



VI INTERNATIONAL CONGRESS ON COMBUSTION ENGINES

POLISH SCIENTIFIC SOCIETY
OF COMBUSTION ENGINES

22nd-24th June 2015



HONORARY PATRONAGE:



MINISTRY
OF
ECONOMY

Deputy Prime Minister
Minister of Economy Janusz Piechociński



Minister of Science and Higher Education
Prof. Lena Kolarska-Bobińska



Voivod
of Warmia and Mazury
Marian Podziewski



Marshal
of Warmian-Masurian Voivodeship
Gustaw Marek Brzezina



President of the
City Olsztyn
Piotr Grzymowicz

FINAL PROGRAMME

University of Warmia and Mazury in Olsztyn
10-719 Olsztyn, ul. Oczapowskiego 2, POLAND

CONGRESS SCHEDULE

22.06.2015 Monday		23.06.2015 Tuesday		24.06.2015 Wednesday	
8.30 - 9.30	Registration Conference Center, hall				
9.30 - 10.10	Opening Ceremony Conference Center, Congress Room	9.30 - 11.00	Plenary Session III Conference Center, Congress Room	9.00 - 10.30	Plenary Session IV Conference Center, Congress Room
10.10 - 10.15	Break			10.30 - 10.45	Coffee break
10.15 - 12.00	Plenary Session I Conference Center, Congress Room	11.00 - 11.15	Coffee break		
12.00 - 12.15	Coffee break	11.15 - 12.45	Technical Session I, II Conference Center, Crimson Room, Blue Room	10.45-12.45	Industrial Session Conference Center, Congress Room
12.15 - 14.00	Plenary Session II Conference Center, Congress Room	12.45 - 13.00	Coffee break	12.45 - 13.15	Closing Ceremony Conference Center, Congress Room
14.00 - 15.15	Lunch Conference Center, Restaurant	13.00 - 14.30	Technical Session III, IV Conference Center, Crimson Room, Blue Room	13.15 - 14.00	Lunch Congress Center, Restaurant
15.15 - 16.45	Poster Session I Conference Center, hall	14.30 - 16.00	Lunch Congress Center Restaurant		
16.45 - 18.00	Break	16.00 - 17.30	Poster Session II Conference Center, hall		
18.00 - 18.30	Transfer to Philharmonic	17.30 - 20.00	Break		
18.30 - 20.00	Gala Concert Warmia - Mazury Philharmonic				
20.00 - 24.00	Gala Dinner Restaurant "Przystan"	20.00 - 24.00	Barbecue Restaurant "Kortowska"		

22nd June 2015

Dear Friends and Colleagues,



On behalf of Polish Scientific Society of Combustion Engines (PTNSS) it is my pleasure to welcome you to the 6th INTERNATIONAL CONGRESS ON COMBUSTION ENGINES which will be held in Olsztyn, Poland on the 22nd-24th of June 2015 and also it is my great privilege to act as PRESIDENT of the Congress.

I have the honor to offer you an exceptional technical programme including over 170 papers presented by top international experts. The Congress covers a wide range of topics in research fields such as design, manufacture, operation and ecological effects of internal combustion engines in the opinion of specialists from all over the world. The Congress also covers varied applications of combustion engines, including aviation and marine engines. This will be a great meeting, with expert engineers and researchers sharing their new ideas, inventions, and experience.

The attendees will gain knowledge in a wide variety of subjects related to combustion engines and will be able to enjoy, along with friends and family, the hospitality of the city of Olsztyn. There are plenty of comfortable hotels, restaurants and points of entertainment. The attendees will have the opportunity of visiting the country with a multitude of historical monuments and religious sites.

I hope you will enjoy the Congress while meeting old friends and making new ones.

Yours sincerely,

Prof. Jerzy Merkisz

A handwritten signature in dark ink, appearing to be 'J. Merkisz', written in a cursive style.

