

# **29th International Scientific Conference on Transport Means 2025**

Sustainability: Research and Solutions

Klaipeda, Lithuania  
1-3 October 2025

Volume 1 of 2

ISBN: 979-8-3313-3373-7

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2025) by Kaunas University of Technology  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

For permission requests, please contact Kaunas University of Technology  
at the address below.

Kaunas University of Technology  
K. Donelaičio St. 73  
44249 Kaunas  
Lithuania

Phone: +370 (37) 300 000, 300 421  
Fax: +370 (37) 324 144

[en.ktu.edu](http://en.ktu.edu)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## Contents

|                                                                                                                                                                                                |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Autor Index                                                                                                                                                                                    | 15  |
| J. Lenz Goetz, S. Japertas, P. Leibl. Comparison of GPS, GLONASS and COMPASS Positioning Accuracy for Small Vehicles in Suburb Area                                                            | 22  |
| R. Ušpalytė-Vitkūnienė, A. Samuilovas. In-depth Analysis of Selection of a Public Transport Operators for Public Transport Services                                                            | 29  |
| T. Rusakova, K. Rusakova. Assessment of the Danger Level of Formaldehyde Emissions from Autotransport and the Risk to Population Health                                                        | 35  |
| S. Serbin, O. Shmarkov, O. Cherednichenko, B. Lychko, N. Korobyeynikova, K. Burunsuz. Hydrogen-Powered Combined Gas and Steam Energy System                                                    | 41  |
| R. Pniewski, M. Kornaszewski, M. Chrzan. The Concept of Safe Single-Channel Railway Traffic Control Systems                                                                                    | 47  |
| J. Hakalová, M. Palochová, Y. Pšenková. Analysis of Selected Issues Concerning Road Freight Transport in the Czech Republic and Its Accounting and Taxation Aspects                            | 53  |
| M. Kováčiková, K. Kováčiková, J. Fabuš, I. Kremeňová. Sustainable Procurement and Digital Innovation in the Transport Supply Chain                                                             | 60  |
| P. Pererva, O. Leha, V. Kobieliev, I. Novik, L. Marchuk, T. Myroshnyk. Research of the Current State and Prospects for the Development of the Ukrainian Market of Transport Services           | 65  |
| L. Melders, R. Smigins, A. Birkavs. Real-Time Driver Health Monitoring Solution                                                                                                                | 71  |
| D. Bosyi, O. Sablin, I. Potapchuk, V. Mazorchuk. Integrated Monitoring of Railway Overhead Lines and Autonomous Aerial Threat Detection                                                        | 78  |
| M. Blatnický, J. Dižo, A. Lovska, S. Semenov. A Design of the Wedge Lifting and Chainsaw Operation Mechanism as Part of the Semi-Automatization of a Mobile Working Machine                    | 85  |
| J. Furch, V. T. Nguyen. Prediction of the Presence of Iron Particles in Engine Oil of Internal Combustion Engines                                                                              | 91  |
| O. Ievsieieva, L. Kalinichenko, A. Pakulina. Metaverse as an Innovative Space for Marketing                                                                                                    | 97  |
| H. Grossberger, J. Kailblinger. Lifecycle Assessment of a High-Speed Railway Line: a Case Study in Austria                                                                                     | 103 |
| D. Gorbacovs, P. Gavrilovs, J. Eiduks, N. Mozga. Research into the Causes of Failures of Railway Automation                                                                                    | 109 |
| G. Myskiv, O. Irshak. Specifics of Freight Vehicle and Cargo Insurance in Ukraine                                                                                                              | 114 |
| V. Cvacho, R. Madleňák. The Role of Visual Attention in Evaluating Electric Vehicles: An Eye-Tracking Perspective                                                                              | 120 |
| O. Gryshchuk, A. Petryk, T. Litus, D. Svirin. Resource Provision of Customs and Transport Infrastructure through the Implementation of Innovative Technologies in International Transportation | 126 |
| K. Kováčiková, A. Novák, A. Novák Sedláčková, M. Kováčiková. Optimizing Airport Passenger Handling through Simulation                                                                          | 132 |
| M. Pastukhov, I. Riabov. Application of Expander-Generator Units for Power Supply of Gas Infrastructure Facilities                                                                             | 137 |
| B. Kozicki. Multidimensional Comparative Analysis of the Number of Passengers, Expenditures and Influences within Urban Transport in the Capital City of Warsaw in Terms of Security           | 141 |

