

Program overview

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|---------------------------------------|-------------|--|------------------------------------|
| Tuesday, 10 September 2024 | 16:30-16:50 | Hall 1 | Conference Opening Ceremony |
| | 16:50-18:00 | Hall 1 | Plenary Session |
| | 20:00-23:00 | Welcome Cocktail Party – Hotel “Selena” Sozopol | |

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| Wednesday, 11 September 2024 | | Hall 1 | |
| | 9:00-10:40 | Session: Aeronautics | |
| | 10:40-11:30 | Coffee Break | |
| | 11:30-12:50 | Session: Aeronautics | |
| | 12:50-14:00 | Lunch Break | |
| | 14:00-15:40 | Session: Dynamics, Strength and Reliability in Transport | |
| | 15:40-16:30 | Coffee Break | |
| | 16:30-17:50 | Session: Railway Engineering and Technologies | |
| | 20:00-23:00 | Restaurant “Art Hotel” / “При художниците” | |

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| Thursday, 12 September 2024 | | Hall 1 | |
| | 9:00-10:40 | Session: Internal Combustion Engines and Alternative Fuels / Automotive Engineering and Technologies | |
| | 10:40-11:30 | Coffee Break | |
| | 11:30-13:10 | Session: Transport Management and Logistics / Green Transport | |
| | 13:10-14:30 | Lunch Break | |
| | 14:30-16:30 | Session: Closing Discussions | |

Technical Program

Tuesday, 10 September 2024, Hall 1

16:30 Conference Opening Ceremony:

Welcome speech by Prof. Ivan Kralov, DSc, Rector of the Technical University of Sofia, Bulgaria

Welcome speech by Assoc. Prof. Krasimir Nedelchev, PhD, Dean of Faculty of Transport, TU-Sofia, Bulgaria

Welcome speech by Assoc. Prof. N. Nikolov, PhD, Vice-Head Research and Development Sector, TU-Sofia, Bulgaria

Plenary Session

16:50 Aerospace and Automotive Electrification and Mutual Benefits

Dr. Evgeni D. Ganey, CEO, Electromechanical Power Systems (EMPS) Consulting LLC, Torrance, Los Angeles, USA

17:30 Green Energy Framework for Transitioning Stralsund Port to Electric Mobility

M. Amin, Prof. Johannes Gulden, Instituts für Regenerative EnergieSysteme (IRES) Hochschule Stralsund, Germany

Welcome Cocktail Party (20:00)

Section: **Aeronautics****Wednesday, 11 September 2024, Hall 1**

Chairman: 1. Prof. Michael Todorov, PhD, *Technical University of Sofia, Bulgaria*

2. Assoc. Prof. Vladimir Serbezov, PhD, *Technical University of Sofia, Bulgaria*

09:00 **Adaptive Intelligent Backstepping for Real-time Quadrotor Trajectory Tracking Using Feedback Error Learning Approach**

E. Baghelani¹, J. Roshanian¹, M. Teshnehlab¹, K. Georgiev², ¹ *K. N. Toosi University of Technology, Tehran, Iran*, ² *Technical University of Sofia, Bulgaria*

09:20 **Reinforcement Learning Application in Multi-UAV Mapping and Spraying**

A. Farid¹, J. Roshanian¹, V. Serbezov², M. Todrov², ¹ *K. N. Toosi University of Technology, Tehran, Iran*, ² *Technical University of Sofia, Bulgaria*

09:40 **A Control Barrier Function-Based Approach for Safe Autonomous Landing**

A. Mesbah¹, J. Roshanian¹, D. Ginchev², ¹ *K. N. Toosi University of Technology, Tehran, Iran*, ² *Technical University of Sofia, Bulgaria*

10:00 **Leveraging Fuzzy Logic for an Asteroid Mission: Introducing a New Fuzzy Algorithm**

M. Azadmanesh¹, K. Georgiev², M. Todrov², ¹ *K. N. Toosi University of Technology, Tehran, Iran*, ² *Technical University of Sofia, Bulgaria*

10:20 **Thermodynamic Model of the Air Quality in Pressurized Aircraft Cabin**

B. Phan, V. Horák, P. Poduška, *University of Defence, Brno, Czech Republic*

10:40 **End of Session**

Coffee Break

Section: Aeronautics**Wednesday, 11 September 2024, Hall 1**

- Chairman:** 1. Prof. Jafar Roshanian, PhD, *K. N. Toosi University of Technology, Iran*
2. Assoc. Prof. Krasin Georgiev, PhD, *Technical University of Sofia, Bulgaria*
- 11:30 **Aerospace Cybernetics: Main Areas of Development**
P. Hadzhiev, D. Ginchev¹, ¹ *Technical University of Sofia, Bulgaria*
- 11:50 **Future of Emergency Services: Utilizing Drone Technology, GIS and 5G Network**
R. Ilieva, D. Ginchev, A. Angelov, *Technical University of Sofia, Bulgaria*
- 12:10 **Earth Satellite – Space Habitat**
Z. Zlatkov, K. Aleksiev, D. Ruzhev, R. Nikolova, N. Veselinov, *Technical University of Sofia, Bulgaria*
- 12:30 **Testing the Strength of Carbon Fiber Reinforced Polymer Composites Specimens
at Cryogenic Temperatures**
K. Nikolov, R. Nikolova, V. Tsonev, N. Veselinov, *Technical University of Sofia, Bulgaria*
- 12:50 **End of Session**