*President of PTNSS
President of 2015 PTNSS Congress*

HONORARY PATRONAGE

The Congress under Honorary Patronage:
 Deputy Prime Minister, Minister of Economy – **Janusz Piechociński**
 Minister of Science and Higher Education – **Lena Kolarska-Bobińska**
 Voivod of Warmia and Mazury – **Marian Podziewski**
 Marshal of Warmian-Masurian Voivodeship – **Gustaw Marek Brzezina**
 President of the City Olsztyn – **Piotr Grzymowicz**

HONORARY COMMITTEE OF THE CONFERENCE

Ryszard Górecki	Rector of University of Warmia and Mazury, Poland
Maciej Bernhardt	Professor Warsaw University of Technology, Poland
Andrzej Kowalewicz	Professor University of Technology and Humanities in Radom, Poland
Krzysztof Kurzydłowski	Professor Warsaw University of Technology, Poland
Hans-Peter Lenz	President Austrian Society of Automotive Engineers, Austria
Helmut List	President AVL List GmbH, Austria
Adam Mazurkiewicz	Professor Institute for Sustainable Technologies, Radom, Poland
Stefan Pischinger	President FEV Motorentechnik, Germany
Adam Lipiński	Dean of the Faculty Technical Science, University of Warmia and Mazury, Poland
Marek Ślęzak	Automotive Industry Institute (PIMOT), Warsaw, Poland
Leszek Surawski	Commander of the 16 th Pomeranian Mechanized Division
Antoni Świątek	President and CEO BOSMAL Automotive Research and Development Institute Ltd. Bielsko-Biala, Poland
Jan A. Wajand	Professor University of Bielsko-Biala, Poland

MEMBERS OF INTERNATIONAL SCIENTIFIC COMMITTEE (reviewers of papers)

Andrzej Ambrozik	Grzegorz Koszalka
Piotr Boguś	Mirosław Kowalski
Marek Brzeżański	Miłostaw Kozak
Gerardo Carelli	Stanisław Kruczyński
Zdzisław Chłopek	Andrzej Kulczycki
Karol Cupiał	Kazimierz Lejda
Jan Czerwiński	Wincenty Lotko
Adam Dużyński	Zbigniew Lozia
Jan Dzida	Sławomir Luft
Hermann Ecker	Jarosław Mamala
Jacek Elias	Jerzy Merkisz
Hubert Fiedl	Władysław Mitanić
Paweł Fuć	Werner Moser
Peter Gillbrand	Andrzej Mruk
Jerzy Girtler	Janusz Mysłowski
Kurt Gschweidl	Andrzej Niewczas
Vladimir Hlavna	Józef Nita
Jacek Hunicz	Marcin Noga
Marek Idzior	Jacek Nowakowski
Antoni Iskra	Marek Orkisz
Antoni Jankowski	Krzysztof Parczewski
Andrzej Kaźmierczak	Zbigniew Pawelski
Toni Kinnunen	Richard Pearson
Oleh Klyus	Wiesław Piekarski
Tomasz Knefel	Ireneusz Pielecha
Tomasz Kniażewicz	Jacek Pielecha
Zbigniew Korczewski	Dariusz Pietras

Andrzej **Piętak**
 Stefan **Postrzednik**
 Kazimierz **Romaniszyn**
 Bronisław **Sendyka**
 Wojciech **Serdecki**
 Lech **Siłnik**
 Maciej **Sobieszczański**
 Zdzisław **Stelmasiak**
 Richard **Stobart**
 Mieczysław **Struś**
 Andrzej **Sucheta**
 Michał **Śmieja**

Piotr **Tarkowski**
 Andrzej **Teodorczyk**
 Mirosław **Wendeker**
 Chris **Wheelan**
 Krzysztof **Wislocki**
 Krzysztof **Wituszyński**
 Piotr **Wolański**
 Piotr **Wygonik**
 Mirosław **Wyszyński**
 Zbigniew **Żmudka**
 Józef **Żurek**

