

Program overview

Sunday, 10 September 2023	16:30-17:00	Hall 1	Conference Opening Ceremony
	17:00-18:00	Hall 1	Plenary Session
	20:00-23:00	Welcome Cocktail Party – Hotel “Selena” Sozopol	

Monday, 11 September 2023		Hall 1	
	9:00-11:00	Session: Aeronautics	
	11:00-11:30	Coffee Break	
	11:30-13:00	Session: Aeronautics	
	13:00-14:00	Lunch Break	
	14:00-16:00	Session: Internal Combustion Engines and Alternative Fuels	
	16:00-16:30	Coffee Break	
	16:30-18:00	Session: Transport Management and Logistics / Transport Infra-Structure	
	20:00-23:00	Restaurant “The Windmill” / “Вятърна мелница”	

Tuesday, 12 September 2023		Hall 1	
	9:00-11:00	Session: Automotive Engineering and Technologies	
	11:00-11:30	Coffee Break	
	11:30-13:30	Session: Dynamics, Strength and Reliability in Transport	
	13:30-14:30	Lunch Break	
	14:30-16:00	Session: Railway Engineering and Technologies	

Technical Program

Sunday, 10 September 2023, Hall 1

16:30 Conference Opening Ceremony:

Welcome speech by Prof. Michael Todorov, 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 speech by Mr. Jesus Caballero, CEO of SOF Connect, Sofia Airport, Bulgaria

Plenary Session

17:00 World Review of Energy Consumption and Particularly in Transport

Prof. Fawaz Massouh, PhD, *ENSAM University, France*

17:30 Influence of Cell Geometrical Parameters on the Performance of SOFC

Ts. Gechev, P. Punov, *Technical University of Sofia, Bulgaria*

Section: **Aeronautics****Monday, 11 September 2023, Hall 1**

Chairman: 1. Prof. Fawaz Massouh, PhD, *ENSAM University, France*

2. Prof. Michael Todorov, PhD, *Technical University of Sofia, Bulgaria*

09:00 **Enhancing Efficiency of Multi-Agent Flying Systems Using Optimization**

B. Ebrahimi¹, A. Bataleblu², J. Roshanian¹, V. Serbezov³, ¹*K. N. Toosi University of Technology, Tehran, Iran,*
²*Free University of Bolzano-Bozen, Bolzano, Italy,* ³*Technical University of Sofia, Bulgaria*

09:20 **A Modified Model - Reference Adaptive Control Scheme for Airplane Landing**

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

09:40 **Evaluation of the Risk of Radio Altimeter Interference**

K. Georgiev, *Technical University of Sofia, Bulgaria*

10:00 **Data-Driven Fault Diagnosis in Spacecraft: an Overview**

M. Azadmanesh¹, J. Roshanian¹, M. Hassanalian², K. Georgiev³, M. Todrov³, ¹*K. N. Toosi University of Technology, Tehran, Iran,* ²*New Mexico Tech, US,* ³*Technical University of Sofia, Bulgaria*

10:20 **Process of Design and Construction of an Air Traffic Monitoring System for Learning Purposes**

P. Georgiev¹, S. Stavrev², D. Ginchev¹, ¹*Technical University of Sofia, Bulgaria,* ²*Paisii Hilendarski University of Plovdiv, Bulgaria*

10:40 **Design and Research of a Prototype Unmanned Aerial Vehicle with Vertical Takeoff**

