

Sustainable Mobility and Transportation Symposium 2025

October 16th to 18th 2025

Session schedule

October 16th 2025 Management Campus

Thursday Management Campus 09:00	REGISTRATION	
Plenary Session Management Campus - Room 001-002		
10:30	József Bokor (Széchenyi István University)	Opening and Welcome Speech
10:40	István Szászi (Robert Bosch Kft.)	Current challenges in automotive world and approaches to overcome
11:10	Zoltán Dobra (Audi Hungaria Zrt.)	From research to reality: experiences in China's sustainable mobility and transportation
12:00	Lunch Break	Bridge Club Győr

This interdisciplinary scientific conference supported by Audi Hungaria Zrt and Robert Bosch Kft. The conference organization was financed from the NRDIFund (National Research, Development and Innovation Office, Hungary) MEC_R 149493 project, titled "Sustainable Mobility and Transportation Symposium 2025". The publications appearance was supported as part of Széchenyi István University's VHFO/416/2023-EM_SZERZ project, titled "Preparation of digital and self-driving environmental infrastructure developments and related research to reduce carbon emissions and environmental impact" (Green Traffic Cloud).

Session schedule

October 16th 2025 Management Campus

Materials Technology I. Management Campus, Room 122		Session Chair: László LENDVAI
13:30	Hanna Csótár, Szabolcs Szalai, Attila Nagy, András Lajos Nagy, Gusztáv Baranyai, Szabolcs Fischer	Structural Integrity Analysis of 3D-Printed PLA- and ABS-Reinforced Concrete Underwater Curing
13:45	Balázs Lőrincz, András Lajos Nagy, Imre Fekete, István Hatos	Determination of Optimal Process Parameters for L-PBF Produced 1.2709 Alloy
14:00	Kashif Ullah Khan, Andrea Ádámné Major	Morphological and Water Absorption Properties of Bio-Based Polyesters MWCNT Nanocomposites
14:15	Balázs Ádám, Ferenc Palásti, Pál Hanságghy, Dorottya Antalicsné Nagy, László Tóth, Erika Varga	Exploring the Potential of PLA Packaging Materials in 3D Printing for Sustainable Goals in the Automotive Industry
14:30	Dorottya Antalicsné Nagy, Balázs Ádám, Erika Varga, Pál Hanságghy, Ferenc Palásti, László Tóth	Oscillatory Shear Rheology of PE/PP/MWCNT Nanocomposites
14:45	Coffee Break	Management Campus, Ground Floor Hall

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Session schedule

October 16th 2025 Management Campus

Mobility & Society, Management I. Management Campus, Room 123		Session Chair: Nikolett NAGY GYURIÁN
13:30	Levente Zsolt Chudi, Ferenc Szlivka, Gusztáv Fekete, Ildikó Molnár	Aerodynamic design and simulation of a racing car with regard to the front wing
13:45	Irving V. Paputungan, Laode G. N. Iksyam, Rio Y. Sakti, Kevin R. Saleh, Arrie Kurniawardhani	Community-based Mobile Application for Motorcycle Riders
14:00	Viktor Nagy, Gábor Kovács	Mobile and Web Tools for Analyzing Driver Mental States in Simulated Tests
14:15	Nikolett Gyurián Nagy	Consumer Cost Perception and Its Role in Hydrogen Vehicle Adoption

14:45	Coffee Break	Management Campus, Ground Floor Hall
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Session schedule

October 16th 2025 Management Campus

Autonomous Vehicle I. Management Campus, Room 227		Session Chair: Rahul RAZDAN
13:30	György Istenes, Gergő Ferenc Ignéczi, Dávid Józsa, Dániel Pup, József Bokor	Spectral Analysis of the Lateral Dynamics of Road Vehicles
13:45	Péter Farkas, Bence Török, Szilárd Aradi	Integrating a Stereo Vision System on the F1Tenth Platform for Enhanced Perception
14:00	Barnabás Kiss, Áron Ballagi, Miklós Kuczmán	Investigation of Energy-Efficient UAV Control: Analysis of PID and MPC Performance
14:15	Gergő Ferenc Ignéczi, Dávid Józsa, Mátyás Mesics	Lightweight Solution to Generate Accurate Lanelet Maps
14:45	Coffee Break	Management Campus, Ground Floor Hall