|                                                                                                                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| V. Trasberg. The Business Environment for UAV Industry Evolution: A USA–China Perspective                                                                                           | 147 |
| P. Pererva, A. Ievsieiev, A. Kosenko, M. Klymentova, I. Lysenko, I. Kobieliiev. Study of Advantages and Disadvantages of Transport Innovations and Forms of Their Commercialization | 153 |
| K. Mäkkä, M. Náplavová, J. Markup, M. Ďurdík. Safety Risk Assessment and Incident Simulation at Hydrogen Refueling Stations                                                         | 159 |
| A. Jachontovas. Impact of Port Shallowness on PANAMAX Container Ship's Squat                                                                                                        | 164 |
| M. Kurhan, D. Kurhan, N. Hmelevska. Priority Assessment of Railway Curve Reconstruction Using the Analytic Hierarchy Process                                                        | 169 |
| Z. Bulková, M. Dedík, J. Mašek, J. Gašparík. Conceptual Model for Evaluating Functional Preferences in Public Transport Applications within Intelligent Transport Systems           | 175 |
| W. Loga-Księska. Concentration of Traffic-related Air Pollutants along Urban Road – a Case Study with Mobile Monitoring                                                             | 181 |
| V.V. Pylyov, A. Marchenko, O. Linkov, S. Lykov. Reliability Assessment of the Outer Surface of the ICE Piston Skirt Based on the Material Creep Limit Criterion                     | 187 |
| L. Šaparnis, P. Rapalis. Study of Nitrogen Oxides Dispersion from a Sailing PANAMAX Container Ship in Klaipėda Port Using the Lagrangian Dispersion Model                           | 193 |
| K. Krzikallová, N. Barvíková, V. Ellnerová, Z. Pechková, M. Krajňák. Evaluation of Factors Connected with Employment and Salary Taxation in the Czech Automotive Industry           | 199 |
| V. Volkov, I. Taran, S. Krivoschapov, T. Volkova, K. Kovtsur. Vehicle Technical Inspections in the Context of Formation Intelligent Transport System                                | 205 |
| P. Csató. Development of the CFD Model of a Gas Turbine Engine Combustor for Numerical Simulation                                                                                   | 211 |
| N. Popova, O. Bolotna, A. Kataiev. Managing the Demand and Behaviour of Consumers of Transport and Logistics Services in the Context of Digitalisation of Society                   | 217 |
| D. Coufal, J. Holopírek. The Means for Determining the Shape of the Watercourse Bottom                                                                                              | 223 |
| A. Lovska, J. Gerlici, J. Dižo. A Thermal Analysis of a Hopper-type Container Design                                                                                                | 229 |
| V. N. Burlayenko, S. D. Dimitrova-Burlayenko, G. I. Lvov. Vibration and Stability Analysis of Variable-Section Composite Beams as Structural Members in Transport Systems           | 235 |
| E. R. Sunaryo, V. Ranawijaya. Assessing The Impact of Automation on Labor in Airport Ground Handling Services                                                                       | 243 |
| V. Aftaniuk, O. Kiris, A. Aftaniuk. Research of the Flow Around Swirler Blades of Marine Scrubber                                                                                   | 250 |
| D. Szpica, W. Murawski. Evaluation of Non-linearity in Flow Characteristics of the Low-pressure Gas-phase Injectors                                                                 | 254 |
| Ie. Riabov, O. Bondarenko, V. Yahotin, A. Prokopov. Application of Mono-motor Bogies on Industrial Locomotives                                                                      | 260 |
| I. Sprogytė-Bredelienė, A. Špuraitė, A. Vaškys. Analysis of the Market of Electric Passenger Vehicles                                                                               | 264 |
| O. Kryvoruchko, L. Kryvenko. Logistics Service Management Based on the Principles of Customer Focus                                                                                 | 270 |
| V.T. Nguyen, J. Furch. Using Fourier Transform Infrared Spectroscopy to Detect the Presence of Soot in Motor Oils                                                                   | 276 |

