

ISBN 978-83-959742-6-7

Transport Problems 2023

Conference proceedings

Konferencja dofinansowana ze środków budżetu państwa
w ramach programu Ministra Edukacji i Nauki pod nazwą
"Doskonała Nauka" nr projektu DNK/SP/549716/2022
kwota dofinansowania 145 200,00 zł
całkowita wartość projektu 299 000,00 zł.



Ministerstwo
Edukacji i Nauki



Doskonała
Nauka

UNDER THE HONORARY
PATRONAGE OF



Silesian
University
of Technology



Krajowa
Reprezentacja
Doktorantów

KRD



XV INTERNATIONAL
SCIENTIFIC
CONFERENCE

21-23.06 2023
Katowice - Częstochowa

19-20.06 2023
Katowice

XII INTERNATIONAL
SYMPOSIUM OF YOUNG
RESEARCHERS



Silesian University of Technology
Faculty of Transport and Aviation Engineering

Transport Problems 2023

Proceedings

XV International Scientific Conference

XII International Symposium of Young Researchers

UNDER THE HONORARY PATRONAGE OF



Silesian University
of Technology



Krajowa
Reprezentacja
Doktorantów

KRD

Media patronage:

Transport Problems International Scientific Journal
ISSN 1896-0596, The Silesian University of Technology,
Faculty of Transport and Aviation Engineering

Transport Problems

International Scientific Journal



Ministerstwo
Edukacji i Nauki



Doskonała
Nauka

Konferencja dofinansowana ze środków budżetu państwa
w ramach programu Ministra Edukacji i Nauki pod nazwą
"Doskonała Nauka" nr projektu DNK/SP/549716/2022
kwota dofinansowania 145 200,00 zł
całkowita wartość projektu 299 000, 00 zł.

editor-in-chief

A. Sładkowski

editorial board

*P. Czech, M. Cieśla, T. Haniszewski,
M. Juzek, W. Kamiński, P. Marzec, G. Wojnar*



XV INTERNATIONAL CONFERENCE TRANSPORT PROBLEMS 2023

TABLE OF CONTENTS

No.	Author, title	Pages	
		Begin	End
1	Ali ABBASOV, Tofiq BABAYEV, Valery VIRKOVSKI Modern approaches to digitalization of middle corridor	1	5
2	Adedotun Joseph ADENIGBO, Joash MAGETO, Rose LUKE Factors influencing air cargo policy decisions and implementation in Nigeria: a stakeholders' perspective	6	19
3	Asmaâ AIT BOUBKR Women's urban mobility and perceived safety in the city of Casablanca (Morocco)	20	27
4	Telman ALIEV, Tofiq BABAYEV, Rauf GADIMOV, Tahir ALIZADA Hybrid technology for control of the latent period of malfunctions of railroad tracks	28	35
5	Michał APOLLO, Lukasz KULESZA, Agnieszka GAWLIK, Anna ORZEŁ, Mateusz JAKUBIAK, Paula BAJDOR, Sławomir PYTEL, Mariusz SPECHT, Karolina KRZYKOWSKA-PIOTROWSKA, Sorin NISTOR, Celso Augusto Guimarães SANTOS, Yana WENGEL, Kamil MACIUK An analysis of engine type trends in passenger cars: are we ready for a green deal?	36	60
6	Tofiq BABAYEV, Khalida MELIKOVA Transport contents in Horizon Europe Framework Programme	61	64
7	Teodor BALÁŽ, Zbyšek KORECKI, Jaroslav KREJČÍ, František RACEK Detection and location system for laser interference with aircraft	65	71
8	Libor BAUER, Libor SVADLENKA, Radek VRBA, Daniel SALAVA Validation of the Sulp methodology (application in the city of Pardubice)	72	83
9	Sylwia BĘCZKOWSKA, Iwona GRABAREK, Maciej KOZŁOWSKI Identification of the factors of arduousness at the workplaces of operators of means of transport	84	95
10	Krzysztof BIZOŃ, Aleksandra CHMIELEWSKA, Andrzej CHUDZIKIEWICZ, Aleksander SŁADKOWSKI, Anna STELMACH	96	110