INDUSTRY COMMITTEE

Piotr Bielaczyc	BOSMAL, Bielsko-Biala, Poland, Chairman for Industry
Gerardo Carelli	Carelli Consulting, Italy/Germany
Sergio Del Re	Ecocat Italia, Genua, Italy
Jerzy Franek	ORLEN Oil, Cracow, Poland
Stefan Góralczyk	Institute of Mechanised Construction and Rock Mining, Warsaw, Poland
Antoni Greń	Fiat Chrysler Automobiles Poland S.A., Tychy, Poland
Davide Guerra	Fiat Chrysler Automobiles Powertrain, Bielsko-Biala, Poland
Sjur Haugen	Statoil Fuel & Retail, Oslo, Norway
Toni Kinnunen	Dinex Group, Finland
Chris Kolodziej	Delphi, USA
Eliza Kotowska	AVL List GmbH, Polish Representatives, Warsaw, Poland
Krzysztof Klinowski	Total Poland Ltd., Warsaw, Poland
Mirosław Kowalski	Air Force Institute of Technology, Warsaw, Poland
Dariusz Michalak	Solaris Bus & Coach S.A., Bolechowo-Osiedle, Poznan, Poland
Rudolf Moerkl	Horiba, Tulln, Austria
Andrzej Muszyński	Automotive Industry Institute (PIMOT), Warsaw, Poland
Tadeusz Pawłowski	Industrial Institute of Agricultural Engineering, Poznan, Poland
Sławomir Poszeleżny	LOTOS Oil, Gdansk, Poland
Krzysztof Starzec	Statoil Fuel & Retail Polska, Warsaw, Poland
Włodzimierz Stawecki	The Rail Vehicles Institute „TABOR”, Poznan, Poland
Małgorzata Stefańska-Jońca	PKN ORLEN, Plock, Poland
Gerolf Strohmeier	AVL List GmbH, Graz, Austria
Andrzej Suchecki	BOSMAL, Bielsko-Biala, Poland
Marek Sutkowski	Waertsila Finland Oy, Finland
Ryszard Szczepanik	Air Force Institute of Technology, Warsaw, Poland
Andrzej Szczolek	Provincial Military Staff in Olsztyn, Olsztyn, Poland
Grzegorz Szyszka	The Institute of Logistics and Warehousing (ILiM), Poznan, Poland
Marcin Ślęzak	Motor Transport Institute, Warsaw, Poland
Wolfgang Thiel	TUM/TRT, Germany
Witold Wiśniowski	Institute of Aviation, Warsaw, Poland
Andrzej Wojciechowski	Institute for Precision Mechanics, Warsaw, Poland

ORGANISING COMMITTEE

Jerzy Merkisz	President
Andrzej Piętak	Vice – President for Organising
Zdzisław Stelmasiak	Vice – President for Science
Sławomir Wierzbicki	Secretary for Organising
Dariusz Pietras	Secretary for Science
Hanna Uzar	Member
Joanna Chrzastek	Member
Milena Borzymowska	Member

SESSIONS SCHEDULE

Monday – 22nd June 2015

9.30 - 10.10 Opening Ceremony Conference Center, Conference Hall

10.10 - 10.15 Break

10.15 - 12.00 Plenary Session I Conference Center, Conference Hall

Chairman: Dr Hubert FRIEDL, Austria; Prof. Andrzej TEODORCZYK, Poland

Jerzy MERKISZ

President PTNSS

Poznan University of Technology, Poland

SELECTED PROBLEMS OF REAL DRIVING EMISSIONS

Ali ALQAHTANI

Farzad

SHOKROLLAHIHASSANBAROUGH

Miroslaw L. WYSZYNSKI

University of Birmingham, United Kingdom

PTNSS-2015-208

THERMODYNAMIC SIMULATION COMPARISON OF AVL BOOST AND RICARDO WAVE FOR HCCI AND SI ENGINES OPTIMISATION

Piotr BIELACZYK

BOSMAL Automotive R&D Institute Ltd.

Bielsko-Biala, Poland

PTNSS-2015-3485

GLOBAL TRENDS IN AUTOMOTIVE EMISSIONS LEGISLATION, ENGINE TECHNOLOGY AND AFTERTREATMENT SYSTEMS

Iain CAMERON

Andrzej SOBIESIAK

University of Windsor, Canada

PTNSS-2015-204

COMBUSTION CHARACTERISTICS OF A SPARK-IGNITED SPLIT-CYCLE ENGINE FUELLED WITH METHANE

12.00 - 12.15 Coffee Break

12.15 - 14.00 Plenary Session II Conference Center, Conference Hall

Chairman: Prof. Miroslaw Lech WYSZYNSKI, UK; Prof. Jerzy MERKISZ, Poland

Dieter PEITSCH

Technische Universität Berlin

USING THE UNSTEADINESS - GAME CHANGING APPROACHES IN GAS TURBINE DESIGN

Hubert FRIEDL

AVL List GmbH, Austria

PTNSS-2015-3525

CHALLENGES AND SOLUTIONS FOR MODERN GASOLINE ENGINE APPLICATIONS

Marek SUTKOWSKI

Wärtsilä Finland Oy, Finland

PTNSS-2015-207

IMPROVING SPARK-IGNITED ENGINES EFFICIENCY BY HEAT ENERGY RECOVERY SYSTEM

Jacek HUNICZ

Lublin University of Technology, Poland

PTNSS-2015-209

HOMOGENEOUS CHARGE COMPRESSION IGNITION: UNDERSTANDING IN-CYLINDER PROCESSES

14.00 - 15.15 Lunch

Conference Center, Restaurant

15.15 - 16.45 Poster Session I Conference Center, 2nd floor

Chairman: Prof. Oleh KLYUS, Poland; Prof Jacek NOWAKOWSKI, Poland

List of Papers see page 8

Tuesday – 23rd June 2015**9.30 - 11.00 Plenary Session III Conference Center, Conference Hall****Chairman: Dr Marek SUTKOWSKI, Finland; Prof. Mirosław WENDEKER, Poland**

