

CONTENT

INTRODUCTORY LECTURES

MVM2024-IL1	Ralph Pütz	EU ENERGY AND PROPULSION TRANSITIONS IN THE MOBILITY SECTOR OF GERMANY – A REALIZABLE STRATEGY OR EVEN RATHER IDEOLOGICAL ASTRAY?	3
MVM2024-IL2	Nenad Miljić Slobodan Popović	HYDROGEN AND INTERNAL COMBUSTION ENGINES – STATUS, PERSPECTIVES AND CHALLENGES IN PROVIDING HIGH EFFICIENCY AND CO2 FREE POWERTRAIN FOR FUTURE	13
MVM2024-IL3	Hakan Kaleli Selman Demirtaş Veli Uysal	NANOSCALE TRIBOLOGICAL INFLUENCE OF NBA ADDED IN ENGINE OIL FOR FRICTION AND WEAR BEHAVIOUR IN DIESEL ENGINE CYLINDER LINER SURFACE RUBBED UNDER 1ST AND 2ND PISTON RINGS	35

SECTION A Power Train Technology

MVM2024-008	Vanja Šušteršič Vladimir Vukašinović Dušan Gordić Mladen Josijević	APPLICATION OF HYDROSTATIC TRANSMISSION IN MOBILE MACHINE	55
MVM2024-010	Miloš Maljković Ivan Blagojević Branko Miličić Dragan Stamenković	TOWARDS AN ENERGY EFFICIENT OPERATION OF A SUPERCAPACITOR ELECTRIC BUS	65
MVM2024-013	Zoran Masoničić Siniša Dragutinović Aleksandar Davinić Slobodan Savić Radivoje Pešić	SOME ASPECTS OF COMBUSTION MODEL VARIATION ONTO FLAME PROPAGATION AND EXHAUST EMISSIONS OF IC ENGINES	75
MVM2024-016	Predrag Mrđa Marko Kitanović Slobodan Popović Nenad Miljić Nemanja Bukušić	MATHEMATICAL MODELING OF AN ELECTRONIC THROTTLE VALVE USING NARX NEURAL NETWORKS	83
MVM2024-018	Nemanja Bukušić Predrag Mrđa Marko Kitanović Nenad Miljić Slobodan Popović	GASOLINE DIRECT INJECTION STRATEGY ANALYSIS FOR IMPROVED COMBUSTION	93
MVM2024-020	Nenad Miljić Predrag Mrđa Mihailo Olđa Slobodan J. Popović Marko Kitanović	THE METHOD AND INSTRUMENTATION FOR ENGINE POSITIONING ON A TESTBED WITH FAST SHAFT ALIGNMENT	103

MVM2024-026	Minja Velemir Radović Danijela Nikolić Nebojša Jurišević Saša Jovanović	APPLICATION OF WASTE PLASTIC OIL IN THE MODERN AUTOMOTIVE INDUSTRY	111
MVM2024-031	Miroljub Tomić Dragan Knežević Miloljub Štavljanin	CYLINDER DEACTIVATION IN IC ENGINES IN CYLINDER PROCESS SIMULATION	123
MVM2024-037	Marko Nenadović Dragan Knežević Željko Bulatović	CHARACTERISTICS OF TORSIONAL OSCILLATIONS OF PERKINS 1104 ENGINE CRANKSHAFT	131
MVM2024-038	Marko Nenadović Dragan Knežević Željko Bulatović	ANALYSIS OF CRANKSHAFT TORSIONAL OSCILLATION DUMPER FOR ENGINE V-46-6	141
MVM2024-047	Attila Kiss Bálint Szabó Zoltán Weltsch	THE SAFETY ISSUES OF HYDROGEN-GASOLINE DUAL-FUEL INJECTION IN NATURAL ASPIRATED INTERNAL COMBUSTION ENGINES	153
MVM2024-049	Ivan Grujic Aleksandar Davinic Nadica Stojanovic Zeljko Djuric Marko Lucic Radivoje Pesic	THE NUMERICAL INVESTIGATION OF THE WORKING CYCLE OF DUAL FUEL IC ENGINE	163

