# Program overview

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<tr>
<th>Saturday, 15 September 2018</th>
<th>16:30-16:50</th>
<th>Hall 1</th>
<th>Conference Opening Ceremony</th>
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<tr>
<td>17:00-18:30</td>
<td>Hall 1</td>
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<td>Plenary Session</td>
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<td>19:30-22:00</td>
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<td>Welcome Cocktail Party</td>
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<tr>
<th>Saturday, 15 September 2018</th>
<th>9:00-11:00</th>
<th>Session: Aeronautics</th>
<th>Session: Internal Combustion Engines</th>
<th>Session: Transport Management and Logistics</th>
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<tr>
<td>11:00-11:30</td>
<td>Coffee Break</td>
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<tr>
<td>11:30-13:00</td>
<td>Session: Aeronautics</td>
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<td>Session: Transport Management and Logistics</td>
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<td>13:00-14:00</td>
<td>Lunch Break</td>
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<td>14:00-16:00</td>
<td>Session: Automotive Engineering</td>
<td>Session: Railway Engineering and Technologies</td>
<td>Session: Dynamics, Strength and Reliability of Vehicles</td>
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Technical Program

Saturday, 15 September 2018

Hall 1

16:30  Conference Opening Ceremony

Plenary Session

17:00  Optimal designs of electric vehicles for a long-range mobility
       Z. Dimitrova
       Research and Innovation Department, PSA Groupe, France

17:20  Shell Eco Marathon – presentation of the Technical University – Sofia team
       C. Gechev
       Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

17:40  Other presentations

19:30  Welcome Cocktail Party
Section: Aeronautics
Sunday, 16 September 2018
Hall 1

Chairman: Prof. F. Massouh, PhD
Arts et Métiers - ParisTech, DynFluid laboratory, ENSAM university, France

09:00 Challenging low Reynolds - SWT blade aerodynamics
D. Kądrowski1, M. Kulak, M. Lipian, M. Stępień, P. Baszczyński, K. Zawadzki and M. Karczewski
Institute of Turbomachinery, Lodz University of Technology, Poland

09:20 Small wind, big potential: HAWT design case study
F. Grapow, D. Raszewska, R. Skalski, J. Czarnecki, K. Telega, M. Miller, P. Rogowski and M. Prociów
Institute of Turbomachinery, Lodz University of Technology, Poland

09:40 Experimental investigation of a helicopter rotor model in hover
F. Panayotov1, I. Dobrev, F. Massouh and M. Todorov1
Department of air transport, Technical University - Sofia, Bulgaria

10:00 Development and construction of a hot fiber type air speed meter
S. Shivachev, I. Vasilev, F. Massouh and I. Dobrev
Department of air transport, Technical University - Sofia, Bulgaria

10:20 PIV investigation of flow around the Ahmed body with different slant angle
I. Dobrev1, F. Massouh1, A. Danlos1 and M. Todorov1
Arts et Métiers – ParisTech, DynFluid laboratory, Paris, France

10:40 Effective use of a helicopter with a Bambi bucket firefighting system in Bulgaria
D. Seyzinski, I. Georgiev and H. Panayotov
Department of Transport and Aeronautical Engineering, Technical University – Sofia, Plovdiv Branch, Bulgaria

Coffee Break
Section: Aeronautics
Sunday, 16 September 2018
Hall 1

Chairman: Prof. M. Todorov, PhD
Department of Aeronautics, Technical University – Sofia, Bulgaria

11:30 Checking the correct operation of main measuring instruments on the flight model and prototype of AIST small spacecraft
A. Sedelnikov¹, E. Khnyryova and T. Ivashova
Department of Space Engineering, Samara National Research University, Russia

11:50 Identification of BDS Registers
T. Topková and S. Pleninger
Department of Air Transport, Czech Technical University in Prague, Czech Republic

12:10 Problem of the GNSS jamming detector positioning
J. Hospodka, J. Kraus and S. Pleninger
Department of Air Transport, Czech Technical University in Prague, Czech Republic