No.	Author, title	Pages	
		Begin	End
	An innovative, multi-purpose stanchion basket for transporting timber and containers		
11	Vladimir BROZOVIC, Danko KEZIC, Srečko KRILE, Filip BROZOVIC Hardware platform for the maritime collision avoidance system	111	119
12	Sławomir BUCKI, Tomasz HANISZEWSKI, Tadeusz OPASIAK, Jerzy MARGIELEWICZ, Damian GAŚKA Compression tests and FEM modeling of EPDM foam	120	125
13	Sławomir BUCKI, Damian GAŚKA, Jerzy MARGIELEWICZ, Tomasz HANISZEWSKI, Tadeusz OPASIAK Identification of lift force in a wind piezoelectric energy harvesting system	126	131
14	Rafał BURDZIK, Niko SPEYBROECK Estimation of SARS-CoV-2 virus pathogens transmission probability in public transport	132	139
15	Rafał BURDZIK, Łukasz KONIECZNY, Michał PIGŁAS, Szymon ŁOŚ Road tests of the innovative mobile magnetic resonance lab built on a semi-trailer	140	145
16	Rafał BURDZIK, Michał PIGŁAS, Ryszard NITZKE Research of the thermal transmittance coefficient of the mobile structure of the magnetic resonance laboratory	146	150
17	Gintautas BUREIKA Approach of technological equipment selection for the measurement of railway track geometry	151	159
18	Leszek BYLINKO Mobility plans in transport demand management	160	176
19	Wioletta CEBULSKA, Damian HADRYŚ Noise emission of electric cars	177	184
20	Jakub DOŃSKI-LESIUK Identification of the adaptation of land transport infrastructure in Vietnam to support cross-border flows in southeast Asia (phase 1 conclusions)	185	195
21	Adam DÖRING, Bożena SZCZUCKA-LASOTA, Tomasz WĘGRZYN, Romana ANTCZAK-JARZĄBSKA, Abilio PEREIRA SILVA Regeneration of car alternators by soldering methods	196	202
22	Joanna DYCZKOWSKA, Marcin OLKIEWICZ Development of bicycle infrastructure in the West Pomeranian Voivodeship	203	213

No.	Author, title	Pages	
		Begin	End
23	Paulina GAJEWSKA, Irena SZEWCZYK, Georgios KOULOURIS Adaptation of railway transport to the needs of physically disabled people on the example of the main railway station in Bielsko-Biała	214	224
24	Laurent GUIHERY The new rail freight corridor Le Havre - Serqueux - Gisors – Paris: will France improve the competitiveness of Le Havre Harbor?	225	232
25	Tomasz HANISZEWSKI, Jerzy MARGIELEWICZ, Damian GAŚKA, Sławomir BUCKI, Tadeusz OPASIAK Nonlinear dynamic analysis of 2-dof EHS with hyper-elastic vibration amplifier	233	244
26	Wojciech HOMIK, Aleksander MAZURKOW, Andrzej CHMIELOWIEC Thermohydrodynamic model of a torsional vibration viscous damper enabling the determination of the operating temperature range	245	254
27	Rosen IVANOV, Ivan EVTIMOV, Krasimir KIRILOV, Iliyana MINKOVSKA Life cycle energy consumption and CO2 emissions of different car types	255	265
28	Michał JUZEK, Paweł SŁOWIŃSKI Impact of accelerometer mounting on the correctness of the results obtained in NDT type tests	266	275
29	Wojciech KAMIŃSKI Suspension and reactivation of passenger traffic on railway lines in Lower Silesia	276	288
30	Arkadiusz KAMPCZYK Correlation of factors defining the calculation height of a hump	289	295
31	Igor KOLESNIKOV, Gulmira ABIDOVA, Sanjar KHAKIMOV, Islom KURBONOV Wireless vehicle charging control system	296	305
32	Igor KOLESNIKOV, Gulmira ABIDOVA, Sanjar KHAKIMOV, Karimberdi KARSHIYEV Innovative technologies in the energy sector based on wireless systems	306	310
33	Łukasz KONIECZNY, Jan FILIPCZYK Analysis of M1 category car braking deceleration in road traffic	311	317
34	Bartosz KOZICKI, Aleksandra SKRABACZ Impact of road accidents on the number of injured and killed in Poland compared to selected EU countries	318	328
35	Maciej KOZŁOWSKI, Andrzej CZEREPICKI, Piotr DZIDO Lane tracking algorithm for low-computational-power microcontroller-controlled autonomous vehicle models	329	341

