



Ing. Jindřich Borka – Ing. Jiří Matějec - Ing. Milan Sliacky – Ing. Roman Srp

**Technická podpora a metody pro ověřování interoperability odbavovacích
a informačních systémů ve veřejné dopravě**
**Technical support and methods for verifying interoperability of electronic fare
collection, information & management and travel information systems in public
transport**

The paper deals with various issues of fare collection, information & management and travel information systems in public transport in terms of their possible interoperability and with a focus on activities related to conformity testing and certification of such equipment. It describes the current situation in the Czech Republic and provides an inspiring example from abroad. The text below presents in more detail the expected outputs of the "R&D" project No. TA02030435 "Technical support and methods for verifying interoperability of electronic fare collection, information & management and travel information systems in public transport", which is currently running under the support of the Technology Agency of the Czech Republic.

Ing. Lukáš Fiala

Návrh metodiky stanovování prvků zhlaví
Draft methodology for determining the elements of a switch area

The article deals with the setting out of the rules for determining the elements of a switch area as a first step for analytical estimation of the switch area capacity. It is based on principles referred to in the D24 Directive. The proposed methods clarify and expand the possibilities of defining the elements depending on the modes of movements inside the switch area.

Ing. Zdeněk Horák, Ph.D.

Termovizní diagnostika trakčního vedení
Thermovision diagnostics of overhead lines

SŽDC operates a measuring car for overhead contact lines, which includes also a thermal imaging camera. This camera scans thermal fields of overhead lines elements while undertaking regular measurements. The objective of the THV diagnostic information is to detect thermal stress points in the overhead lines in order to prevent their failures and disruptions to rail operations.



Ing. Martin Jacura, Ph.D. – Ing. Tomáš Javořík – Ing. Libor Ládyš – Ing. David Vašica

**Vliv opatření na infrastrukturu železniční dopravy na snížení vzniku a šíření
hluku od jedoucích vlaků**
**Impact of measures on the rail transport infrastructure to reduce creation
and spreading of noise from moving trains**

The paper is focused on the issue of noise from rail transport. At the beginning it mentions basic sources of railway transport noise. This is followed by a summary of partial results of the project "Impact of measures on the rail transport infrastructure to reduce creation and spreading of noise from moving trains" whose provider is the Technology Agency of the Czech Republic. This contribution describes the measurement methodology, the actual procedure of measurement and data processing. The paper is concluded with a summary of the results in graphical and textual forms. Finally, partial results are presented.

Ing. Jan Kodada – prof. Dr. Ing. Otto Pastor, CSc.

Aplikace prediktivního řízení na intermodální přepravní síť
Application of predictive control on an intermodal transport network

The objective of the paper is intermodal transport network optimization. As a tool for optimization we selected predictive control with a receding horizon, which can handle dynamic time variable changes of conditions in the transport network. We drew up a definition of predictive control and demonstrated its application on a real transport network.

Ing. Richard Lacko – doc. Ing. Radovan Doleček, Ph.D.

Specifika trakčního napájecího systému 2 AC 25 kV 50 Hz
Specifics of the 2 AC 25 kV 50 Hz traction power supply system

This paper deals with issues of the traction power supply 2x25 kV, 50 Hz system (AT system), which is prospective especially for high-speed rail transport and for special purposes. Attention is paid especially to the model parameters of the system.



Ing. Miloslav Macháček, Ph.D.

**Úvod do problematiky sítí LTE a LTE-Advanced
Introduction into LTE and LTE-Advanced networks**

The article deals with the development of UMTS networks, the features of LTE technology, evaluation of properties of LTE networks of T-Mobile, Telefónica and Vodafone, and with the possibility of their use in the control and information systems of Czech Railways.

Bc. Jiří Štos – doc. Ing. Radovan Doleček, Ph.D.

**Smart Grids v ČR pro dopravu
Smart Grids in the Czech Republic for transport**

The article deals with the issue of transition of the existing 10 kV cable network in the Vrchlabí Smart Region to the absolutely new network operation model called Smart Grid, in terms of protection and maximum reliability of power supply. The article describes draft principles of application of intelligent protection units when the network is operated as a closed cable loop. Proper operation of the protections is conditioned by fast and reliable communication between individual IED units.

doc. Ing. Lukáš Týfa, Ph.D.

**Vybrané teoretické aspekty vysokorychlostního železničního systému
Selected Theoretical Aspects of a High-speed Railway System**

The paper contributes to the ongoing discussion on the future development of Czech railway in the form of so-called Fast Connections (FC) to be made, including – among other things – new sections of high-speed railway lines (HSRL). The author does not seek to solve the form of the HSRL/FC network or its specific parameters, but points to selected general facts and principles relating specifically to HSRL, which should not be omitted in the planning of new lines. This mainly concerns description of basic advantages and disadvantages of connection of high-speed and conventional railway systems, with an emphasis on determining the minimum radius of a horizontal curve and the relation between the HSRL and the municipality which is to use transport services offered by that railway infrastructure.