

**AutoSim 2011****Special Session on SIMULATION IN AUTOMOTIVE TECHNOLOGY**

Organized by Doz. Dr. Branislav Basara, AVL List GmbH, Advanced Simulation Technologies, Graz, AUT

**Key-Note Presentation**

NMV11AutoSim01  
**BLENDED THE RANS AND LES CONCEPTS FOR COMPUTING INDUSTRIAL AND ENVIRONMENTAL FLOWS: A PERSPECTIVE.**  
 K.Hanjalic, Delft University of Technology, HOL / Sapienza University of Rome, ITA

**Panel Presentations**

NMV11AutoSim02  
**AERODYNAMICS AND MIXING CHARACTERISTICS OF A MODEL COMBUSTOR: A HYBRID LES/RANS STUDY**  
 S. Jakirlic, B. Kniesner, G. Kadavelil, C. Tropea, Technische Universität Darmstadt, Chair of Fluid Mechanics and Aerodynamics, Center of Smart Interfaces, Darmstadt, GER

NMV11AutoSim03  
**CAPTURING TRANSIENTS IN TURBULENT FLOWS OVER COMPLEX HETEROGENEOUS URBAN AREAS AT LABORATORY SCALES**  
 S. Kenjeres, T. Busking, Delft University of Technology, HOL

NMV11AutoSim04  
**APPROPRIATE USAGE OF LARGE EDDY SIMULATION IN ROAD VEHICLE AERODYNAMICS**  
 S. Krajnovic, Chalmers University, Department of Applied Mechanics, SWE, . Basara, AVL List GmbH, Advanced Simulation Technologies, Graz, AUT

NMV11AutoSim05  
**ADVANCED DESIGN ENVIRONMENT FOR SCREW MACHINES IN AUTOMOTIVE INDUSTRY**  
 E. Mujic, N. Stosic, A. Kovacevic, I. K Smith, Centre for Positive Displacement Compressor Technology City University, London, UK

NMV11AutoSim06  
**EFFECT OF ENERGETIC POWDER ADDITIVES ON FUEL DROP AUTOIGNITION AT CONDITIONS RELEVANT TO DIESEL ENGINE**  
 F.S. Frolov, S. M. Frolov, Department of Combustion and Explosion, Semenov Institute of Chemical Physics, Moscow, RUS

NMV11AutoSim07  
**SIMULATION OF NOX AND SOOT FORMATIONS IN ENGINE**  
 F.S. Frolov, S. M. Frolov, V.S. Ivanov, S.N. Medvedev, P.A. Vlasov, B. Basara, M. Suffa, Semenov Institute of Chemical Physics, Moscow, RUS/AVL List GmbH, Advanced Simulation Technologies, Graz, AUT

NMV11AutoSim08  
**OVERVIEW OF MULTIPHASE CFD APPLICATIONS IN AUTOMOTIVE INDUSTRY**  
 D. Greif, AVL List GmbH, Advanced Simulation Technologies, Maribor, SLO, V. Srinivasan, AVL Powertrain Engineering Inc, Plymouth, Michigan, USA

NMV11AutoSim09  
**PANS vs. RANS FOR COMPUTATIONS OF THE FLOW THROUGH INTAKE ENGINE PORTS**  
 B. Basara, AVL List GmbH, Advanced Simulation Technologies, Graz, AUT

NMV11AutoSim10  
**DEVELOPMENT OF NEXT-GENERATION VIBRATION-FATIGUE SOFTWARE AND CATIA INTEGRATION FOR THE AUTOMOTIVE INDUSTRY**  
 J. Slavič, University of Ljubljana, SLO, T. Opara, CIMOS d.d., SLO, R. Banov, M. Dogan, CadCam GroupCRO, M. Česnik, M. Boltežar, University of Ljubljana, SLO

NMV11AutoSim11  
**IMPROVEMENT OF REFRIGERANT DISTRIBUTION IN PARALLEL EVAPORATOR CHANNELS OF AUTOMOTIVE AIR CONDITIONING BY COMPUTATIONAL MULTI-FLUID DYNAMICS**  
 V. Stevanovic, Faculty of Mechanical Engineering, Belgrade, SRB, S. Cucuz, W. Carl-Meissner, Visteon Innovation & Technology GmbH, Climate Control Systems, Kerpen, GER