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Session schedule

October 16th 2025 Management Campus

Diagnostics & Testing I. Management Campus, Room 228		Session Chair: László PAULOVICS
13:30	Michael Bohm, Jan Fojtasek	An Eye-Tracking Analysis of Rider Behavior and Handling Strategy in Motorcycle Racing
13:45	Peter Harth, Anna Nagy	Estimation of the Range of Light Duty Commercial Vehicle
14:00	Jan Fojtasek, Michael Bohm	Development of a Data-Driven Methodology for Rapid Identification of Key Performance Indicators in Motorcycle Racing
14:15	László Paulovics, László Boros, Csaba Tóth-Nagy	Timing Chain Test Bench Equipped with Hydraulic Chain Force Control
14:45	Coffee Break	Management Campus, Ground Floor Hall

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Session schedule

October 16th 2025 Management Campus

Materials Technology II. Management Campus, Room 122		Session Chair: Ibolya ZSOLDOS
15:05	Kristóf Bányai, Sándor Kovács, Gabriella Bognár	Optimization of Ni-B Coating Process Parameters Through Factorial Design and Taguchi Approach
15:20	Imre Czinege, Dóra Harangozó	Strain Rate Dependence of PLC Effect in AlMg4.5 Alloys
15:35	Imre Czinege, Dóra Harangozó	Comparative Analysis of Stress Serration Characteristics in AlMg3 Alloys
15:50	Hamed Peidayesh, Ivan Chodák, Jozef Soták	End-of-Life Tires as Secondary Raw Materials for Sustainable Environment
16:05	Sándor Kálmán Jakab, László Lendvai	Toward Sustainable 3D Printing: Tensile Mechanical Comparison of PLA/PBAT Biopolymer Blend and TPU in MEX Additive Manufacturing
16:20	Coffee Break	Management Campus, Ground Floor Hall

Session schedule

October 16th 2025 Management Campus

Mobility & Society, Management II. Management Campus, Room 123		Session Chair: László BUICS
15:05	Stefan Ugrinov, Sanja Stanisavljev, Edit Terek Stojanović, Mihalj Bakator, Mila Kavalić, Verica Gluvakov	Supply Chain Management and Logistics 5.0 for Improving Competitiveness of Enterprises
15:20	Nguyen Ngoc Quynh Tran, László Buics	A Comprehensive Model for the Assessment of Digitalization Transformation in Supply Chain
15:35	Abishae Noel, László Buics, Eszter Sós	Examining Lean Management Principles in SMEs: A Systematic Literature Review and Survey Analysis
15:50	Lahiru Bandara Vimukthi, László Buics	Towards a Theoretical Framework for Digital Twin Readiness Assessment in Logistics: Conceptualization and Model Development
16:20	Coffee Break	Management Campus, Ground Floor Hall

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October 16th 2025 Management Campus

Autonomous Vehicle II. Management Campus, Room 227		Session Chair: Ernő HORVÁTH
15:05	Rudolf Krecht, Áron Ballagi	Curvature-Constrained Motion Planning Methods for Differential-Drive Mobile Robot Platforms
15:20	Daniel Csikor, János Hollósi, Ferenc Szauter	Investigating the Impact of Environmental Factors on Autonomous Vehicle Sensors
15:35	Szilárd Hunor Tóth, Zsolt János Viharos	Autonomous Vehicle Drifting Under Dynamically Changing Road Friction Using Adversarial Agents
15:50	Abdelrahman Alabdallah, Barham Jeries Barham Farraj, Ernő Horváth	ROS 2-Based Framework for Semi-Automatic Vector Map Creation in Autonomous Driving Systems
16:05	Gergő Ferenc Ignéczi, Dávid Józsa, Tamás Dobay, Máttyás Mesics	Driver Clustering based on Individual Curve Path Selection Preferences
16:20	Coffee Break	Management Campus, Ground Floor Hall

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October 16th 2025 Management Campus

AI & Control I. Management Campus, Room 228		Session Chair: Miklós KUCZMANN
15:05	Martin Kernács, Olivér Hornyák	Supporting Rule-Based Control with a Natural Language Model
15:20	Ilie Indreica, Mihnea Dimitrie Doloiu, Ioan-Alexandru Spulber, Gigel Măceșanu, Bogdan Sibișan, Tiberiu-Teodor Cociaș	Design and Control of a 32-DoF Robot for Music Performance Using AI and Motion Planning
15:35	Ioan-Alexandru Spulber, Mihnea Dimitrie Doloiu, Ilie Indreica, Gigel Măceșanu, Bogdan Sibisan, Tiberiu-Teodor Cociaș	Real-Time Robotic System for Interactive Tic-Tac-Toe Using Computer Vision
15:50	Mihnea Dimitrie Doloiu, Ioan-Alexandru Spulber, Ilie Indreica, Gigel Măceșanu, Bogdan Sibisan, Tiberiu-Teodor Cociaș	Modeling and Control of a Pan-Tilt Servo System for Face Tracking Using Deep Learning and PID
16:05	Armand Nagy, János Hollósi	A Comparative Evaluation of Classical and Deep Learning-Based Visual Odometry Methods for Autonomous Vehicle Navigation
16:20	Coffee Break	Management Campus, Ground Floor Hall

