

Ing. Petr Jasanský

**Minerální směsi v konstrukčních vrstvách tělesa železničního spodku
Mineral mixtures in construction layers of the railway substructure body**

The article deals with some issues of technical requirements and applications of mineral mixtures (assorted crushed stone) in construction layers of railway substructure bodies in the SZDC infrastructure area. It also outlines various possibilities of use of mineral mixtures in the near future.

doc. Ing. Otto Plášek, Ph.D. – Ing. Richard Svoboda, Ph.D.
– Ing. Miroslava Hruzíková, Ph.D. – Ing. Milan Valenta

**Ověřování pražcových kotev z recyklovaného plastu
Verifying of sleeper anchors made of recycled plastic materials**

The paper is focused on the process of verifying the sleeper anchors made of recycled plastic materials as a structural component determining reliability and safety of continuous welded rails in small-radius curves. The process of the design enhancement of sleeper anchors on the basis of the results of analyses and tests is described. The paper further deals with definition and implementation of laboratory tests and with the testing of sleeper anchors in the test sections during operation. It specifies basic requirements for plastic sleeper anchors, the procedures of verifying these requirements and basic results of the tests that have been carried out so far.

Ing. Lukáš Hejzlar

**Posouzení vybraných druhů protihlukových opatření na železnici
Assessment of selected types of noise reduction measures on the railway
infrastructure**

The aim of the paper is to introduce and assess results of measurement of effectiveness of selected noise reduction measures on the railway infrastructure under normal operational conditions. These are noise reduction measures based on composite brake blocks, track absorbers applied on non-ballasted track or low-height noise barriers. Special attention was paid to the influence of rail acoustic roughness on noise emissions; the aim of the investigation was to determine the track contribution due to different rail head surface acoustic roughness, as well as to quantify the influence of repair grinding on noise emissions after approximately three weeks of operation after grinding.

doc. Dr. Ing. Roman Štěřba

Rozvrácení British Rail a její renacionalizace po 20 letech
Disruption of British Rail and its renationalisation after 20 years

The article reviews the recent disruption of British Rail in the first half of the 1990s and finding the way to renationalisation of the railways in order to unify the railway service quality standards towards passengers and to achieve sustainable financing from public budgets.

Ing. Martin Táborský

Systém broušení kolejnic u Správy železniční dopravní cesty, státní organizace
Rail grinding system in the network of the Railway Infrastructure
Administration, state organisation.

Rail grinding is an ordinary part of the railway infrastructure maintenance in many European countries. This article briefly describes the reasons for rail grinding and deals with the present practices and the future of rail grinding on tracks operated by the Railway Infrastructure Administration, state organization, in a detailed way.

Ing. Radovan Kovařík

Systém cyklického broušení výhybek
System of cyclic grinding of rail switches

Proper and skilled grinding can prevent occurrence of defects on running parts of switches and thus maintain them in operation up to the end of their life cycle due to wear and tear. The introduction of the cyclic switch grinding system strives to achieve not only higher performance, but also the best quality of the works carried out.

The quality of grinding works on rail switches must comply with the European standard, i.e. ČSN EN 13231 - 4 Railway applications - Track – Acceptance of works, Part 4: Acceptance of reprofiling rails in switches and crossings.

At SŽDC, grinding of switches and crossings abides by SŽDC Regulation S3/1 Works on Railway Superstructure which lays down specific conditions for this activity. With an emphasis on assurance of economic use of running parts of switches and crossings, Správa železniční dopravní cesty, státní organizace (the Czech Railway Infrastructure Administration, state organisation) issued the “Instruction of the Director General No. 10/2015 for cyclic grinding of switches and crossings”.

The aim of this Instruction is to introduce a new system of cyclic grinding and thus to carry out diagnostics of the working state of running surfaces, which helps to prevent occurrence of defects as well as the need of urgent repair interventions, and especially a premature uneconomical replacement of damaged parts.

In order that cyclic grinding of switches can be worth and can fulfil its planned objectives, it is unconditionally necessary for employees of managing entities to observe the Instruction of the Director General and to cooperate with employees of

the SŽDC Headquarters and with the Technical Centre of Infrastructure. The approach of supplying companies is extremely important as well, especially in terms of quality of the works carried out.