12:30 Exploring the degree of impact of perturbation factors on the accuracy of GPS positioning
Ts. Zhelyazkova, V. Radkov
Department of air transport, Technical University - Sofia, Bulgaria

12:50 Consideration regarding pulse detonation engine
V. Prisacariu¹, C. Rotaru¹, I. Cîrciu¹ and M. Niculescu
¹Aviation Department, Henri Coandă Air Force Academy of Braşov, Romania

13:10 Theoretical maximum of turbine inlet temperature considering the thermal efficiency improvement of gas turbine engines
B. Varga, L. Kavas and G. Óvári
Department of Aircraft and Engine, National University of Public Service, Szolnok, Hungary

13:30 Airplane terminal servicing – influence of aircraft stand width on turnaround time
P. Líkař, J. Kraus and M. Špák
Department of Air Transport, Czech Technical University in Prague, Czech Republic

Lunch Break
Section: Aeronautics
Monday, 17 September 2018
Hall 1

Chairman: Assoc. Prof. Ts. Stoyanov, PhD
Department of Aeronautics, Faculty of Transport, TU-Sofia, Bulgaria

09:00 Global approach to optimize settings of ship radars repair procedures
E. Guglev\textsuperscript{1} and Ch. Alexandrov
\textsuperscript{1}Faculty of Navigation, Nikola Vaptsarov Naval Academy, Varna, Bulgaria

09:20 Modeling of aircraft jet noise in airports
H. Georgieva\textsuperscript{1} and Krasin Georgiev
\textsuperscript{1}Mechanical Department, Technical University – Sofia, Bulgaria

09:40 An air traffic conflict resolution under wind conditions study
P. Petrov, I. Dimitrov
Department of Aeronautics, Technical University – Sofia, Bulgaria

10:00 Concept of using artificial intelligence to assess and predict the psycho-physiological state of aviation personnel
G. Maklakov
Space research and technology institute, Bulgarian Academy of Sciences, Sofia, Bulgaria

10:20 Personalized preventive chronomedicine as an effective tool for rehabilitation and prophylaxis of disorders in the psychosomatic condition of the operators of ergatic systems
G. Maklakov\textsuperscript{1} and N. Georgieva
\textsuperscript{1}Space research and technology institute, Bulgarian Academy of Sciences, Sofia, Bulgaria

10:40 Study of aerodynamic characteristics of blown box-wing for V/STOL aircraft
P. Roglev
EOL Technica EOOD, Bulgaria

11:00 Shock-wave-drag reduction using supercritical airfoil
O. Elsayed and E. Essadiqi
International University of Rabat, Maroc
Coffee Break

Section: **Automotive Engineering**

**Sunday, 16 September 2018**

**Hall 1**

**Chairman:** Assoc. Prof. St. Dimitrov, PhD,
Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

14:00 **Automated charging of electric vehicles using technologies from automated driving**
Z. Dimitrova
Research and Innovation Department, PSA Groupe, France

14:20 **Dynamics simulation of mechanical gearbox vibration**
J. Furch and C. Tran
Faculty of Military Technology, University of Defence, Brno, Czech Republic

14:40 **Experimental investigation of the electric vehicle gearbox efficiency**
J. Břoušek and T. Zvolský
Department of Vehicles and Engines, Technical University of Liberec, Czech Republic

15:00 **Cascade control algorithm of test bench for investigation of load-sensing electrohydraulic steering systems**
A. Mitov¹, J. Kralev and I. Angelov¹
Department of Hydroaerodynamics & Hydraulic machines, Technical University – Sofia, Bulgaria

15:20 **Life cycle assessment for electric and conventional cars concerning energy consumption and CO2 emissions**
I. Evtimov, R. Ivanov, G. Kadikyanov and G. Staneva
Department of Engines and Vehicles, University of Ruse, Bulgaria