|                                                                                                                                                                                                                        |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| M. Bučko, K. Kravchenko, A. Lovska, J. Dižo, M. Blatnický. A Modification of a Locomotive Bogie Frame                                                                                                                  | 281 |
| O. Verbovskiy, A. Lisoval, H. Zhuk, V. Verbovskiy, A. Dzygar. Setting the All-mode Electronic Speed Regulator for Automotive Diesel                                                                                    | 287 |
| V. Kuznetsov, P. Hubskeyi, A. Rojek. Pantograph Contact Force: Regulations, Standards and Measurement Methods                                                                                                          | 293 |
| P. Asmari, S. Ricci. Effects of Track Access Charges Mechanisms and Performance Regimes on Generation and Propagation of Trains' Delays                                                                                | 297 |
| H. Kyrychenko, Yu. Berdnychenko, I. Karnasiuk, A. Bernatskyi, O. Strelko. Frame Representation of Models of Automated Technologies for Controlling Cargo Delivery During Railway Transportation in Ukraine             | 303 |
| Z. Říha. The Labour Market and the Shortage of Drivers in Road Transport                                                                                                                                               | 308 |
| S. Goolak, O. Bolotov, L. Neduzha. Research on the Strength of the Gearbox Housing of the Traction Drive in the Electric Locomotive                                                                                    | 312 |
| S. Himmetoglu. Influence of Rear Impact Crash Pulses on Neck Loading of Occupants Sitting in Rear Seats                                                                                                                | 318 |
| L. Šeibokaitė, A. Endriulaitienė, R. Markšaitytė, M. Morkevičiūtė, T. Vadvilavičius. Older Lithuanian Drivers Didn't Benefit from a Short Road Hazard Perception Training                                              | 324 |
| O. Holovashchenko, V. Tkachenko. Research on Vibration Isolation Elements of Suburban Railway Cars in Ukraine                                                                                                          | 328 |
| E. Mikhailov, S. Semenov, O. Spivak, J. Dižo, M. Blatnický. Clarification of Calculation Dependences for Selecting Rational Loading Schemes of Soft Containers                                                         | 333 |
| P. Dvořák, E. Zezulová. Barrier Systems for Safeguarding Buildings from Vehicle Attacks                                                                                                                                | 341 |
| E. Maliuha, R. Gavriluk. Interdependence of Ice Spread in the Davis Strait and the Labrador Sea with the Direction and Speed of Surface Wind                                                                           | 345 |
| I. Demjanenko, J. Kaminskis, L. Neimane, L. Šulakova, D. Sīka, J. A. Beller. Integrating Shipborne Pollution and Gravimetric Data into Latvia's Maritime Spatial Planning Framework                                    | 348 |
| I. Riabov, Y. Lysenko, I. Shuba, B. Yeritsian, D. Iakunin. Determining the Type of Locomotive Power Unit for a Shunting Locomotive                                                                                     | 355 |
| M. Klimas, V. Lukoševičius, S. Kilikevičius. Explicit Dynamic Finite-Element Modelling of High-Velocity Ballistic Impact on Carbon-Fiber Composite Armor Plates: Ply-Orientation Optimization for Ballistic Resistance | 360 |
| I. Musiienko, V. Masych, K. Borysenko, O. Yurchenko, Yu. Yurchenko. Computer Simulation of the Physical Model Flexible Bracelet for Horizontal Highway Alignment                                                       | 368 |
| N. Chornopyska, R. Slobodzianyk. CyberResilience in Logistics & Supply Chains: A Comparative Analysis of Expert Opinions                                                                                               | 374 |
| J. Bartusiak, A. Pashkevich. Detection of Coloured Road Markings by Camera and LiDAR                                                                                                                                   | 380 |
| V. Dykan, O. Kirdina, I. Tokmakova, M. Korin, E. Kuznetsov. Development of Innovation Partnership as a Basis for Forming an Environment for Scaling Innovations at Railway Transport Enterprises                       | 388 |
| Š. Kavan, E. Stýblová. Selected Aspects of Railway Transport and Railway Area Security Using Private Security Services                                                                                                 | 394 |

|                                                                                                                                                                                                                          |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| D. Astaykin, A. Golikov, A. Bondarenko, I. Vorokhobin. Virtual Navigation Technologies for Enhancing Shipping Safety on Inland Waterways of Ukraine                                                                      | 399 |
| J. Gerlici, A. Lovska, M. Pavliuchenkov. Features of a Container Design Consisting of a Truss Frame                                                                                                                      | 404 |
| K. Cibulova, M. Priesner. Introduction of a New Approach of Evaluating the Trafficability by Telescopic Penetrometer                                                                                                     | 410 |
| Ie. Lebid, N. Luzhanska, I. Lebid, D. Tarasenko. Modeling the Selection of a Transport Enterprise in the Organization of International Freight Transportation by Road                                                    | 416 |
| R. Rucins-Vejins. Target Detection by Primary Surveillance Radar Depending on the Material Properties of a Target                                                                                                        | 422 |
| S. Frolov, Yu. Yivzhenko, B. Kreminskiy, V. Muraviov, Val. Kharuta. Adapting Traditional Security Standards for AI in Safety-Critical Domains                                                                            | 426 |
| S. Himmetoglu, A.B. Demirtas, G.A. Soyleyici, H. Akbal. Autonomous Electric SUVs: A Survey Study Presenting a Critical Review on the Future Trends in Transportation                                                     | 431 |
| S. Arhun, V. Dvadnenko, A. Hnatov. Enhancing Battery Charging Efficiency in Vehicles Under Low-Speed Operating Conditions Using Harmonic Energy Recovery                                                                 | 437 |
| D. Bagočius, A. Narščiū. Assessment of Wind Force Influence on Shallow Underwater Sound Propagation Using Numerical Data                                                                                                 | 443 |
| O. Ievsieieva, A. Ustilovska, I. Bozhydai, V. Yanovska, A. Medyna, A. Nakaliuzhna. Strategic Planning of the Operation and Spatial Development of Transport Enterprises in the Region                                    | 448 |
| M. Išoraitė. Implementation of Sustainable Transport Marketing                                                                                                                                                           | 456 |
| A. Kosolapov, O. Yehorov, S. Buriak, S. Kozyrev. Conceptual Design of Socio-Cyber-Physical Control Systems of a Railway Marshalling Yards Based on Combining a Colony of Stationary and a Swarm of Dynamic Digital Twins | 462 |
| M. Kornaszewski, R. Pniewski, M. Chrzan. Use of Damage Symptoms to Diagnose the Technical Conditions of Transport Devices Responsible for the Safe Running Movements of Railway Traffic                                  | 466 |
| Ie. Riabov, A. Kachan, S. Roi, A. Tykhonov. Plug-in Hybrid Traction System for an Industrial Shunting Locomotive                                                                                                         | 472 |
| A. Novák, K. Kováčiková, T. Lusiak, A. Novák Sedláčková. The Impact of Digitalization on Employment in Air Transport: A Sectoral Analysis                                                                                | 476 |
| V. Prokhorov, T. Kalashnikova. On the Use of Point Process Theory for Modelling Transport-Related Event Streams                                                                                                          | 481 |
| M.A. Lacane, M. Klimovica. Aircraft Landing Systems Used in EASA Countries and Their Impact on Flight Safety                                                                                                             | 484 |
| H. Holub, I. Kulbovskiy, M. Tkachuk, O. Danak, P. Rezanov. Analytical Aspects of Ensuring the Safe Functioning of Technological Processes of a Railway Transport Enterprise                                              | 490 |
| F. Yasmin, A.M. Usman, I. Bartuseviciene. Examining the Role of Maritime Education and Training Institutions in Addressing Mental Health Challenges Faced by Seafarers                                                   | 495 |
| O. Kryvoruchko, I. Fedotova, N. Bocharova, N. Vnukova. Process Model for Enhancing Quality Management in Transport and Logistics Services                                                                                | 501 |
| A. Patlins, N.A. Busalovs. Layered Web Security for Transportation Systems Using Machine Learning and Ruby on Rails Framework                                                                                            | 508 |

