Anton Drubetsky: **Determination of Inductive Parameters of the Uncompensated DC Machines Taking Into Account the Reaction of the Armature**

In modeling the electrical machine, for calculation transient states, it is necessary to determine the inductances of the coils. This problem can be solved in different ways. There know the design parameters of the machine, being available to it basic magnetizing curve or directly from the experiment. As a rule we don't have the calculated data of the specific engine when solving a modeling problem. Also we need expression allows to obtain the value of the inductive parameters for each possible value of the currents flowing in the motor coils for studding different modes of operation. This expression can be obtained using the magnetizing curve of the machine when open-circuit operation. It is known that when working uncompensated machine a significant impact on the magnitude of the magnetic flux provided by the armature reaction which in turn has an impact on its inductance. In this case, in the determination of inductive parameters we have to take into account the effect of the armature reaction. The method of determining the inductive parameters of the uncompensated traction electric motor taking into account back induction is described in this article. This method allows to obtain analytical expressions for the inductive parameters that can be directly used for simulation of transient electromagnetic processes in the case that linearization of these parameters is unacceptable is making a gross error in the calculations. The influence of eddy currents in the work is not taken into account

<u>*Keywords:*</u> DC machine, traction motor, armature reaction, magnetizing curve, flux per pole, simulation

Ignacy Góra: **Changes in the Law of Railway Transport, Postulates de Lege Ferenda**
(Zmiany w prawie transportu kolejowego, postulaty de lege ferenda)

Unclear and inconsistent law hinders the proper functioning of the rail transport market operators and may lead to undermining the citizens' trust. In my daily work, I have experienced the effects of inaccurate and in-adequate provisions very oft en. Th is article is an invitation to discussion on trying to take action to minimize this kind of inconvenience.

<u>*Keywords:*</u> rail transport, amendment to the act on rail transport, improvements for entrepreneurs

Adam Jabłoński, Marek Jabłoński: **Configuration Management in the Maintenance of Freight Wagons – an Interdisciplinary Approach** (Zarządzanie konfiguracją w procesie utrzymania wagonów towarowych – podejście interdyscyplinarne)

This article presents the key aspects of configuration management in the maintenance of freight wagons. The authors of the article significantly relate to the place and role of the system approach in the development of the fundamentals of configuration management, focusing on the factors, the use of which can improve railway safety and interoperability. Maintenance Management System of freight wagons due to multiple accidents to railway, can create an important area falls within the scope of Directives of interoperability of rail transport. Maintenance Management System is implemented to the safety and interoperability in the railway system and can provide the ability of wagons to carries freight services through them.

<u>*Keywords:*</u> maintenance management, configuration management, safety, freight wagon

Witold Olpiński: **Human Reliability in Railway Signalling System** (Niezawodność człowieka w systemie sterowania ruchem kolejowym)

The human reliability is a factor of great importance for the safe operation of complex technical systems, such as the modern railway signalling equipment and systems, in which an individual is one of elements in processes performed by these systems. The article attempts to define the human reliability assessment possible application in railway signalling systems. The basic human reliability analysis elements and characteristics of selected methods applied for this purpose are discussed. The attempt at justification for reasonableness of the current rule change, which requires the absolute priority of the human decision over the orders worked out by the signalling system is given in the summary. Such a change would be particularly applicable to the degraded mode states.

<u>*Keywords:*</u> human reliability, railway signalling, safety

Michał Rudowski: **IT Used in the Research and Development Activities of the Railway Research Institute** (Zastosowanie technologii IT w badaniach i pracach rozwojowych Instytutu Kolejnictwa)

Modern railway solutions increasingly take advantage of information technology (IT). Research and development activities carried out by the Railway Research Institute use these technologies and are based on IT products. This article features an overview of selected solutions, techniques and research methods used in the research and development work carried out at the Railway Research Institute.
The author presented his opinion on the scope of solutions applied at the Railway Research Institute, identified areas of good or sufficient support of research and development tasks, and areas where the current range of IT application is not sufficient due to changes in the Railway Research Institute's interest arising from changes in the railway transport market in Poland and technological changes in the infrastructure and rolling stock.

<u>*Keywords:*</u> IT, research, development, Railway Research Institute

Marek Sumiła, Andrzej Miszkiewicz: **Reasons for Taking Tests of GSM-R Network Interference in Poland** (Przesłanki podjęcia badań występowania zakłóceń systemu GSM-R w Polsce)

The article presents the essential premises for undertaking research in the evaluation of the possibility of GSM-R receivers interference with the base stations of the public networks' operators in Poland. The following sections deal with the scale of interference problem based on the experiences of other EU countries, types of interference influencing GSM-R receivers and the criteria underlying the identification of potential interference. In the second part of the article cases conducive to the appearance of certain types of interference are specified. In the final part of the article recommended preventive measures used by other countries to eliminate interference of GSM-R network with public networks and the activities that can be used in Polish conditions are presented.

<u>*Keywords:*</u> GSM-R, networks coexistence, interferences

David Tooley: **Rail Vehicle Peak Heat Release Rate Estimation**

This paper describes the various methods used to estimate vehicle energy released in the event of a rail vehicle flashover fire. It considers real scale test data and whether it can be applied to other designs. It also considers the calculation methods used in a variety of applications including estimation based on heat content, the Boon-Chiam and Heat Release Rate per Unit Area (HRRPUA or Duggan) methods.
It describes features and gives an overview of each calculation method considered. It discusses the energy required to generate flashover in a rail vehicle.
It discusses limitations to confidence in calculation of peak release rate. It proposes some ideas for future work programmes to mitigate them as far as is possible. This includes the possibility of using a validated CFD analysis method. CFD analysis could also determine a greater understanding of what may happen in a tunnel in the event of a vehicle flashover fire.
It is considered feasible to use the concepts proposed in this paper to develop an outline calculation methodology, but it is noted that because of infrastructure variables, it may not be possible to define a fully standardised process.
Keywords: rail vehicle, heat release rate, fire, EU499 Eureka Project, Transfeu Project, Metro Project, CFD

Bogdan Żółtowski, Leonel Castaneda, Mariusz Żółtowski: **Nonlinear Regression Model for Ride on Railway**

The portable diagnosis system – SPD – evaluates the safety and ride quality aspects of the railway vehicles and the technical condition of the rail-vehicle interface. The objective of this article is to estimate the nonlinear regression model associated with the ride quality or motion behavior, by applying fuzzy clustering algorithms to the geometric data obtained from the technical condition of the railway-vehicle interface and measuring quasi-static lateral acceleration y^*_{qst} in different vehicles. The performance will be evaluated by comparing the measured acceleration y^*_{qst} with the acceleration calculated in our model y^*_{qstM} for 15 different vehicles. The obtained results will be then compared with the results of the multiple linear regression model used previously for the same purpose
Keywords: regression model, fuzzy set, rail transport