NMV11AutoSim12  
**SELECTION OF OPTIMAL VEHICLE DESIGN ACCORDING TO THE SPECIFIC CUSTOMER REQUIREMENTS**  
 Z. Sakota, Z. Zivanovic, Dj. Diligenski, Z. Jovanovic, INN Vinca Belgrade, SRB

**SAFETY , including SAFETY DEDICATED SESSION**

NMV11SAF01  
**THE WRONG CHOICE OF TYRES INFLUENCING THE STABILITY OF VEHICLES**  
 E.-C. von Glasner, EVU & Daimler AG, ret., J. Ahlgrimm, Forensic Engineering, DEKRA, GER

NMV11SAF02  
**DRIVER ASSISTANCE SYSTEMS - STATUS 2011**  
 L. Palkovics, Knorr Bremse AG, HUN, E.-C. von Glasner, EVU & Daimler AG, ret., GER

NMV11SAF03  
**EVACUATION OF BUSES – EMERGENCY EXITS**  
 M. Matolcsy, Scientific Society of Mechanical Engineers, HUN

NMV11SAF04  
**VEHICLE SAFETY PERFORMANCE INDICATORS & INDEXES**  
 Č. Duboka, University of Belgrade, Faculty of Mechanical Engineering, SRB

NMV11SAF05 – Written Only  
**COMPARISON BETWEEN TRAFFIC STATISTICS OF THE CZECH REPUBLIC, LEBANON AND JAPAN**  
 N. Khatib, V. Panáček, A. Vémola, Institute of Forensic Engineering, Brno University of Technology, Brno, CZE

NMV11SAF06  
**CHALLENGES AND POSSIBILITIES FOR ENHANCED VEHICLE FLOW AND SAFETY ON URBAN TRAFFIC**  
 A. Kostic, M. Kosevski, Faculty of Mechanical Engineering Skopje, MKD

NMV11SAF07  
**ACTIVE SAFETY AT THE INTERSECTION USING INTELLIGENT ROAD INFRASTRUCTURE**  
 M. Djekić, M. Derikonjić, R. Eper, D. Matković, "Selma" Ltd., Subotica, V. Jovanović, JP "Subotica-trans", Subotica, SRB

NMV11SAF08  
**THE ROLE OF HEAVY VEHICLES IN ROAD SAFETY: TECHNICAL IMPROVEMENTS AND TRAINING OF PROFESSIONAL DRIVERS IN EU ACTIVITIES**  
 S. Amoroso, L. Caruso, F. Castelluccio, Dipartimento di Ingegneria dei Trasporti, Università degli Studi di Palermo, ITA

NMV11SAF09  
**INTRODUCTION OF DIGITAL TACHOGRAPH SYSTEM IN EU-AETR AND NON EU-AETR COUNTRIES**  
 M. Rychter, Motor Transport Institute, Diagnostic and Servicing Process Department, Warsaw, POL

NMV11SAF10  
**APPLICATION OF COUPLED FE- AND MULTI-BODY SIMULATIONS IN THE AREA OF PEDESTRIAN AND OCCUPANT SAFETY**  
 E. Ertugus, Institut für Kraftfahrzeuge RWTH Aachen University, GER, J. Obradovic, Politecnico di Torino, Department of Mechanics, ITA, L. Eckstein, Institut für Kraftfahrzeuge RWTH Aachen University, GER, G. Belingardi, Politecnico di Torino, Department of Mechanics, ITA

NMV11SAF11  
**IMPROVEMENT OF LATERAL VEHICLE CRASHWORTHINESS BY INTRODUCING INNOVATIVE STRUCTURAL SOLUTIONS**  
 J. Obradovic, Politecnico di Torino, Department of Mechanics, ITA, E. Ertugus, Institut für Kraftfahrzeuge RWTH Aachen University, GER, G. Belingardi, Politecnico di Torino, Department of Mechanics, ITA, L. Eckstein, Institut für Kraftfahrzeuge RWTH Aachen University, GER

NMV11SAF13  
**CRUISE CONTROL STRATEGIES OF ELECTRIC BICYCLE**  
 P. Boonporm, School of Mechanical Engineering, Suranaree University of Technology, Meaung, Nakorn Ratchasima, THA

NMV11SAF14  
**IMPLEMENTATION OF QUALITY SYSTEM OF BRAKE ROLLER DYNAMOMETER MEASUREMENTS**  
 M. Haataja, University of Oulu, Department of Mechanical Engineering/Automotive Engineering, FIN

NMV11SAF15  
**PRELIMINARY DESIGN OF A MAGNETORHEOLOGICAL BRAKE FOR AUTOMOTIVE USE**  
 G. V. Marannano, G. Virzi Mariotti G., DIMA - Università degli studi di Palermo ITA, Č. Duboka, Automotive Department, Faculty of Mechanical Engineering, University of Belgrade SRB.