|                                                                                                                                                                                                                                                            |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Y. Velychko, O. Hetman. Assessment of Organizational Structure Transformation in Transport Enterprises within the Paradigm of Sustainable Development                                                                                                      | 514 |
| V. Ruban. The Role of the Slag Phase in the Regulation of Thermal Processes During Steel Processing in a Ladle Furnace                                                                                                                                     | 520 |
| M. Bauer. Analysis of the Travel Time Components of the Gorka Narodowa – Dworzec Towarowy Rapid Tram Route in Krakow                                                                                                                                       | 524 |
| Z. Krobot, B. Knappek. Safety of Electric Vehicles                                                                                                                                                                                                         | 530 |
| T. Charkina, A. Hryhorenko. Rail Tourism as a Strategic Direction of Railway Passenger Transportation Development                                                                                                                                          | 537 |
| S. Japertas, A. Rimkevičius. Russian UAV Tactics in the Ukrainian War: Evolution and Analysis                                                                                                                                                              | 542 |
| A. Holovan. A Review of Digital Twin Applications for Optimizing Maritime Maintenance                                                                                                                                                                      | 549 |
| O. Ievsieieva, A. Nakaliuzhna, A. Ustilovska, I. Bozhdyai, V. Yanovska, A. Medyna. Innovativeness of the Transport and Logistics Sector and its Impact on the Trend Significance of the EU Sustainable Development Concept: Globalization-related Approach | 555 |
| A. Prokhorchenko, O. Malakhova, O. Shander, G. Sikonenko, H. Prokhorchenko, L. Parkhomenko. Study of Railway Infrastructure Capacity Utilisation Based on Macro Analysis of Interdependencies of Train Flows                                               | 560 |
| M. Išoraitė, A. Jarašūnienė. The Green Marketing, the Internet of Things, and Artificial Intelligence in Logistics                                                                                                                                         | 566 |
| I. Honcharuk. An Overview of Maritime Waste Heat Recovery Systems in the Context of Energy Transition and Environmental Sustainability                                                                                                                     | 572 |
| I. Taran, A. Kozhevnykov. Optimization of Network Retailers' Logistics Based on a Clutter Model of Population Density                                                                                                                                      | 577 |
| G. Vaičiūnas, J. Matijošius. Study of Diversity of Metropolitan Parameters                                                                                                                                                                                 | 583 |
| Y. V. Zelenko, M. V. Kalimbet. Principles of Safety Increasing the Procedure for the Carriage of Dangerous Goods by Rail                                                                                                                                   | 590 |
| M. Chrzan, R. Pniewski, M. Kornaszewski. Handover Issues in the Future Railway Mobile Communication System                                                                                                                                                 | 596 |
| T. Charkina, V. Zadoia, D. Korolov, V. Mazorchuk. Organisation of Multimodal Passenger Transport Services and a Transport Hub in the Ukraine-Europe Cross-Border Corridor                                                                                  | 601 |
| A. Heřmánková, J. Kleprlík. Selection of Suitable Buses for Public Bus Services in Sparsely Populated Areas Using Multi-Criteria Decision-Making Methods                                                                                                   | 607 |
| O. Fomin, O. Melnyk, O. Cherkashin, V. Lisnychiy, I. Rodionov, Ie. Gunko. Optimization of Load-Bearing Structures in Freight Wagons: Identification and Elimination of Redundant Constraints                                                               | 613 |
| K. Kozáková, J. Harušinec, A. Suchánek. Experimental Investigation of the Influence of the Railway Wheel Rim Volume on the Frictional Characteristics of Rail Vehicle Braking Components                                                                   | 620 |
| V. Ruban, D. Ruban. Study of the Radiating Properties of a Fractal Antenna in the Form of a Sierpinski Napkin                                                                                                                                              | 626 |
| A. Vucans Development of Air Defence System Configuration to Provide Sufficient Coverage                                                                                                                                                                   | 630 |
| Ye. Synehin, K. Niziaiev, O. Stoianov. Analysis of Steel Smelting and Deoxidizing on Defect Formation in Rail Steel Ingots                                                                                                                                 | 636 |