SECTION B Vehicle Design and Manufacturing

MVM2024-005	Gordana Bogdanović Dragan Čukanović Aleksandar Radaković Milan T. Đorđević Petar Knežević	FUNCTIONALLY GRADED MATERIALS IN AUTOMOTIVE INDUSTRY-MODELLING AND ANALYSIS OF FG PLATE ON ELASTIC FOUNDATION	171
MVM2024-006	Dušan Arsić Djordje Ivković Dragan Adamović Vesna Mandić Marko Delić Andjela Mitrović Nada Ratković	APPLICATION OF HIGH STRENGTH STEELS IN AUTOMOTIVE INDUSTRY	179
MVM2024-011	Saša Vasiljević Jasna Glišović Marko Maslač Milan Đorđević Sonja Kostić Dobrivoje Čatić	TIRE WEAR: VEHICLE SAFETY AND ENVIRONMENTAL PROBLEM	187
MVM2024-012	Zorica Đorđević Sonja Kostić Saša Jovanović Danijela Nikolić	THE INFLUENCE OF FIBER ORIENTATION ANGLE ON THE STABILITY OF A COMPOSITE DRIVE SHAFT	199
MVM2024-014	Vojislav Filipovic Milan Matijevic Dragan Kostic	DIGITAL PREVIEW CONTROLLER DESIGN USING REINFORCEMENT LEARNING	205
MVM2024-015	Milan Matijevic Vojislav Filipovic Dragan Kostic	ITERATIVE LEARNING (ILC) IN MANUFACTURING SYSTEMS: DESIGN OF ILC ALGORITHMS AND OVERVIEW OF MODEL INVERSION TECHNIQUES FOR ILC SYNTHESIS	213

MVM2024-017	Marko Delić Vesna Mandić Dragan Adamović Dušan Arsić Đorđe Ivković Nada Ratković	ANALYSIS OF PHOTOGRAMMETRY APPLICATION POSSIBILITIES FOR REVERSE ENGINEERING OF COMPONENTS IN THE AUTO INDUSTRY	229
MVM2024-023	Dániel Kecskés László Tóth István Péter Szabó	STRENGTH TESTING OF 3D PRINTED SPECIMENS	235
MVM2024-027	Milan Stanojević Milan Bukvić Saša Vasiljević Lozica Ivanović Blaža Stojanović	RESEARCH METHODS IN THE DESIGN PROCESS OF HYDRAULIC SYSTEMS WITH CYCLOID TEETH	247
MVM2024-028	Dragan Adamovic Vesna Mandic Nada Ratkovic Dusan Arsic Djordje Ivkovic Marko Delic Marko Topalovic	MODERN MATERIALS IN AUTOMOTIVE INDUSTRY - REVIEW	255
MVM2024-029	Dragan Adamović Fatima Živić Nikola Kotorčević Nenad Grujović	REVIEW OF THE USE OF NANOTECHNOLOGIES AND NANOMATERIALS IN THE AUTOMOTIVE INDUSTRY: DEVELOPMENT, APPLICATIONS AND FUTURE DIRECTIONS	269
MVM2024-032	Nada Ratković Dragan Adamović Srbislav Aleksandrović Vesna Mandić Dušan Arsić Marko Delić Živana Jovanović Pešić	ADVANCED WELDING TECHNOLOGIES: FSW IN AUTOMOTIVE MANUFACTURING	281
MVM2024-035	Milan Bukvić Sandra Gajević Slavica Miladinović Saša Milojević Momčilo Đorđević Blaža Stojanović	CHARACTERISTICS AND APPLICATION OF POLYMER COMPOSITES IN THE AUTOMOTIVE INDUSTRY	289
MVM2024-036	Gordana Bogdanović Aleksandar Radaković Dragan Čukanović Nikola Velimirović Petar Knežević	SHAPE FUNCTION OPTIMIZATION FOR STATIC ANALYSIS OF COMPOSITE MATERIALS USED IN AUTOMOTIVE INDUSTRY	295
MVM2024-039	Igor Saveljić Slavica Mačužić Saveljić Nenad Filipović	THE MODERN APPROACH TO PROBLEM- SOLVING IN MECHANICAL ENGINEERING - APPLICATION OF ARTIFICIAL INTELLIGENCE	303
MVM2024-040	Slavica Mačužić Saveljić Igor Saveljić Jovanka Lukić	DETERMINATION OF THE SEAT-TO-HEAD TRANSFER FUNCTION AND INFLUENCING FACTORS ON COMFORT UNDER VERTICAL RANDOM VIBRATIONS	309
MVM2024-041	Dobrivoje Ćatić Saša Vasiljević Živana Jovanović Pešić Vladimir Ćatić	DISC BRAKE FAILURE ANALYSIS OF THE MOTOR VEHICLE BRAKING SYSTEM	315