M. Serafimov, M. Alexiev, P. Georgiev, D. Ginchev, *Technical University of Sofia, Bulgaria*

Coffee Break

Section: **Aeronautics****Monday, 11 September 2023, 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 **Advances in Added Mass Calculation of Airship Bodies**
 D. López, D. Domínguez, A. García, A. Delgado, J. Gonzalo, *University of Leon, Spain*
- 11:45 **Satellite Magnetic Attitude Control Based on PD Controller with Particle Swarm Optimization**
 M. F. Erturk¹, C. Hajiyev², ¹ *Turkish Aerospace Industries, Türkiye*, ² *Istanbul Technical University, Türkiye*
- 12:00 **A Method for Improving the Sounding Pulse Shape of an Ultra-Wideband Radar**
 M. Zhelyazov, S. Uzunova, *Technical University of Sofia, Bulgaria*
- 12:15 **Possibilities for the Application of Ultra-Wideband Radar Signals in the Detection and Tracking of Small Targets**
 S. Uzunova, *Technical University of Sofia, Bulgaria*
- 12:30 **Investigating the Feasibility of Extending the Corrosion Inspection Period of the Aluminium Beams in the Airbus A320 Entrance Areas**
 M. Velinov, V. Tsonev, K. Penkov, N. Kuzmanov, *Technical University of Sofia, Bulgaria*
- 12:45 **PIV Investigation of the Flow-field Characteristics of a Hovering UAV Rotor in Ground Effect**
 F. Panayotov, R. Nikolova, M. Todorov, *Technical University of Sofia, Bulgaria*
- 13:00 **Experimental Study of UAV Rotor Performance during Vertical Landing in Ground Effect**
 F. Panayotov¹, V. Serbezov¹, R. Nikolova¹, I. Dobrev², M. Todorov¹,
¹ *Technical University of Sofia, Bulgaria*, ² *ENSAM University, France*

Lunch Break

Section: **Internal Combustion Engines and Alternative Fuels**

Monday, 11 September 2023, Hall 1

Chairman: Assoc. Prof. P. Punov, PhD, *Technical University of Sofia, Bulgaria*

- 14:00 **Experimental and Numerical Investigation on the Effects of Using Natural Gas in a Monovalent Spark Ignition Engine (Online)**
R. Popa¹, A. Clenci¹, R. Chiriac², R. Niculescu¹, V. Iorga-Simăn¹, ¹ *National University of Science and Technology POLITEHNICA Bucharest, University Centre of Pitești, Romania,* ² *National University of Science and Technology POLITEHNICA Bucharest, University Centre of Bucharest, Romania*
- 14:20 **Improvement of EGR Valve Performance Using a Virtual Prototyping-Based Methodology (Online)**
G. Todorov, K. Kamberov, Ts. Ivanov, *Technical University of Sofia, Bulgaria*
- 14:40 **Life Cycle Assessment Models of Cars Using Different Fuels or Energy Sources**
I. Evtimov, R. Ivanov, *University of Ruse, Bulgaria*
- 15:00 **Energy Consumption of Electric Bicycles and Small Electric Scooters in City Conditions**
R. Ivanov, N. Dimitrov, I. Minkovska, *University of Ruse, Bulgaria*
- 15:20 **Numerical and Experimental Study of Passive Pre-chamber Turbulent Jet Ignition on Wankel Engine**
H. Dillice¹, O. A. Kutlar¹, O. O. Taskiran², O. Cihan³, H. Arslan¹, A. Calik¹, A. Cetiner⁴,
¹ *Istanbul Technical University, Türkiye,* ² *Design Project Office, Turkish Naval Forces, Türkiye,*
³ *Sakarya University of Applied Sciences, Hendek Vocational School, Türkiye*
⁴ *Turkish-German University, Türkiye*

Coffee Break

Section: **Transport Management and Logistics / Transport Infra-Structure**

Monday, 11 September 2023, Hall 1

Chairman: Assoc. Prof. D. Grozev, PhD, *University of Ruse, Bulgaria*

16:30 **Improved Methodology for the Training of Licensed Candidates
for Motor Vehicle Drivers Category "B"**

A. Asenov, V. Pencheva, B. Ivanov, N. Paunov, *University of Ruse, Bulgaria*

16:50 **Enhancing Inventory Optimization and Management for Automotive Repair Shops**

I. Georgiev^{1,2}, D. Grozev², I. Beloev², M. Milchev², V. Gladkova²,

¹ *Bulgarian Academy of Sciences, Bulgaria*, ² *University of Ruse, Bulgaria*

17:10 **Methodology for Using Unmanned Aircraft Devices for Photographing
and Subsequent Analysis of Road Junctions**