Coffee Break

Section: **Automotive Engineering**
Sunday, 16 September 2018

Hall 1

Chairman: Prof. L. Kunchev, PhD,
Department of Combustion Engines, Automobile Engineering and Transport, TU-Sofia, Bulgaria

16:30 Identifying vehicle and collision impact by applying the principle of mechanical energy
S. Karapetkov, H. Uzunov, S. Dechkova
Technical University – Sofia, Faculty and College – Sliven, Bulgaria

16:50 Investigating collisions following metal crash barrier impact
Stanimir Karapetkov, Hristo Uzunov, Silvia Dechkova
Technical University – Sofia, Faculty and College – Sliven, Bulgaria

17:10 Methodology of testing and optimal setting of an asynchronous traction drive for electric vehicles
V. Dimitrov
Department of Power Engineering and Electrical Equipment in Transport, Todor Kableshkov University of Transport – Sofia, Bulgaria

17:30 Overview of theoretical and experimental studies related to tire vibrational behaviour and its effect on the suspension of a passenger car
Z. Georgiev
Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

17:50 Investigation of the vibrational behaviour of the components of a car suspension
Z. Georgiev and L. Kunchev
Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

18:10 Regenerative braking possibilities of an electric motorcycle
G. Yanachkov and S. Hesapchieva
Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

Official Banquet

Section: Internal Combustion Engines
Sunday, 16 September 2018
Hall 2

Chairman: Assoc. Prof. P. Punov, PhD
Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

09:00 Automotive compressor: effect of an electric throttle in the upstream circuit on the surge limit
P. Podevin¹, A. Danlos¹, M. Deligant, P. Punov, A. Clenci and G. Bourdonnaye
¹Laboratoire de Chimie Moléculaire, Génie des procédés Chimiques et Énergétique, HESAM Université, Paris, France

09:20 Experimental optimisation of multiple pilot injection strategy in an automotive direct injection diesel engine
P. Punov¹, T. Gechev¹, S. Mihalkov¹, P. Podevin and D. Barta
¹Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

09:40 On the assessment of autoignition delay for diesel fuel and biodiesel B20
B. Radu, A. Racovitza and R. Chiriac
Faculty of Mechanical Engineering, University Politehnica of Bucharest, Romania

10:00 Detailed speciation of emissions from a diesel engine fuelled with canola methyl ester
G. Koszalka and J. Hunicz
Faculty of Mechanical Engineering, Lublin University of Technology, Poland

10:20 HCCI combustion control using advanced gasoline direct injection techniques
J. Hunicz¹, M. Mikulski and H. Komsta¹
¹Faculty of Mechanical Engineering, Lublin University of Technology, Poland

Coffee Break
Section: Internal Combustion Engines

Sunday, 16 September 2018

Hall 2

Chairman: Assoc. Prof. P. Punov, PhD
Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

11:30 The impact of selected biofuels on the performance parameters of the Common Rail power system in the utility engine
P. Krzaczek¹, A. Rybak and A. Bochniak
¹Department of Power Engineering and Transportation, University of Life Sciences, Lublin, Poland

11:50 A study of hydrogen fuel influence on compression ignition engine performance
E. Dimitrov, B. Gigov, S. Pantchev, P. Michaylov and M. Peychev
Department of Combustion Engines, Automobile Engineering and Transport, Technical University – Sofia, Bulgaria

12:10 An experimental study of the cylinder pressure at work of diesel engine with generator
V. Nikolov and K. Ambarev
Department of Transport and Aircraft Equipment and Technologies, Technical University – Sofia, Plovdiv Branch, Bulgaria

12:30 An experimental study of the fuel consumption and opacity of the exhaust gas at work of diesel generator
K. Ambarev and V. Nikolov
Department of Transport and Aircraft Equipment and Technologies, Technical University – Sofia, Plovdiv Branch, Bulgaria