No.	Author, title	Pages	
		Begin	End
36	Jakub MARSZAŁKIEWICZ Afghan aviation and its infrastructure on the eve of collapse in 2021	342	352
37	Michał MIROS Exhaust gases of cars undergoing periodic technical inspection at a vehicle inspection station in one of the cities of Silesia region	353	358
38	Marcin OLKIEWICZ, Joanna DYCZKOWSKA Selected problems of infrastructure development for residents of the Middle Pomeranian region: case study	359	367
39	Abelim PASSOLI, Kossi DIZEWE, Coffi AHOLOU Intermodality between institutional transport and informal transport in Grand Lomé: case of motorbike taxi and Sotral	368	377
40	Jan PEČMAN, Ondrej STOPKA Influence of road longitudinal terrain profile on vehicle kinetic energy recovery and mitigation of selected transport negative aspects	378	388
41	Velizara PENCHEVA, Asen ASENOV, Ivan GEORGIEV, Boril IVANOV, Ivelin ZANEV, Ivan GEORGIEV Study of inland waterway transport routing options under conditions of uncertainty in navigational restrictions	389	399
42	Michał PRZYBYŁOWICZ Economic optimisation of railway superstructure through use of the wide sleepers	400	406
43	Ewelina SENDEK-MATYSIAK, Wojciech LEWICKI, Zbigniew ŁOSIEWICZ, Wojciech HOMIK Assessment of young consumers' knowledge and their views on e-mobility	407	417
44	Denys SHALAPKO Optical-graphic studies of the hydrogen additives effect on the diesel fuel atomization parameters	418	429
45	Lina SHBEEB Evaluating the roadside advertisement perception and impact across selected countries: Jordan and Kuwait	430	442
46	Yevhenii SHKVAR, Jonas KANDUME The key role of modern aerodynamic trends in increasing the energy efficiency of high-speed vehicles	443	452
47	Aleksandra SKRABACZ, Bartosz KOZICKI Multidimensional analysis of losses in the number of passengers transported by air in Poland and Germany caused by the COVID-19 pandemic in terms of the maintenance of economic security	453	463

No.	Author, title	Pages	
		Begin	End
48	Iwo SŁODCZYK, Jacob WHITTLE, David FLETCHER, Stephen DANKS, Brian WHITNEY Towards a more realistic railway sleeper lateral resistance test	464	476
49	Sebastian SOBCZUK, Anna BORUCKA Passenger air transport in the face of epidemic phenomena on the example of the COVID-19 pandemic – review article	477	487
50	Stasys STEIŠŪNAS, Šarūnas ŠUKEVIČIUS, Gediminas VAIČIŪNAS Study of the interaction of railway brake shoe with a wheel of freight wagon	488	493
51	Madiyar SULTANBEK, Nazdana ADILOVA, Aleksander SŁADKOWSKI, Arnur KARIBAYEV Estimating the demand for railway freight transportation in Kazakhstan: a case study	494	506
52	Bożena SZCZUCKA-LASOTA, Tomasz WĘGRZYN, Bogusław ŁAZARZ, Krzysztof LUKASZKOWICZ, Klaudiusz GOŁOMBK, Abilio PEREIRA SILVA, Krzysztof Ireneusz WILCZYŃSKI Welding of high-resistance steel in the construction of electric transport	507	513
53	Michał TARACHA, Laurent GUIHÉRY COVID-19 and long-distance coach services in Europe: impact of changing passenger behaviour	514	526
54	Igor TARAN, Vadim LITVIN Justification of rational parameters of a warehouse with gravity flow racking using simulation environment	527	541
55	Vitaly TSOPA, Tetiana NEHRII, Serhiy CHEBERYACHKO, Yana LITVINOVA, Oleg DERYUGIN, Nataliia HOROSHKO The improved model for assessing the occupational risk of a truck driver	542	550
56	Attila TURI Transportation challenges in Eastern Europe: national, EU and non-EU issues – Romanian case study	551	555
57	Gediminas VAIČIŪNAS, Stasys STEIŠŪNAS Study of the influence of diesel train engine oil replenishment on the efficiency of oil filtration equipment	556	561
58	Laszlo VIDA, Béla ILLÉS, Antal VÉHA Modal shift, but how?	562	574
59	Tadas VIPARTAS, Alfredas RIMKUS, Jonas MATIJOŠIUS The influence of intake valve timing on the environmental performance of the SI engine using gasoline and natural gas	575	585