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October 16th 2025 Management Campus

Transportation & Logistics I. ; Vehicle Development I. Management Campus, Room 122		Session Chair: Attila BORSOS
16:40	Márton Nagy, Attila Ferenc Bagosi, Viktor Nagy	Method of Assessing Cognitive Workload for Budapest Tram Drivers to Enhance Urban Traffic Safety
16:55	Emese Makó, Gabriella Kosztolányi-Iván, Daria Krezub	Criteria-Based Selection of Cycling Infrastructure: Comparative Analysis of European Guidelines
17:10	József Orbán	Overview of GNSS Interference Risks in Transport Safety and Resilient Responses
17:25	Yashveer Dunpath, Norbert Kiss, Matthew Joshua Sandy, Székely Dániel, Mahmud MD Firoz, Antal Bakonyi	Finite Element Simulation of Quarter Surface Mounted Resistor Solder Joints Models under Thermomechanical Loading
17:40	Krisztián Horváth, Ambrus Zelei	Multibody Simulation of Helical-Gear Noise and Vibration Behavior Using MSC ADAMS

Session schedule

October 16th 2025 Management Campus

Vehicle Development II. Management Campus, Room 123		Session Chair: Zoltán PUSZTAI
16:40	György Marton, Zoltán Szávicza, Dr. András Lajos Nagy	Validation of a 1D Thermodynamic Simulation of a 4 - Cylinder Turbocharged DI Engine with Testbench Measurements
16:55	Máté Boros, Adam Agocs, Márk Pesthy	Investigation of Artificially Altered Lubricant: Impact on Vibration Behavior on Automotive Turbocharger
17:10	Bence Nagy, Dénes Fodor	Developing Longitudinal Vehicle Dynamics Model of Electric Bicycles for Virtual Validation of Active Safety Systems
17:25	Pavel Novotný, Jiří Vacula, František Kocman, Antonín Krmíček	An Advanced Approach for the Analysis of Rotor Dynamics of a Ball Bearing Turbocharger
17:40	Zoltán Pusztai, Tamás Luspay	Wind-Disturbance Integrated LPV Model for Energy-Efficient Vehicles

Session schedule

October 16th 2025 Management Campus

Electromobility I. Management Campus, Room 227		Session Chair: József POLÁK
16:40	Péter Kőrös, Zoltán Pusztai	Torque Profile Optimization for Shell Eco-marathon Urban Category Race
16:55	Jozsef Gabor Pazmany, Zoltan Szeli, Krisztian Enisz	User-specific Load Profile Clustering for Automotive Battery Applications
17:10	Zoltan Gabor Gazdag, Zoltan Gabos, Ádám Szabó, Bálint Dobrovics, Szargisz Szargszjan, Szabolcs Nagy, Zoltan Dombovari	Design Considerations of a Vibration Absorber with Nonlinear Stiffness for Power Electric Units
17:25	József Polák	Extension of the Energetic Modeling of Single-stage Gear Unit to Multi-stage Constant Ratio Gear Unit

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Session schedule

October 16th 2025 Management Campus

Fuels & Lubricants I. Management Campus, Room 228		Session Chair: András Lajos NAGY
16:40	Pál Lukács, Róbert Auer	Environmental Impacts of Synthetic Fuels
16:55	Balázs Pere, Martin Lénárt	Advancing Lubrication Modeling: A Preliminary Study of Finite Element Solutions for Cavitation-Aware Reynolds Equation
17:10	Márkó Kovács, Dominika Pintér	Investigation of Silicone Contamination in Tribometer Experiments Using FT-IR and XPS Technology
17:25	Ádám István Szabó, Rafiul Hasan	Synergistic Effect of CuO and ZnO Nano-additives on Friction and Wear in Automotive Base Oil
17:40	Charlotte Besser	Impact of ammonia as carbon-free fuel and its combustion by-products on engine oil ageing and bearing materials
17:55	Ádám Agócs	Handling and fueling with future fuels – non-microbial filter blocking in fueling station pumps