NMV11SAF16 – Written only  
**DETERMINATION OF THE SEATING POSITION IN VEHICLE AND THE SAFETY BELT USAGE PRIOR TO ACCIDENT –CASE STUDY**  
 I. Bodolo, Expert witness organization "Vojvodina", SRB, T. Mrčela, Osijek, CRO, T. Bodolo, CVP Novi Sad, SRB

**ADVANCED ENGINEERING TECHNIQUES & TOOLS**

NMV11 AETT01

**INTEGRATION OF ACTIVE STEERING LOGIC INTO A CLASSIC COMMERCIAL VEHICLE ESP**Z. Hankovszki, R. Kovács, L. Palkovics, *Department of Automobiles, Budapest University of Technology and Economics, HUN*

NMV11 AETT02

**OPTICAL MEASURING TECHNIQUES IN RECONSTRUCTION AND MODIFICATION OF VEHICLES**R. Tomić, Z. Lulić, P. Ilinčić, *Faculty of Mechanical Engineering and Naval Architecture, Chair of IC Engines and Motor Vehicles, Zagreb, CRO*

NMV11 AETT03

**CHARACTERIZATION OF IMPACT BEHAVIOR OF COMPOSITE CAR COMPONENTS**G. Minak, *DIEM, University of Bologna, ITA*, Z. Soškić, A. Pavlović, *Faculty of Mechanical Engineering Kraljevo, SRB*, C. Fragassa, *DIEM, University of Bologna, ITA*

NMV11 AETT04

**DESIGN AND APPLICATION OF GEAR WEAR ACCELERATED TESTING DEVICE WITH REVERSE MOTION**M. Ognjanović, *University of Belgrade, Fac. of Mech. Engrg.*, A. Pavlović, S. Čirić-Kostić, *University of Kragujevac, Fac. of Mech. Engrg.*, SRB, C. Fragassa, *University of Bologna, Fac. of Mech. Engrg.*, ITA

NMV11 AETT05

**AN ADVANCED FLEXIBLE MULTIBODY NUMERICAL MODEL FOR DYNAMIC SIMULATIONS OF AUTOMOTIVE BELT-DRIVES**G. Čepon, M. Boltežar, *University of Ljubljana, Faculty of Mechanical Engineering, Laboratory for dynamics of machines and structures, SLO*

NMV11 AETT06

**COMPARATIVE ANALYSIS ON MATHEMATICAL MODELS DESCRIBING VIBRATIONS OF ROAD VEHICLES WITH DIFFERENT TYPES SUSPENSIONS**L. Kunchev, N. Pavlov, *Technical University, Sofia, BUG*

NMV11 AETT07

**INFLUENCE ON THE DYNAMIC BEHAVIOUR OF FULL CAR EQUIPPED WITH MAGNETORHEOLOGICAL DAMPERS VIA SWITCH ON/OFF AND  $h_z$  CONTROLLER**G. Barbaraci, G. Virzi Mariotti, *Dipartimento di Ingegneria Industriale Università di Palermo ITA*

NMV11 AETT08

**MECHATRONICS APPLICATIONS IN HEAVY DUTY AGRICULTURAL TRACTOR AXLES**M. Kuslits, M. Lelkes, K. Szocs, *Rába Development Institute, Rába Axle Ltd., Gyor, HUN*

NMV11 AETT09

**EXPERIMENTAL RESEARCH OF MOTORCYCLE'S FRAME VIBRATION DURING ACCELERATION AND BRAKING**B. Aleksandrović, M. Džapan, R. Radonjić, A. Janković, *Faculty of Mechanical Engineering, Kragujevac, SRB*