|                                                                                                                                                                                                                                               |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| V. Kuznetsov, P. Hubskeyi, A. Rojek. Simulation-Based Analysis of the Traction Power Supply System: Katowice Railway Transportation Hub Case                                                                                                  | 640 |
| M. Hernych, S. Klyuchnyk, K. Perepelitsa. Improving the Efficiency of Using Long-Term Storage Beams in Bridge Reconstruction                                                                                                                  | 644 |
| J. Tóth. Hazard Perception – Conceptual Frameworks, Training Methods and Tools in Civil Aviation                                                                                                                                              | 652 |
| V. Nozhenko, M. Kovtanets, O. Serhienko, V. Mogila, T. Kovtanets. Implementation of Resource-Efficient Technologies in The Wheel Flange-Rail Tribological Interface                                                                           | 657 |
| M. Gelžinis, A. Jarašūnienė. Decarbonising Port Logistics: A Case Study of Electrification and Renewable Energy Integration in Klaipėda Seaport                                                                                               | 662 |
| M. Biliaiev, V. Biliaieva, O. Berlov, V.A. Kozachyna, V.V. Kozachyna, P. Semenenko. Modeling of Thermal Regime in the Main Fairing of a Launch Vehicle                                                                                        | 666 |
| D. Bebej, T. Musil. Correlation Analyses of Degradation Processes in Modern Synthetic Combustion Engine Oils                                                                                                                                  | 672 |
| Yu. Proidak, A. Gorobets, K. Chornoivanenko, V. Mazorchuk. Improvement of Steel Properties for Railroad Wheels by Microalloying with Rare Earth Metals                                                                                        | 677 |
| A. Pashkevich, J. Bartusiak, A. Krawiec. Analysis of Speeding Behaviour on Polish Motorways Using a Naturalistic Driving Study                                                                                                                | 681 |
| O. Fomin, O. Melnyk, D. Legeyda, N. Shramenko, D. Muzylyov, Ie. Medvediev. Modelling a Digital Twin of a Vessel for Optimizing Water Transport Operations                                                                                     | 688 |
| O. Shepel, L. Raslavičius, M. Felneris. Energy and Emission Indicators of the Compression-Ignition Engine Running on PMO/Diesel and FAME/ HVO Blends                                                                                          | 695 |
| A. Dolinayová, P. Morihladko. The Possibilities of Usability Alternative Drives in Railway Freight Transport – a Case Study in the Slovak Republic                                                                                            | 700 |
| T. Kobieliava, P. Pererva, O. Kosenko, M. Tkachov, O. Khodyrieva, T. Pohorielova. Formation of a Strategy for the Economic Development of a Transport Enterprise                                                                              | 705 |
| A. Soczówka, P. Chyliński. Quo Vadis Silesian Interurban Trams?                                                                                                                                                                               | 711 |
| T. Vodolazhskaya, L. Achkasova. Approach to the Formation of a Company's Logistics Strategy Under Armed Conflict Conditions                                                                                                                   | 717 |
| V. Konečný, B. Kopilakova, P. Stodola, J. Stodola. Internal Combustion Engine Conversion                                                                                                                                                      | 723 |
| A. Golikov, A. Gusev, I. Tereschenko. Conflict Management as a Component of Safety Culture Onboard: Function and Training                                                                                                                     | 729 |
| M. Sarfraz Ali, A. Naeem Shah, L. Raslavičius, S. Saleem, S. Hamid. Performance and Emission Characteristics of a Compression-Ignition Engine Fuelled with Jatropa Biodiesel Containing Oxygenated Metal-Based TiO <sub>2</sub> Nanoparticles | 734 |
| V. Nesterenko, V. Oshovskyi, I. Shvets, O. Hrabovenko, I. Ursulenko. Problems of Using Plant Oils as Fuel in Diesel Engines                                                                                                                   | 738 |
| Z. Korecki, T. Hoika. Evaluation of Variability of the Passenger Security Control Process at the Airport                                                                                                                                      | 745 |
| I. Riabov, L. Overianova, L. Kondratieva, O. Plyutin, O. Demydov. Application of Plug-In Drives on Dual-Mode Locomotives                                                                                                                      | 751 |
| T. Rázga, V. Krehel', M. Mozoľa. Interaction of Modern Technology with Thermal Imaging and Night Vision                                                                                                                                       | 755 |