No.	Author, title	Pages	
		Begin	End
60	Oleksandr VOICHYSHEN, Serhii PATSERA, Vitalii DERBABA, Oleksandr BOCHDANOV, Volodymyr HRYHORENKO Reliability assessment dimensional control details of vehicles depending on the accuracy tool	586	593
61	Anna WARCHOŁ-JAKUBOWSKA, Krzysztof KREJTZ, Patrik SZCZECIŃSKI, Katarzyna WISIECKA, Izabela KREJTZ, Andrew T. DUCHOWSKI The use of eye tracking to study the visual attention of tram drivers as a step towards increasing safety in public transport. Comparative study between novice and expert tram drivers	594	605
62	Tomasz WĘGRZYN, Bożena SZCZUCKA-LASOTA, Tadeusz SZYMCZAK, Bogusław ŁAZARZ, Jan PIWNIK Regeneration repairs of Hardox steel elements used in transport means	606	610
63	Robert WIESZAŁA, Jarosław PIĄTKOWSKI, Mariusz HEJNE, Jacek MENDAŁA Process of transporting and storing jet fuel at airports	611	618
64	Grzegorz WIŚNIEWSKI, Adrian MIROWSKI The needs of transport managers in the context of implemented innovations and models supporting safety, based on the potential of artificial intelligence	619	626
65	Marian ZAJKO Potential of the social media in the Slovak road freight transport	627	642
66	Weronika ŻMUDA, Piotr CZUBAK Operation of the new single-vibrator conveyor on the falling slope of the second resonance	643	651

XII INTERNATIONAL SYMPOSIUM OF YOUNG RESEARCHERS TRANSPORT PROBLEMS 2023

TABLE OF CONTENTS

No.	Author, title	Pages	
		Begin	End
1	Mujahid ALI, Elżbieta MACIOSZEK Travel mode choice, multi-tasking activities, and its influence on subjective well-being	652	662
2	Kamil BOBIŃSKI, Adam RAJCA, Michał BANET, Robert WIESZAŁA, Henryk BĄKOWSKI Cessna winglet optimization - a comparative study of different designs	663	667
3	Oussama BOUGUEFFA, Patryk TEZCAN, Kundai BGONI, Aleksander ŚLADKOWSKI The use of automated vehicles in warehouses	668	677
4	Michał BRZOZOWSKI, Kacper CIEŚLAR, Krzysztof PARCZEWSKI The effect of snow on the operation of autonomous car sensors	678	686
5	Artur BUDZYŃSKI, Aleksander ŚLADKOWSKI, Bartłomiej DŁUGOSZ, Konrad SIKORA, Wesam HASAN, Taras NIKITISHYN The analysis of factors affecting the occurrence of road incidents in Poland in 2015-2021	687	695
6	Martynas DRAZDAUSKAS Numerical studies of ice combustion cycle operating on dual ammonia diesel fuel	696	709
7	Krzysztof DREWNIOK, Aleksander SOBOTA Test results of inter-stops travel times on bus line no. 11 from Katowice to Czeladz	710	719
8	Mikołaj FEDEROWICZ, Dawid GOŁAŚ, Adam JABŁOŃSKI, Izabella KOSTORZ, Kamil ULMAN, Krystian SZEWCZYŃSKI, Piotr OPAŁA Project of using a modern car simulator to analyze road safety in selected urban areas	720	725
9	Isidore KACHAKHIDZE, Omar KIKVIDZE Numerical calculation of vibrations of a single-axis trailer	726	730

No.	Author, title	Pages	
		Begin	End
10	Elżbieta MACIOSZEK, Aleksander SOBOTA, Paulina ŚWIERK Research on selected characteristics in the scope of the functioning of public collective transport in Sosnowiec	731	738
11	Elżbieta MACIOSZEK, Agata WYDERKA Application of c&rt tree for analysis of variables affecting the parking space use value in selected cities in Poland	739	748
12	Audrius MALŪKAS The assessment of feasibility of utilizing LNG cold potential for capturing CO2 emissions on FSRU based vessels towards IMO's carbon neutral strategy	749	758
13	Caroline MUKOMBERO, Bartłomiej DŁUGOSZ, Aleksander ŚLADKOWSKI Analysis and comparison of gasoline and electrical vehicles	759	765
14	Sman RAIYMZHAN Warehouse automation: trends, challenges, and opportunities	766	779
15	Konrad SIKORA, Kamil GRZECHNIK, Stephen EMMANUEL, Aleksander ŚLADKOWSKI Use and analysis of hydrogen vehicles	780	792
16	Magdalena SKIBA The impact of economic and political changes on public transport and tram investments in Wrocław	793	800
17	Wojciech SZYMALSKI Emissions of CO2 from road transport in Polish regions	801	809
18	Maksymilian TOMASZ, Szymon TETLA, Kamil WAJDZIK, Adam ROSKOSZ, Henryk BĄKOWSKI An electric, urban mean of transport, powered by a charging station based on renewable energy sources	810	813
19	Kaja WIECZOREK, Maja FORYCIARZ, Robert WIESZAŁA Risk analysis of the pilot's position under changing socio-economic conditions	814	819