Launch break
Section: **Railway Engineering and Technologies**

**Sunday, 16 September 2018**

**Hall 2**

**Chairman:** Assoc. Prof. K. Velkov, PhD

*Department of Railway engineering, Technical University – Sofia, Bulgaria*

13:30 **Dynamic loading of the tank container on a flat wagon with account of fittings displacement relating to the stops**

O. Fomin¹, J. Gerlici, A. Lovskaya, M. Gorbunov, K. Kravchenko, P. Prokopenko and T. Lack

¹*Department of Cars and Carriage Facilities, State University of Infrastructure and Technology, Kyiv, Ukraine*

13:45 **Change in the maintenance strategy as a method of improving the efficiency of the process of operation of railway means of transport**

M. Szkoda¹ and M. Satora

¹*Institute of Rail Vehicles, Cracow University of Technology, Poland*

14:00 **Research of safety indicators of diesel train movement with two-stage spring suspension**

A. Kuzyshyn¹, A. Batig, S. Kostritsa¹, J. Sobolevska, V. Kovalchuk, S. Dovhanyuk¹ and O. Voznyak

¹*Dnipropetrovsk National University of Railway Transport named after Academician V. Lazaryan, Dnieper, Ukraine*

14:15 **Studies of possibilities for efficient use of regenerative braking in DC traction power supply**

T. Lalev, *Siemens Mobility EOOD, Sofia, Bulgaria*

14:30 **Technical and scheme solutions for the construction of traction substations in the railway infrastructure of the Republic of Bulgaria. Structural and functional features**

T. Lalev, *University of Transport “Todor Kableshkov”, Sofia, Bulgaria*

14:45 **Strength analysis of hopper freight wagon with regard to lightweight design**

S. Slavchev, V. Maznichki, V. Stoilov and S. Purgic

*Department of Railway engineering, Technical University – Sofia, Bulgaria*

15:00 **Replacement of the pressure converter DÜ15 in the brake equipment of the locomotives series 06 and 46**

K. Velkov, O. Krastev and V. Maznichki

*Department of Railway engineering, Technical University – Sofia, Bulgaria*

15:15 **Improving noise immunity of an audio frequency track circuit**

I. Saiapina¹, M. Babaiev, O. Ananieva and S. Nakonechna¹

¹*Telecommunication Technologies and Automation Department, State University of Infrastructure and Technologies, Kyiv, Ukraine*

**Coffee Break**
Section: **Dynamics, Strength and Reliability of Vehicles**

**Sunday, 16 September 2018**

**Hall 2**

**Chairman:** Assoc. Prof. G. Stoychev, PhD

*“Strength of materials” Department, Technical University – Sofia, Bulgaria*

16:00 **Using statistical methods to determine load-bearing capacity of rectangular CFST columns**

G. Vatulia\(^1\), Y. Orel\(^1\), M. Rezunenko and N. Panchenko

\(^1\)Structural Mechanics and Hydraulics Department, Ukrainian State University of Railway Transport, Kharkiv, Ukraine

16:20 **Modelling of motorway bridge spans under modernization with consideration of rheological properties of the materials**

A. Lobiak\(^1\), A. Plugin, L. Kravtsiv\(^1\) and O. Kovalova

\(^1\)Structural Mechanics and Hydraulics Department, Ukrainian State University of Railway Transport, Kharkiv, Ukraine

16:40 **Experimental research of steel-concrete load bearing components of bridge column piers**

N. Smirnova\(^1\), S. Bugayevskiy, A. Ihnatenko, O.Synkovska and M. Kovalov

\(^1\)Road Building and Maintenance Department, Kharkov National Automobile and Highway University, Kharkiv, Ukraine

17:00 **An experimental and numerical study of forces and residual stresses in AISI 316L stainless steel joints due to conventional and pulse gas tungsten arc welding**

I. Muhtarov\(^1\), T. Iamboliev, V. Tsonev

\(^1\)Visteon Electronics Bulgaria, Sofia, Bulgaria

17:20 **Impact of plastic deformation of S235JR steel rods on their mechanical properties and corrosion behavior in NaCl solution**