Toni KINNUNEN <i>Dinex Group, Finland</i>	PTNSS–2015–3526 INNOVATIVE AND COMPLETE AFTERTREATMENT SOLUTIONS FOR HEAVY DUTY AND LARGE ENGINES
Sjur HAUGEN <i>Statoil Fuel & Retail AS, Norway</i>	PTNSS–2015–3527 FUTURE TRANSPORTATION SEEN FROM A RETAILER'S PERSPECTIVE
Joseph WOODBURN <i>BOSMAL Automotive R&D Institute Ltd, Bielsko-Biala, Poland</i>	PTNSS–2015–3484 AN OVERVIEW OF EXHAUST EMISSIONS OF PARTICULATE MATTER FROM LIGHT DUTY VEHICLES

11.00 - 11.15 Coffee Break**11.15 - 12.45 Technical Session I Conference Center, Crimson Room****Chairman: Dr Toni KINNUNEN, Finland; Prof. Sławomir LUFT, Poland**

Tomasz SKRZEK <i>University of Technology and Humanities in Radom, Poland</i>	PTNSS–2015–3480 EFFECT OF THE DIESEL FUEL DOSE DIVISION AND THE INJECTION ANGLE ON OPERATING PARAMETERS OF A DUAL-FUEL COMPRESSION IGNITION ENGINE
Grzegorz PRZYBYŁA Shashank NAGARAJA <i>Silesian University of Technology, Gliwice, Poland</i>	PTNSS–2015–3402 EXPERIMENTAL STUDY ON PERFORMANCE AND EMISSION CHARACTERISTICS OF LEAN BURN SI ENGINE FUELLED WITH HYDROGEN METHANE BLENDS
Jerzy DUTCZAK <i>Cracow University of Technology, Poland</i>	PTNSS–2015–405 HEAVY FUEL ENGINES (HFE)
Karol GRAB-ROGALIŃSKI Stanisław SZWAJA <i>Częstochowa University of Technology, Poland</i>	PTNSS–2015–3478 MILLER CYCLE APPLICATION TO THE GASEOUS SUPERCHARGED SI ENGINE

11.15 - 12.45 Technical Session II Conference Center, Blue Room**Chairman: Prof. Mirosław Lech WYSZYŃSKI, UK; Prof. Marek IDZIOR, Poland**

Władysław MITANIEC <i>Cracow University of Technology, Poland</i>	PTNSS–2015–205 MODELLING AND SIMULATION OF WORKING PROCESSES IN WANKEL ENGINE WITH DIRECT HYDROGEN INJECTION SYSTEM
Rafał PYSZCZEK¹ Carsten SCHMALHORST² Andrzej TEODORCZYK¹ ¹ <i>Warsaw University of Technology, Poland</i> ² <i>AVL Deutschland, Germany</i>	PTNSS–2015–303 NUMERICAL INVESTIGATION ON DIESEL COMBUSTION AND EMISSIONS WITH A STANDARD COMBUSTION MODEL AND DETAILED CHEMISTRY
Farzad SHOKROLLAHIHASSANBAROUGH Ali ALQAHTANI Mirosław L. WYSZYŃSKI <i>University of Birmingham, United Kingdom</i>	PTNSS–2015–308 THERMODYNAMIC SIMULATION COMPARISON OF OPPOSED TWO-STROKE AND CONVENTIONAL FOUR-STROKE ENGINES
Lukasz Jan KAPUSTA Andrzej TEODORCZYK <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–406 NUMERICAL SIMULATIONS OF DUAL FUEL COMBUSTION IN A HEAVY DUTY COMPRESSION IGNITION ENGINE