MVM2024-048	Isak Karabegović Ermin Husak Edina Karabegović Mehmed Mahmić	DEVELOPMENT AND IMPLEMENTATION OF ADVANCED ROBOTICS IN THE AUTOMOTIVE AND ELECTRO-ELECTRONIC INDUSTRY OF CHINA	321
MVM2024-051	Jasna Glišović Saša Vasiljević Jovanka Lukić Danijela Miloradović	SUBSYSTEM AND SYSTEM ANALYSIS OF BRAKE WEAR PARTICLES FOR PREDICTION AND CONTROL OF THE TRAFFIC NON- EXHAUST EMISSION	331
MVM2024-052	Dobrivoje Čatić Vladimir Čatić	DETERMINING THE RELIABILITY OF BRAKE BOOSTERS IN LIGHT COMMERCIAL VEHICLES	343
MVM2024-053	Nikola Komatina Danijela Tadić Marko Džapan	QUANTITATIVE ANALYSIS OF NONCONFORMING PRODUCTS: A CASE STUDY IN THE AUTOMOTIVE INDUSTRY	349
MVM2024-054	Danijela Miloradović Jasna Glišović Jovanka Lukić Nenad Miloradović	SUSPENSION RATIOS OF MACPHERSON STRUT SUSPENSION	357
MVM2024-056	Nenad Miloradović Rodoljub Vujanac	INFLUENCE OF SELECTION OF MATERIAL HANDLING DEVICES ON SOLUTION FOR WAREHOUSE SYSTEM IN AUTOMOTIVE INDUSTRY	369
MVM2024-057	Nenad Petrović Strahinja Milenković Živana Jovanović Pešić Nenad Kostić Nenad Marijanović	DETERMINING 3D PRINTED HOUSING DIAMETERS FOR PRESS-FITTING STANDARD BALL BEARINGS	379

SECTION C

Vehicle Dynamics and Intelligent Control Systems

MVM2024-002	Mihai Blaga	VOLVO FH POWERTRAIN, VEHICLE ENGINE DIAGNOSTICS	387
MVM2024-007	Abdeselem Benmeddah Momir Drakulić Aleksandar Đurić Sreten Perić	MODELING AND VALIDATION OF TRUCK SUSPENSION SYSTEMS USING ADAMS SOFTWARE	401
MVM2024-030	Vesna Ranković Andrija Đonić Tijana Geroski	ROAD TRAFFIC ACCIDENTS PREDICTION USING MACHINE LEARNING METHODS	409
MVM2024-034	Vasko Changoski Igor Gjurkov Vase Janushevska	HANDLING AND STABILITY ANALYSIS OF AN AUTOMATED VEHICLE WITH INTEGRATED FOUR-WHEEL INDEPENDENT STEERING (4WIS)	417
MVM2024-042	Bojana Bošković Nadica Stojanović Ivan Grujić Saša Babić Branimir Milosavljević	THE INFLUENCE OF THERMAL STRESS OF DISC BRAKES ON VEHICLE DECELERATION	431
MVM2024-046	Andjela Mitrović Vladimir Milovanović Nebojša Hristov Damir Jerković Mladen Josijević Djordje Ivković	ANALYSIS OF PLACING ADDITIONAL SUPPORTS OF THE INTEGRATED ARTILLERY SYSTEM CALIBER 130 mm	439

SECTION D

Driver/Vehicle Interface, Information and Assistance Systems

MVM2024-001	Miroslav Demić Mikhail P. Malinovsky	INVESTIGATION OF TORSIONAL VIBRATIONS OF THE STEERING SHAFT FROM THE ASPECT OF MINIMAL DRIVER-HAND FATIGUE IN HEAVY MOTOR VEHICLES	451
MVM2024-009	Mikhail P. Malinovsky Miroslav Demić Evgeny S. Smolko	TECHNICAL SOLUTIONS FOR CATASTROPHIC EXTENT OF THE HUMAN FACTOR IN DRIVERS TRAINING AND STRUCTURAL SAFETY OF BUSES AND HEAVY VEHICLES	459
MVM2024-050	Jovanka Lukić Danijela Miloradović Jasna Glišović	MASKING EFFECTS UNDER DUAL AXIS WHOLE BODY VIBRATION	477

SECTION E

Transport Challenges in Emerging Economies

MVM2024-004	Slobodan Mišanović	PERFORMANCES OF FAST CHARGERS FOR ELECTRIC BUSES IN BELGRADE ON THE EKO2 LINE	485
MVM2024-019	Siniša Dragutinović Zoran Masonicic Aleksandar Davinić Slobodan Savić Radivoje Pešić	APPLICATION OF THE AHP METHOD FOR THE ASSESMENT OF INFLUENTIAL CRITERIA IN RISK ANALYSIS OF ROAD TRANSPORT OF DANGEROUS GOODS	493
MVM2024-021	Željko Đurić Snežana Petković Valentina Golubović Bugarski Nataša Kostić	METHODS FOR CATEGORIZING ROAD TUNNELS ACCORDING TO DANGEROUS GOODS REGULATIONS	501
MVM2024-025	Franci Pušavec Janez Kopač	TRAFFIC HAZARD DUE TO HIGH CENTRE OF GRAVITY	511
MVM2024-043	Alexander Koudrin Sergey Shadrin	DEVELOPMENT OF AN ENERGY-EFFICIENT CONTROL SYSTEM FOR CONNECTED, HIGHLY AUTOMATED VEHICLES	517
MVM2024-055	Marko Miletić Ivan Miletić Robert Ulewich Ružica Nikolić	EV CHARGING STATIONS: CURRENT SITUATION AND FUTURE PERSPECTIVES	527