D. Grozev, I. Beloev, *University of Ruse, Bulgaria*

17:30 **Transport Routes Optimization Through Genetic Algorithms**

U. Hacizade, I. Kaya, *Halic University, Türkiye*

Section: Automotive Engineering and Technologies**Tuesday, 12 September 2023, Hall 1****Chairman:** Assoc. Prof. N. Pavlov, PhD, *Technical University of Sofia, Bulgaria***09:00 Application of Piezoelectric Shunt Damping Treatment for Brake Squeal Suppression**A. Yavuz, O. T. Sen, *Istanbul Technical University, Türkiye***09:20 Trajectory Following of a Vehicle via Computationally Improved Explicit Nonlinear Model Predictive Controller**V. B. Yangin, Ö. Akalin, Y. Yalçın, *Istanbul Technical University, Türkiye***09:40 Ride Quality and Handling Characteristics of a Vehicle with Active Anti-Roll Bar Suspension**B. Canpolat, Ö. Akalin, H. Y. Yeşilyurt, *Istanbul Technical University, Türkiye***10:00 Maneuverability and Stability of an Articulated Bus for Bus Rapid Transit System**V. Sakhno¹, O. Kravchenko², V. Poljakov¹, I. Chovcha¹, J. Dižo², M. Blatnický²,¹*National Transport University, Ukraine*, ²*University of Žilina, Slovak Republic***10:20 Coefficient of Adhesion Determination by the Method of Full Braking Force Applied by the Towed Vehicle**A. Mazgarev, B. Gigov, N. Pavlov, *Technical University of Sofia, Bulgaria***Coffee Break**

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

Tuesday, 12 September 2023, Hall 1

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

- 11:30 **S235 Steel Rods Corrosion Behavior According to Their Manufacturing Process**
N. D. Nikolov, V. Tsonev, Y. Marcheva, *Technical University of Sofia, Bulgaria*
- 11:45 **Effect of Static Undeterminacy on a Longitudinal Crack in a Functionally Graded Frame Under Impact Load (Online)**
V. Rizov, *University of Architecture, Civil Engineering and Geodesy, Bulgaria*
- 12:00 **Analysis of Impact Induced Delamination in a Plane Frame Supported by Elastic Springs (Online)**
V. Rizov, *University of Architecture, Civil Engineering and Geodesy, Bulgaria*
- 12:15 **Fatigue Damage Evaluation of a Link for Slat Chain Conveyor**
V. Tsonev, G. Stoychev, N. Kuzmanov, K. Penkov, *Technical University of Sofia, Bulgaria*
- 12:30 **Forced Vibrations of an Elastically Supported Rigid Rotor at Different Types of Unbalance**
P. Sinapov, *Technical University of Sofia, Bulgaria*
- 12:45 **Investigation of the Corrosion Resistance of Complex Alloyed Hypereutectic Aluminium-Silicon Alloys**
K. Kamarska, D. Dimova, B. Dochev, M. Dubaradjieva, N. Peeva, T. Demirev,
Technical University of Sofia, Plovdiv Branch, Bulgaria
- 13:00 **Investigation of the Structure and Mechanical Properties of Alloys AlSi25Cu4Cr and AlSi25Cu5Cr Alloyed with Refractory Metals**
B. Dochev¹, D. Dimova¹, I. Panov¹, Y. Boichev², ¹ *Technical University of Sofia, Plovdiv Branch, Bulgaria,*
² *Bulgarian Academy of Sciences, Bulgaria*

Lunch Break

Section: Railway Engineering and Technologies**Tuesday, 12 September 2023, Hall 1****Chairman:** Assoc. Prof. Ján Dižo, PhD, *University of Žilina, Slovak Republic***14:30 Determination of the Transverse Load of the Box Wagon Body with Sandwich Panel Walls**S. Panchenko¹, J. Gerlici², A. Lovska², G. Vatulia³, A. Rybin¹,¹ *Ukrainian State University of Railway Transport, Ukraine*, ² *University of Žilina, Slovak Republic*,³ *O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine***14:50 Research into the Strength of the Discharge Door of an Open Wagon Transporting Containers**J. Gerlici¹, A. Lovska¹, G. Vatulia², J. Dizo¹, M. Blatnicky¹,¹ *University of Žilina, Slovak Republic*,² *O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine***15:10 Optimization of Railway Cantilever Based on Physical Test and Non-linear Computation Model with Finite Element Method**S. Slavchev, V. Maznichki, S. Krastev, *Technical University of Sofia, Bulgaria***15:30 Measurement System for Determining the Main Pneumatic Parameters of Train Braking System**S. Krastev, K. Velkov, S. Slavchev, V. Maznichki, *Technical University of Sofia, Bulgaria*