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October 17th 2025 Management Campus

Friday Management Campus 09:00	REGISTRATION	
10:00	Opening Speech	Management Campus, Room 001-002
10:10	Panel discussion: Jenő Csanaki - Stellantis Hungary Szabolcs Nagy - Robert Bosch Ltd. Rahul Razdan - Embry-Riddle Aeronautical University Moderator: Barna Hanula - Széchenyi István University	Management Campus, Room 001-002
11:10	Poster Session	Management Campus, Ground Floor Hall
12:00	Lunch Break	Bridge Club Győr

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Poster session

Management Campus, Ground Floor Hall

Judit Lukács, Péter Váradi, Richárd Horváth	Vehicle-Related Risk Level in the Case of Claims on the Motor Insurance Market in Hungary
Szabolcs Fischer, Zoltán Major, Bence Hermán, Bálint Molnár, András Pollák, Szabolcs Kocsis Szürke	Technologies for Minimizing Track Degradation and Additional Dynamic Effects at Permanent Way-Railway Bridge Stiffness Transitions
István Kecskeméti, Gábor Szakállas	Design of a Modular and Scalable Measurement System for Battery and Electronics Testing
Dávid Gorza, Gábor Saly, Dániel Csikor	Simulation of environment recognition systems for autonomous vehicles in CARLA Simulator
Péter Gulyás	Beyond Lithium: Evaluating Sodium-Ion Batteries for the Next Generation of Electric Vehicles
Balázs Lenkei, Rita Földesi	The role of ergonomic handrails in inclusive public transport: user aspects, accident risks and design guidelines
Rudolf Krecht, Abdelrahman Mutaz A. Alabdallah, Barham Jerjes B. Farraj	Evaluation of SLAM Methods for Small-Scale Autonomous Racing Vehicles
Ádám Agócs	Squalane Products as Sustainable Alternative to Polyalphaolefin base oils: Oxidative Degradation and Physicochemical Properties
Dániel Bársony, Martin Kaszab, Dániel Feszty	An iterative method for the layup selection of carbon-fiber reinforced polymer

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Máté Kapocsi, László Illés Orova, Zoltán Pusztai	Optimal Sensor Placement for Autonomous Formula Student Vehicles: A Field-of-View Analysis of Dual LIDAR and Stereo Camera Configurations
Illés Lőrincz, Szabolcs Kocsis Szürke	Analysis of the correlation between depth of discharge and thermal behavior in various lithium-ion cell types
Barham Jeries Barham Farraj, Abdelrahman Alabdallah, Miklós Unger, Ernő Horváth	Enhancing Autonomous Navigation: Real-Time LIDAR Detection of Roads and Sidewalks in ROS 2
Réka Koteczki, Zoltán Szávicza, Boglárka Eisinger Balassa	Exploring the link Between Ride-Sharing Experience and Autonomous Vehicle Acceptance in the Context of Sustainable Mobility
László Illés Orova, Máté Kapocsi, Zoltán Pusztai	Steering System Modification for Autonomous Test Vehicle and the Measurement Steering Geometry
Gerda Bak, Regina Reicher	Relationship of the Security Awareness and the Value Chain
Brendon Axel Vagdalt, Ferenc Szlivka, Gusztáv Fekete, Ákos Jányoki, Ildikó Molnár	Reduction of energy demand and environmental impact in office buildings by natural ventilation: A case study
Emil Nagy, Árpád Török, József Pázmány	Validation of the Energy Consumption of an Electric Vehicle System Model in the 3D Environment of the High-speed Handling Module of the ZalaZONE Automotive Proving Grounds
Daniel Simon	Supplier Collaboration and Trust Enablers of Sustainable and Resilient Supply Chain

Session schedule

October 17th 2025 Management Campus

AI & Control II.; Electromobility II. Management Campus, Room 122		Session Chair: János HOLLÓSI
13:30	Norbert Markó, Áron Ballagi, Tamás Szirányi	Monocular Curb Edge Detection via Robust Geometric Correspondences
13:45	Attila Aradi, Attila Károly Varga	Servo Motors' Predictive Maintenance by Kafka Streams and Deep Learning based on Acoustic Data
14:00	János Hollósi	YOLO-Based Object and Keypoint Detection for Autonomous Traffic Cone Placement and Retrieval for Industrial Robots
14:15	Kitti Gálfi, Loránd Szabó	Replacing Rare Earth Permanent Magnets in Spoke-Type PMSMs for Light Electric Vehicles: A Study on Performance, Material Efficiency, and Cost Optimization
14:45	Coffee Break	Management Campus, Ground Floor Hall

