowing for derogations from existing laws, as well as satisfying the urgent needs of the railway sector for the duration of the effects of the pandemic, may be a significant step towards a permanent leveling of the playing field for all of the branches competing in the transport sector. This article presents information in terms of the legal regulations concerning the charges for infrastructure use and outlines the assumptions of Regulation 2020/1429 (EU) of the European Parliament and of the Council.

Keywords: railway, cost of access to infrastructure, transport sustainability, COVID-19

*Jakub Siwiec: **Use of Hydrogen Fuel Cells in Rail Transport***

The article presents the most technologically advanced alternative propulsion of rail vehicles that, at the same time, has great development potential, i.e. hydrogen fuel cells. The current condition of the rolling stock and electrification of the traction network is described, and domestic and foreign plans for the deployment of fuel cells are presented and accompanied by legislative work aimed at the application of environmentally friendly solutions.

Keywords: hydrogen propulsion, fuel cells, railway transport