Ing. Jan Stískal

Tepelná pohoda v drážních vozidlech
Thermal comfort in rail vehicles

The article describes basic parameters of comfort in rail vehicles, their importance, and monitors their quantification in the existing normative documents. Besides the basic parameters of the comfort environment it describes also the pressure comfort aspects. It suggests thermal comfort control in the saloon. It also deals with the development towards modern vehicles and the potential energy savings in air conditioning systems.

Ing. Jiří Pohl

Vize rozvoje elektromobility
Vision of electromobility development

The development of both industry and transport was initiated by the discovery and exploitation of fossil fuels. This takes its toll on the climate change, which occurs due to the shift of carbon from underground into the sky. In order to keep the climate change at a reasonable level, the population decided to stop using fossil fuels and to replace them with renewable energy resources. Consequently, the demand for rail transportation with electric traction is growing. There is an urgent task to improve the quality and efficiency of rail transport with electric traction to cope with these new challenges. The tools for achievement of this goal are the focus on a unified 25 kV power supply system, completion of the network electrification, high-speed rail system development and use of vehicles with energy storage facilities in peripheral applications.

Ing. Tomáš Michálek, Ph.D. - Bc. Jiří Šlapák

**Vliv elektrifikace trati Klatovy–Železná Ruda na jízdní doby a spotřebu energie
Influence of electrification of the Klatovy–Železná Ruda railway line on journey
times and energy consumption**

This paper deals with calculations of journey times and energy consumption of chosen train sets of the electric as well as diesel tractions on the railway line Klatovy–Železná Ruda-Alžbětín (Czech Republic). The aim of this paper is assessment of possible electrification of this railway line from the operational point of view. In the first part of the paper, a brief description of the track, which has recently been modernised, and technical parameters of the chosen train sets are given. The following part describes the numerical calculation methodology used for traction calculations. The results achieved show that replacement of the trains of diesel traction by the electric train sets has a positive influence on journey times because of a better utilisation of the track speed profile. The shorter journey times can be reached by means of application of modern DMUs as well. However, a very positive effect of utilisation of the electric traction can be observed in field of energy demand of the railway operation, including a significant decrease in costs spent on the traction energy.

Ing. Marie Vopálenská

**Výsledky aplikovaného výzkumu firem českého železničního průmyslu,
členů ACRI
Results of applied research of firms of the Czech railway industry,
ACRI members**

The article informs about the success of the Czech railway industry companies in the field of applied research, about current possibilities of supports for science and research and about the research outlook in the future.

Ing. Adam Hlubuček

**Význam popisu infrastruktury pro inteligentní dopravní systémy na železnici
Importance of the infrastructure description for the Intelligent Railway
Transport Systems**

One of the basic presumptions for the railway transport development leading to a decrease in operating costs and increase in the overall efficiency of the railway operation is to implement principles of intelligent transport systems. Among others, the precious description of the infrastructure is an essential ground for implementation of these systems. With regard to the fact that this data may be also safety-relevant in many cases, such data is required to be highly accurate, guaranteed and comprehensive. It is obvious that this issue needs to be dealt with also in conditions of the Czech Republic.

Ing. Ondřej Fanta, Ph.D. - Ing. Jiří Kolář, Ph.D.

**Vzájemné uznávání při uvádění vozidel do provozu. Pozice Drážního úřadu
v nové úloze ERA.**

**Mutual recognition at putting into operation of rail vehicles, Position of the Rail
Authority in the new ERA role**

In the last twenty years, the railway sector has undergone significant changes in terms of interoperability and interconnection of railways in Europe. Historically, the railways in different countries evolved in different ways and in the European Union it is possible to register long-term efforts of removing barriers preventing the European-wide operation from becoming reality. With this main goal the European Railway Agency was established in 2004, and together with the legislative instruments of the EU it began to unify the conditions and technical parameters for railway transport. This process led to the setting up of the procedures of how to accept vehicles between individual Member States so that the system could be clear, unified and competitive. Now, the development has reached the phase known as the 4th Railway Package, which continues with their work and defines a new role of ERA and single contact place (One Stop Shop) for submitting applications for the rolling stock approval across Europe.