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October 17th 2025 Management Campus

Mobility & Society, Management IV.; Autonomous Vehicle III. Management Campus, Room 123		Session Chair: Alex SUTA
13:30	Matúš Čavojský, Štefan Mikula, Juraj Gazda, Gabriel Bugár	Enhancing Autonomous Vehicle Segmentation with Compact UNET Models and Temporal Input Fusion
13:45	György Pócsik, Ferenc Oláh, Mihály Réger, Richárd Horváth	Daimler-Benz Adhesion Test on Case-hardened and DLC Coated Parts
14:00	Emese Sánta, Petra Katalin Szűcs, Gábor Patocskai, István Lakatos	The Impact on Road Safety of Drivers Under the Influence of Psychoactive Substances
14:45	Coffee Break	Management Campus, Ground Floor Hall

Session schedule

October 17th 2025 Management Campus

Materials Technology III.; Manufacturing Technology I. Management Campus, Room 227		Session Chair: Ferenc TANCSICS
13:30	Sándor Kálmán Jakab, László Lendvai	Effect of Printing Parameters on the Tensile Mechanical Properties of 3D Printed Thermoplastic Polyurethane
13:45	Erzsébet Egyed-Faluvégi, Attila Levente Gergely, József Kántor	Dimensional Precision of Plastic Gear Tooth Profiles Produced by 3D Printing
14:00	Vivien Nemes, Brigitta Fruzsina Szívós, Szabolcs Szalai, Szabolcs Fischer	Measurement Errors and Challenges in Sheet Metal Components When Using Digital Image Correlation (DIC) Systems

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October 17th 2025 Management Campus

Diagnostics & Testing II. Management Campus, Room 228		Session Chair: Ákos CSERVENÁK
13:30	József Richárd Lennert, Dénes Fodor, István Szalay	Development of an Automated Solution for the Error Analysis of MATLAB/Simulink Based Digital Twins
13:45	Péter Óri, István Lakatos	Extended Measurement Methods to Detect Brake Disc Deformation on Board
14:00	László Kajdocsi, Szabolcs Kocsis Szürke	Validation of a Fuzzy Wind Resistance Risk Index for UAV Energy Consumption Using Telemetry Data
14:15	Ákos Cservenák	Educational Aspect of Testing and Diagnostics of Drones

Session schedule

October 17th 2025 Management Campus

Vehicle Development III. Management Campus, Room 122		Session Chair: Dániel FESZTY
15:05	Tamás Koller, Csaba Tóth-Nagy	Replacing Traditional Transmission Models with Artificial Intelligence: A Comparative Study of Physics-Based Models and AI-Driven Approaches
15:20	Krisztián Horváth, Ambrus Zelei	Predicting Gear Noise Levels in Electric Multiple Units Based on Microgeometry Modifications Using Clustering and Inverse Distance Weighting
15:35	Antal Bakonyi, Levente Bodnár, Ambrus Miklós Zelei	Sensitivity analysis of SAC 305 solder polycrystal mechanical parameters and predicted fatigue lifetime with different grain structure
15:50	Bence Zsoldos, András Lajos Nagy, Máté Zöldy	Development process of TGDI SI Engine Combustion simulation model using ethanol-gasoline blends as fuel
16:05	Krisztián Horváth, Ambrus Zelei	The Impact of Pitch Error on the Dynamics and Transmission Error of Gear Drives

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Session schedule

October 17th 2025 Management Campus

Mobility & Society, Management III. Management Campus, Room 123		Session Chair: Boglárka EISINGER BALASSA
15:05	Dorottya Biczi	Legal Challenges for Automated Decision-Making in Self-Driving Vehicles - Liability Issues and Remedies
15:20	István Lakatos, Lea Pődör	Analytical Overview of Accident Emergencies Arising from the Structure and Characteristics of Various Alternative Fuel Vehicles
15:35	Siyabonga Nxumalo	Leveraging AI in Mitigating Road Accidents and Alleviating Traffic Congestion: A South African Perspective
18:00	Gala Dinner	SZE Restaurant

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Session schedule

October 18th 2025 Management Campus

Saturday Management Campus		
To participate in the technical tour, you must pre-register in advance		
09:00-12:00	Technical Tour	In front of Management Campus