NMV11 AETT10

**IMPACT OF CLEARANCE ON THE POWER TRANSMISSION LOAD IN THE PROCESS OF MOVEMENT OF MASSES THROUGH THE CLEARANCE**M. Damjanović, R. Durković, R. Bulatović, S. Simović, *Faculty of Mechanical Engineering, Podgorica, MNE***5E - Engines, Emissions, Ecology, Environment, Energy**

NMV11\*5E01 - ORAL ONLY

**TWENTY YEARS OF RESEARCH ON HYDROGEN FUELLED IC ENGINES AT GHENT UNIVERSITY**R. Sierens, *Laboratory of Transport Technology, Ghent University, BEG*

NMV11\*5E02

**DIESEL PARTICULATE FILTER REGENERATION STRATEGIES: THE STUDY OF HYDROGEN ADDITION**K. Theinnoi, S.S. Gill, A. Tsolaikis, *University of Birmingham*, AP.E York, *Johnson Matthey Technology Centre, Reading*, A. Megaritis, *Brunel University*, R. Harrison, *University of Birmingham*, UK

NMV11\*5E03

**DEVELOPMENT OF STRATIFIED FRACTAL COMBUSTION MODEL**M. Sjerić, D. Kozarac, G. Šagi, *Faculty of Mechanical Engineering and Naval Architecture, Chair of IC Engines and Motor Vehicles, Zagreb, CRO*

NMV11\*5E04

**METHODS FOR MEASURING AND VERIFICATION OF ULTRA FINE PARTICLES CONCENTRATION FROM DIESEL ENGINE EMISSION**V. Petrović, *IMR Institute, Belgrade, SRB*

NMV11\*5E05

**SIMPLIFIED PROBABILISTIC POWERTRAIN SIZING FOR HYBRID VEHICLES**M. Milačić, C. Gearhart, *Research & Advanced Engineering - Ford Motor Company, USA*

NMV11\*5E06

**CONCEPTUAL DESIGN OF HIGH PERFORMANCE, LOW CO<sub>2</sub> EMISSION HYBRID SPORTS VEHICLE USING Flybrid® KERS**M. Tirović, *Cranfield University, D Cross, Flybrid, UK*

NMV11\*5E07

**TECHNOLOGIES TO MEET EVER MORE DEMANDING POWERTRAIN COOLING REQUIREMENTS**S. Čučuz, *Visteon Deutschland GmbH, Climate Control Systems, Kerpen, GER*

NMV11\*5E08

**THE IMPACT ON GREENHOUSE GASSES EMISSIONS OF THE PRODUCTION OF ELECTRIC ENERGY USED BY ELECTRIC VEHICLES**A. Negoitescu, A. Tokar, L. Mihon, *Faculty of Mechanics, Politehnica University of Timisoara, Romania*

NMV11\*5E09

**A HARD DECISION FOR HEV MANUFACTURERS: GASOLINE HYBRID VEHICLE OR DIESEL HYBRID VEHICLE**V. Croitorescu, E. Negrus, M. Oprean, C. Andreescu, *Politehnica University of Bucharest, Automotive Engineering Department, ROM***AUTOMOTIVE LOGISTICS**

NMV11 AL01

**COMPARISON OF VEHICLE MAINTENANCE COST AMONG DIFFERENT VEHICLE TYPES**K. Jakimovska, I. Gjurkov, *Faculty of Mechanical Engineering, Ss."Cyril and Methodius" University in Skopje, MK*

NMV11 AL02

**A TOOL TO ESTIMATE THE WARRANTY LEVEL ACCORDING TO DESIGN CHANGES**P. Alcalde, *CITEAN, Pamplona, ESP*

NMV11 AL031

**TOTAL PRODUCTIVE MAINTENANCE AND OVERALL VEHICLE EFFECTIVENESS**A. Manojlović, O. Medar, V. Papić, J. Trifunović, *University of Belgrade – Faculty of Transport and Traffic Engineering, Belgrade, SRB*

NMV11 AL041

**RENEWAL OF SERBIAN BUS FLEET: A WAY TO REDUCE EMISSION OF POLLUTANTS**J. Trifunović, A. Manojlović, V. Momčilović, N. Redžić, *University of Belgrade – Faculty of Transport and Traffic Engineering, Belgrade, SRB*