Lunch Break

Section: **Dynamics, Strength and Reliability in Transport**

Wednesday, 11 September 2024, Hall 1

Chairman: Assoc. Prof. Nikolay Nikolov, PhD, *Technical University of Sofia, Bulgaria*

14:00 **Dynamic Analysis of a Bridge Crane in the Mode of Lifting and Driving of the Crane**
V. Tsonev, G. Stoychev, P. Sinapov, *Technical University of Sofia, Bulgaria*

14:20 **Dynamic Behavior Assessment of an Automotive Component through Virtual Prototyping**
G. Todorov, K. Kamberov, M. Semkov, *Technical University of Sofia, Bulgaria*

14:40 **Forced Vibrations Induced by an Unbalanced Rotor Mounted in a Balancing Machine**
Petko Sinapov, *Technical University of Sofia, Bulgaria*

15:00 **Mechanical Properties of Laser-Sintered Specimens**
N. Nikolov, V. Tsonev, K. Nikolov, *Technical University of Sofia, Bulgaria*

15:20 **Natural Frequency Analysis of a 3D Printed Intake Trumpet for a Racing Car**
K. Georgieva, Ts. Gechev, K. Nedelchev, *Technical University of Sofia, Bulgaria*

15:40 **End of Session**

Coffee Break

Section: Railway Engineering and Technologies**Wednesday, 11 September 2024, Hall 1****Chairman:** Assist. Prof. Vladislav Maznichki, PhD, *Technical University of Sofia, Bulgaria***16:30 Development and verification of computational models of handrail for shunters in railway wagons**S. Slavchev, V. Maznichki, S. Krastev, S. Purgic, *Technical University of Sofia, Bulgaria***16:50 Study of the dynamics and strength of a covered wagon with sandwich-type components in the body structure (online)**J. Gerlici¹, A. Lovska¹, A. Rybin², ¹ *University of Zilina in Zilina, Slovak Republic*, ² *Ukrainian State University of Railway Transport, Kharkiv, Ukraine***17:10 Investigation of the strength of the open wagon body loaded with containers taking into account their elastic-friction interaction (online)**A. Lovska¹, J. Gerlici¹, J. Dižo¹, P. Rukavishnikov²,
¹ *University of Zilina in Zilina, Slovak Republic*, ² *Ukrainian State University of Railway Transport, Kharkiv, Ukraine***17:30 Modelling the repair equipment reliability for locomotive depots (online)**O. Krashenin, O. Oboznyi, O. Shapatina, O. Anatskyi, S. Bobrytskyi, A. Zalata, *Ukrainian State University of Railway Transport, Kharkiv, Ukraine***17:50 End of Session****Dinner (20:00)**

Section: **Automotive Engineering and Technologies/
Internal Combustion Engines and Alternative Fuels**

Thursday, 12 September 2024, Hall 1

Chairman: Assoc. Prof. N. Pavlov, PhD, *Technical University of Sofia, Bulgaria*

09:00 **Determination of Engine Torque and Power Characteristics by Measuring the Indicators of Vehicle Dynamic Performance**

N. Pavlov, B. Gigov, Y. Yoskov, K. Georgieva, *Technical University of Sofia, Bulgaria*

09:20 **Ride and Handling Characteristics of a Vehicle Equipped with an Electromechanical Regenerative Damper (Online)**

H. Y. Yeşilyurt, T. Tağrikulu, M. Büyükköprü, O. T. Sen, Öz. Akalın, *Istanbul Technical University, Türkiye*

09:40 **Variable-Speed Autonomous Path Tracking of a Vehicle via Robust Linear Model Predictive Controller (Online)**

V. B. Yangin, Y. Yalcin, Oz. Akalin, *Istanbul Technical University, Türkiye*

10:00 **A Brief Review of Automotive Driving Simulators**

B. Borchev, Ts. Gechev, N. Pavlov, *Technical University of Sofia, Bulgaria*

10:20 **Study on the Early Pre-injection Strategy in DI Diesel Engine Under High EGR Rate (Online)**

S. Mihalkov, D. Stefanov, P. Punov, *Technical University of Sofia, Bulgaria*

10:40 **End of Session**

Coffee Break

Section: Transport Management and Logistics / Green Transport**Thursday, 12 September 2024, Hall 1****Chairman:** Assoc. Prof. Dimitar Grozev, PhD, *University of Ruse, Bulgaria*

- 11:30 **A Graph-Analytical Method for Determining the Speed of a Car in an Expert Investigation of a Pedestrian Accident**
D. Hlebarski, M. Savova-Mratsenkova, *Technical University of Sofia, Bulgaria*
- 11:50 **Model for Determining the Periodicity of Maintenance of Vehicles Equipped with an Additional Automotive LPG Gas System**
D. Grozev, M. Milchev, *University of Ruse, Bulgaria*
- 12:10 **Organization of Operations of a Transport Company Registered in the City of Ruse**
A. Aleksandrov, D. Grozev, *University of Ruse, Bulgaria*
- 12:30 **Improving Energy Efficiency of Crawler Excavator VOLVO EC300EL with Hybrid System**
P. Ivanov, V. Tsonev, *Technical University of Sofia, Bulgaria*
- 12:50 **Comparisson of Fuel Consumption between Wheel Loader with Hydrodynamic and Hydrostatic Transmission**
P. Ivanov, V. Tsonev, *Technical University of Sofia, Bulgaria*
- 13:10 **Green Energy Framework for Transitioning Stralsund Port to Electric Mobility (backup plenary lecture)**
M. Amin, J. Gulden, *Instituts für Regenerative Energie Systeme (IRES), Germany*

Lunch Break

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