|                                                                                                                                                                                                                                                                                                  |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| S. Buriakovskiy, Ar. Maslii, An. Maslii, A. Tyshchenko, O. Oboznyi. Strategies for Controlling the Charge-Discharge Cycle of Energy Storage System in Railway Traction Rolling Stock                                                                                                             | 761 |
| M. Dorofiev, Y. Mykhailiuk, R. Kushnir, D. Astaykin. Digitalization in Navigation                                                                                                                                                                                                                | 767 |
| T. Vyčítal, L. Křížan, M. Vyhnánovský. KPI for Evaluating Overtaking Maneuvers in Railway Traffic                                                                                                                                                                                                | 771 |
| S. Himmetoglu. Validation of a Multi-body Human Model against Volunteer Response to Rear Impact in Leaning Forward Posture                                                                                                                                                                       | 777 |
| O. Kichkin, O. Kichkina. Information Support and Artificial Intelligence in the Practice of Road Freight Transportation Business                                                                                                                                                                 | 782 |
| M. Kisiel, D. Szpica Experimental Performance Evaluation of the Differential Section of a Prototype Pneumatic Brake Valve                                                                                                                                                                        | 787 |
| O. Cherednichenko, S. Serbin, B. Lychko, N. Korobyeynikova, I. Ratushniak. Floating Power Plants Based on Energy-Efficient Technologies as Sources of Energy Supply in Port Waters                                                                                                               | 793 |
| D. Beitāns-Špaks, Yu. Dekhtyar, R. Kalniņa, E. Skrebele, H. Sorokins. Chemical and Geometrical Properties of Sand Particles from the Latvian Coast of the Baltic Sea                                                                                                                             | 798 |
| Yu. Proidak, A. Gorobets, A. Hrechukhin, L. Kamkina, O. Zhadanos. Improving the Quality of Switch Point Cores and Railway Frogs by Metal Smelting Technology Optimization                                                                                                                        | 802 |
| V. Ovchinnikova, N. Kalicheva, H. Obruch, N. Frolova, D. Toropova. Formation of an Innovation and Investment Basis for Ensuring Complementary Development of Enterprises                                                                                                                         | 806 |
| S. Himmetoglu, Ç.O. Çimen, F. Durdu, N. Gültekin, Ö.C. Ülger. Automatically Adjustable Head Restraint for Rear Seats                                                                                                                                                                             | 812 |
| J. Šulc, R. Soušek, K. Šulcová, M. Dorda, D. Teichmann. The Issue of Preparing Historical Maintenance Data for the Needs of Automatic Maintenance Planning in a Transport Company                                                                                                                | 817 |
| O. Kudriavtseva, V. Kudriavtsev. Methodological Aspects of Researching the Passenger Transport Services Market in Agglomerations                                                                                                                                                                 | 823 |
| E. Diatlova, L. Henesey, S. Jankowski, M. Przywarty, L. Gerlitz. Developing Green Energy Monitoring Process Concept for Small and Medium-Sized Ports in the Baltic Sea                                                                                                                           | 829 |
| I. Solomnikov, O. Sementsova, Iu. Krasnokutskaya, I. Andrenko, A. Ryabev. Scientific and Methodological Approaches to Assessing the Investment Attractiveness of International Railway Transportation in the Context of Tourism Industry Development During the Post-War Recovery of the country | 837 |
| T. Iwan, A. Jagiełło. The Impact of the Human Factor on Road Safety                                                                                                                                                                                                                              | 843 |
| Ye. Synegin, K. Nizhaev, O. Stoianov, V. Ruban. Effect of Steel Overheat and Casting Speed on the Formation of Rail Steel Ingots                                                                                                                                                                 | 849 |
| Ya. Shostak, Yu. Reshetnikov, V. Tkachenko. Improving the Balancing Parameters of Electric Machine Rotors                                                                                                                                                                                        | 853 |
| R. Popławski, D. Szpica, M.R.O. Panão. Investigation of Dosage Non-Repeatability of an LPG Injector in Various Stages of Wear                                                                                                                                                                    | 859 |
| O. Fomin, A. Krasulin, T. Yarkho, Yu. Sklyarenko, D. Legeyda, O. Burlutskiy. Optimizing the Bearing Capacity of Rolling Stock Structures Through Innovative Materials: Computer Modelling and Durability Analysis                                                                                | 865 |
| T. Baláž, K. Nováčková, Z. Korecki, T. Hoika. Measurement of Passenger Compartment Illumination Intensity when an Aircraft is Hit by a Laser                                                                                                                                                     | 872 |

