

Program overview

Saturday, 15 September 2018	16:30-16:50	Hall 1	Conference Opening Ceremony
	17:00-18:30	Hall 1	Plenary Session
	19:30-22:00	Welcome Cocktail Party	

Sunday, 16 September 2018		Hall 1	Hall 2	Hall 3
	9:00-11:00	Session: Aeronautics	Session: Internal Combustion Engines	Session: Transport Management and Logistics
	11:00-11:30	Coffee Break		
	11:30-13:00	Session: Aeronautics	Session: Internal Combustion Engines	Session: Transport Management and Logistics
	13:00-14:00	Lunch Break		
	14:00-16:00	Session: Automotive Engineering	Session: Railway Engineering and Technologies	Session: Dynamics, Strength and Reliability of Vehicles
	16:00-16:30	Coffee Break		
	16:30-18:00	Session: Automotive Engineering	Session: Dynamics, Strength and Reliability of Vehicles	
	19:30-23:00	Official Banquet		

Monday, 17 September 2018		Hall 1	Hall 2	Hall 3
	9:00-11:00	Session: Aeronautics		
	11:00-11:30	Coffee Break		
	11:30-11:50	Conference Closing Ceremony		

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. Todorov
¹*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
¹*Aviation 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. Guglev¹ and Ch. Alexandrov
¹*Faculty of Navigation, Nikola Vaptsarov Naval Academy, Varna, Bulgaria*
- 09:20 **Modeling of aircraft jet noise in airports**
H. Georgieva¹ and Krasin Georgiev
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. Maklakov¹ and N. Georgieva
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

¹*Laboratoire de Chimie Moléculaire, Génie des procédés Chimiques et Energétique, 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

¹*Department 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 Politenica 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

¹*Faculty 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. Vatulia¹, Y. Orel¹, M. Rezenenko 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. Lobiak¹, A. Plugin, L. Kravtsiv¹ 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. Smirnova¹, 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. Muhtarov¹, 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. Tsonev¹, N. Nikolov¹ 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. Dimova¹ 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

¹*Moscow 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

¹*Department of Railway engineering, Technical University – Sofia, Bulgaria*

Coffee Break

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

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