V. Tsonev\(^1\), N. Nikolov\(^1\) and Y. Marcheva

\(^1\)“Strength of materials” Department, Technical University – Sofia, Bulgaria

17:40 **Development of specialized software for determining the strength of high-speed rotating disks**

B. Dimova\(^1\) and T. Marinova

\(^1\)“Strength of materials” Department, Technical University – Sofia, Bulgaria

*Official Banquet*
Section: Transport Management and Logistics
Sunday, 16 September 2018
Hall 3

Chairman: Assoc. Prof. S. Stoilova, Dr.Sc.
Department of Railway engineering, Technical University – Sofia, Bulgaria

09:00 An approach for choice the optimal route and type of transport for freight carriage using compromise programming
S. Stoilova
Department of Railway engineering, Technical University – Sofia, Bulgaria

09:20 Approach of siting a support facility for transporting supplies in emergency cases in the Republic of Bulgaria
E. Demir
Department of Civil Engineering, College of Engineering, Antalya Bilim University, Turkey

09:40 On the issue of formalization and mathematical modelling of threat space of transport infrastructure object security and some approaches to its decision
L. Elisov¹ and N. Ovchenkov
¹Moscow State Technical University of Civil Aviation, Moscow, Russian Federation

10:00 Increasing the accuracy of evaluation in selecting a location for establishing an intermodal terminal
S. Martinov
Department of Railway engineering, Technical University – Sofia, Bulgaria

10:20 System for automated management of the logistic process through control points
S. Martinov¹, S. Kostova-Toleva, V. Popov and M. Zhelev
¹Department of Railway engineering, Technical University – Sofia, Bulgaria

Coffee Break
Chairman: Assoc. Prof. S. Stoilova, Dr.Sc.  
*Department of Railway engineering, Technical University – Sofia, Bulgaria*

11:30 **Studying the work of universal automotive service**  
M. Milchev and D. Grozev  
*Transport Department, University of Ruse, Bulgaria*

11:50 **Study mode of operation at a border crossing point Rousse-Danube Bridge considered as a mass service system with incoming flow of cars in non-stationary mode of operation**  
D. Grozev¹, V. Pencheva¹, I. Georgiev and I. Beloev¹  
*Transport Department, University of Ruse, Bulgaria*

12:10 **Analysis of some factors affecting the vehicles life and operation costs**  
B. Borisov  
*“Strength of materials” Department, Technical University – Sofia, Bulgaria*

12:30 **Assessment of the safety of urban passenger transport**  
V. Pencheva, R. Angelova, P. Stoyanov and D. Grozev  
*Transport Department, University of Ruse, Bulgaria*

12:50 **Bulgarian policy for regional development and its implications on air transport system**  
D. Yordanova and M. Pencheva  
*Transport Department, University of Ruse, Bulgaria*  

*Launch Break*
Section: Dynamics, Strength and Reliability of Vehicles
Sunday, 16 September 2018
Hall 3

Chairman: Prof. I. Kralov, PhD
Department of Mechanics, Technical University – Sofia, Bulgaria

14:00 Modelling a bar element to study impact processes in elasto-plastic mechanical systems
P. Sinapov
Department of Mechanics, Technical University – Sofia, Bulgaria

14:20 Dynamic Response of the Tower of NREL5MW Wind Turbine Generator
I. Angelov
Department of Mechanics, Technical University – Sofia, Bulgaria

14:40 Some aspects of the influence of the vertical wind speed gradient on the blade aerodynamics loads in high class wind generators
J. Genov
Department of Mechanics, Technical University – Sofia, Bulgaria

15:00 A synthesis of a blade pitch control for large wind turbines, taking into account the functional dependence of the torque generated in the blades from the azimuth angle
J. Genov
Department of Mechanics, Technical University – Sofia, Bulgaria

Coffee Break