|                                                                                                                                                                                                                                          |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| O. Ievsieieva. Assessment of the Effectiveness of the Cost Formation and Cost Management by Responsibility Centers in the System of Internal Settlement of a Corporate Entity (the Example of the Transport Industry)                    | 878  |
| M. A. Lacane, A. Kurtiss. Use of Artificial Intelligence in the Provision of Weather Information in Air Traffic Control Centres                                                                                                          | 887  |
| D. Ivanchenko, O. Kletska, D. Hanzheiev, S. Razhonov, R. Keršys. Comparative Analysis of Alternative Fuels under Various Operating Modes of Commercial Road Transport                                                                    | 893  |
| V. Khlud, V. Feofanovs, J. Baronins, D. Bickovs. Modern Approaches to Decarbonization of Port Logistics: International Trends and Latvian Practice                                                                                       | 900  |
| A. Hnatov, S. Arhun, N. Hryhorenko. Features of Electric Vehicle Diagnostics Using the Car Scanner ELM OBD-II Application                                                                                                                | 908  |
| M. Kovtanets, M. Morneva, D. Marchenko, A. Klimash. The Theoretical Analysis of Jet - Abrasive Flow Parameters Influence Degree on Wheels - Rail Friction Coefficient                                                                    | 914  |
| D. Szeőcs, A. Masuk, J. Menyhárt, G. Husi. Vertical Take-Off and Landing of Fixed-Wing UAVs Using Thrust Vectoring                                                                                                                       | 918  |
| M. Arbuzov, V. Andrieiev, O. Hubar, O. Hromova, N. Mukhina, S. Kostiurechko, V. Savvitskyi. Research on Non-Standard Gravel for Railway Ballast                                                                                          | 924  |
| R. Stephany. Comparison of Engine Oil Degradation and Its Impact on Vibrations During Vehicle Operation                                                                                                                                  | 933  |
| S. Sapronova, O. Vorobjov, E. Zub, S. Syvakivskiy. Extending the Service Life of Railway Transport Wheels Based on the Strategy of Partial Reprofiting and Optimisation of the Rolling Surface                                           | 939  |
| A. Daunoras, Ž. Vainoras. A Data-Driven Approach to Evaluating Atmospheric Emissions from "Klaipėdos Smeltė" Container Terminal Operations Based on Fuel and Electricity Consumption                                                     | 945  |
| D. Pohorletskyi, N. Pohorletska, M. Skalyha, V. Chernenko, Yu. Losynsky, A. Kotov. Features of the Experimental Study of the Processes of Thermal Preparation of an Internal Combustion Engine using a Phase Transition Heat Accumulator | 951  |
| S. Lebedevas, E. Milašius. A Comparative Analysis of Marine Diesel Engines' Thermal Load When Converting Their Operation to Renewable and Low-Carbon Fuels at Different Engine Load Characteristic Cycle Modes acc ISO 8178              | 957  |
| B. Knappek, B. Kopilakova, P. Stodola, J. Stodola. Intelligent Transport Systems and Telematics                                                                                                                                          | 964  |
| O. Fomin, O. Melnyk, O. Pipchenko, I. Hannoshyna, O. Kushch, O. Ptashnyi. Description of Trends in Digitalization and Automation in Marine Navigation                                                                                    | 970  |
| R. Rucins – Vejins. Detection of a Target by Primary Surveillance Radar Depending on Its Physical Shape                                                                                                                                  | 977  |
| A. Hnatov, Shch. Arhun, V. Migal. Experimental Assessment of Temperature and Speed Effects on Hyundai Kona Electric Driving Range and Energy Consumption                                                                                 | 983  |
| L. Achkasova, T. Vodolazhska, O. Hetman. Assessment of the Efficiency of Transport and Logistics Services                                                                                                                                | 989  |
| M. Andrzejewski, M. Nowak, P. Knast. Modern Technologies in Railway Applications                                                                                                                                                         | 995  |
| M. Kovtanets, O. Serhienko, T. Kovtanets. Priority Areas of Scientific Research and Innovation in Railway Transport                                                                                                                      | 1001 |
| T. Rázga, V. Popardovský. Modern Control Method of Vertical Stabilization of a Weapon Station Placed on a Mobile Platform                                                                                                                | 1007 |

|                                                                                                                                                                                                                                |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| I. Skliarenko, P. Skok, E. Khomeriki, O. Kulinchenko, V. Pishchana, Yu. Vitomsky. Socio-Psychological Problems in Transport Psychology: Classification of Factors and Approaches to Their Resolution                           | 1012 |
| D. Trifonov, O. Syrota, Y. Shuba, M. Romanenko, M. Babych, J. Matijošius. Research into Potential Directions for Improving the Energy Efficiency of Power Units in Used Hybrid Vehicles                                        | 1019 |
| R. Lamberts. Possibilities of Placement of Fighters at Military Airfield and Features of Additional Fortifications                                                                                                             | 1026 |
| O. Onishchenko, O. Melnyk, Ol. Melnyk, S. Sagin, O. Pipchenko, R. Keršys. Marine Power Plants with Bi-Rotor Mechanisms: Development Prospects and Optimization                                                                 | 1032 |
| A. Šakalys, V. Skrickij, D. Bazaras, R. Šakalys. Enhancement of the European Transport Competitiveness                                                                                                                         | 1039 |
| M. Kopczewski, G. Wiśniewski, R. Sadowski. Integrated Supply Chain Models in Civil Aviation: Lithuania Case and EU Framework                                                                                                   | 1046 |
| R. Makaras, U. K. Medževėpytė, M. Natanas. Study of Energy Consumption of an Electric Bus Operating in Lithuania – The Case of Kaunas City                                                                                     | 1050 |
| M. Zimakowska - Laskowska, E. Kozłowski, P. Wiśniowski, J. Matijošius, A. Rimkus. The Influence of the Initial Coolant Temperature on the Pollutant Concentration Curve During the Cold Start Phase of a Spark-Ignition Engine | 1055 |
| O. Khodakivskiy, T. Butko, Ye. Khodakivska, Ya. Zapara, V. Kuleshov, O. Pestremenko-Skrypka. Model for Assessing the Impact of Blockchain Implementation in Customs Control on Ukrainian Railways                              | 1061 |
| A. Svasta, B. Kopilakova, P. Stodola, J. Stodola. Reliability of Military Land Mobile Platforms                                                                                                                                | 1064 |
| O. Fomin, V. Tretyak, T. Emelyanova, T. Sotnikova, A. Legeyda, Ie. Medvediev. Mathematical Model for Optimal Logistics Resource Allocation Under Military Strike Risks                                                         | 1070 |
| M.B. Egboye. Advancing Green Shipping: Emission Reduction Strategies and Sustainable Technologies in Maritime Transport                                                                                                        | 1076 |
| Yu. Zelenko, V. Cherkudinov, V. Tarasov, M. Soroka. Optimisation of Petroleum Product Transportation by Multimodal Transport During Martial Law                                                                                | 1081 |
| M.F. Baimukhamedov, A.M. Baimukhamedova, G.S. Baimukhamedova, A.S. Boranbaev. Development of the Transport Industry in the Context of Digitalization, Intellectualization and Foreign Experience                               | 1090 |
| V. Tsopa, S. Cheberyachko, O. Deryugin, Ya. Litvinova, B. Hrymalo. Development of Logistics Risk Management Process During the Transportation of Extracted Raw Materials by Road Transport                                     | 1096 |
| Yu. Grytsuk, A. Yurzhenko, O. Volska, A. Leshchenko, O. Litikova, S. Dotsenko. Features of Computational Analysis of a Contact-Type Heat Accumulator in an ICE Thermal System                                                  | 1103 |
| D. Ivanchenko, M. Khara, A. Klymash, S.Kuzmenko, O. Vorokh, O. Lutsenko. Practical Application of a Locomotive Digital Twin for Railway Optimization                                                                           | 1109 |
| V. Konečný. Outputs from Optimization of Service Maintenance Intervals                                                                                                                                                         | 1116 |
| D. Marozas. Reduction of CO2 Emission from Container Ship Through Application of IMO Decarbonisation Technologies                                                                                                              | 1127 |
| M. Kapitsa, M. Hryshchenko, A. Bohomolov, S. Yurchenko. Detection of Internal Combustion Engine Faults Using Mathematical Modeling Methods                                                                                     | 1134 |
| D. Drnec, M. Drábek. Costs of Train Interior Comfort                                                                                                                                                                           | 1141 |
| O. Mirzayev. Green and Digital Port Development in the Maritime Industry                                                                                                                                                       | 1148 |

|                                                                                                                                                                                 |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| R. Zarirov, E. Ramazan, P. Gavrilovs. Development of a Multifunctional Transport and Technological Machine Based on a Passenger Car                                             | 1153 |
| O. Fomin, O. Burlutskyi, O. Melnyk, S. Sagin, O. Osmayev, A. Sulym. Modelling of Mechanical Properties of Multilayer Bearing Elements of Freight Wagons                         | 1158 |
| S. Matviienko, V. Moiseenko, V. Panchenko, V. Butenko, M. Meztis, A. Baranovskii. Developing the Model of a Cut Rolling Down the Hump for Computer Decision Support Systems     | 1165 |
| V. Dzerkelis, V. Lukoševičius. Forecasting of Yield Strength and Tensile Strength of Steel Alloys by Micro-Hardness of Materials: the Case of Automotive Body Structural Repair | 1172 |