12.45 - 13.00 Coffee Break

13.00 - 14.30 Technical Session III Conference Center, Crimson Room

Chairman: Dr Hubert FRIEDL, Austria; Prof. Ireneusz PIELECHA, Poland

Krzysztof KACZMARCZYK Marek BRZEŻAŃSKI <i>Cracow University of Technology, Poland</i>	PTNSS–2015–404 IMPACT OF FLAMEPROOF EXHAUST SYSTEM ON EFFICIENCY OF SELECTIVE CATALYTIC REDUCTION
Wojciech GIS¹ Jerzy MERKISZ² Jacek PIELECHA² Maciej GIS³ Remigiusz JASIŃSKI² ¹ <i>Motor Transport Institute, Warsaw, Poland</i> ² <i>Poznan University of Technology, Poland</i> ³ <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3353 ECOLOGICAL ASSESSMENT OF CITY BUSES POWERED BY NATURAL GAS
Jerzy MERKISZ Marek WALIGÓRSKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3360 INFLUENCE OF OPERATING PARAMETERS OF MARITIME ENGINE ON ITS ACOUSTIC AND TOXIC EMISSION CHARACTERISTICS
Jerzy KAPARUK Ślawomir LUFT <i>University of Technology and Humanities in Radom, Poland</i>	PTNSS–2015–3481 THE INFLUENCE OF MODERNIZATION OF A DIESEL ENGINE FOR LPG SUPPLYING (WITH THE USE OF SPARK IGNITION) ON ENGINE PERFORMANCES AND EXHAUST EMISSIONS – A PRELIMINARY STUDY

13.00 - 14.30 Technical Session IV Conference Center, Blue Room

Chairman: Prof. Gvidonas LABECKAS, Lithuania; Prof. Paweł FUĆ, Poland

Grzegorz KOSZAŁKA¹ Andrzej SUCHECKI² ¹ <i>Lublin University of Technology, Poland</i> ² <i>BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland</i>	PTNSS–2015–304 CHANGES IN PERFORMANCE AND WEAR OF SMALL DIESEL ENGINE DURING DURABILITY TEST
Barbara WORSZTYNOWICZ Andrzej UHRYŃSKI <i>AGH University of Science and Technology, Poland</i>	PTNSS–2015–305 THE ANALYSIS OF HEATING PROCESS OF CATALYTIC CONVERTER USING THERMO-VISION
Wojciech BUESCHKE Krzysztof WISŁOCKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3415 THE EVALUATION OF CONDITIONS OF TURBOCHARGER INTERACTION WITH COMPRESSION IGNITION COMBUSTION ENGINE AT PARTIAL LOADS
Ślawomir WIERZBICKI Maciej MIKULSKI Michał ŚMIEJA <i>University of Warmia and Mazury in Olsztyn, Poland</i>	PTNSS–2015–310 EFFECT OF CO₂ CONTENT IN CNG ON THE COMBUSTION PROCESS IN A DUAL-FUEL COMPRESSION IGNITION ENGINE

14.30 - 16.00 Lunch Conference Center, Restaurant

16.00 - 17.30 Poster Session II Conference Center, 2nd floor

Chairman: Prof. Jacek HUNICZ, Poland; Prof. Piotr BOGUŚ, Poland

List of Papers see page 12

Wednesday – 24th June 2015

9.00 - 10.30 Plenary Session IV Conference Center, Conference Hall

Chairman: Dir Sjur HAUGEN, Norway; Prof. Krzysztof WISŁOCKI, Poland

Christopher KOŁODZIEJ <i>Delphi Automotive, USA</i>	PTNSS–2015–3528 FULL LOAD RANGE STRATEGIES FOR TWO FULL-TIME GASOLINE COMPRESSION IGNITION MULTI-CYLINDER ENGINES
Gvidonas LABECKAS Irena KANAPKIENĖ <i>Aleksandras Stulginskis University in Kaunas, Lithuania</i>	PTNSS–2015–302 PERFORMANCE AND EMISSIONS OF A SINGLE CYLINDER DIESEL ENGINE OPERATING WITH RAPESEED OIL AND JP-8 FUEL BLENDS
Robin VANHAELST¹ Alaa KHEIR¹ Jakub CZAJKA² ¹ <i>Ostfalia Campus Wolfsburg, Germany,</i> ² <i>Volkswagen Poznan Sp. z o.o., Poland</i>	PTNSS–2015–408 A SYSTEMATIC ANALYSIS OF THE FRICTION LOSSES ON BEARINGS OF MODERN TURBOCHARGER

10.30 - 10.45 Coffee Break

10.45 - 12.45 Industry Sessions Conference Center, Conference Hall

Chairman: Dr Piotr BIELACZYK, Poland; Dr Christopher KOŁODZIEJ, USA

Joseph WOODBURN <i>BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland</i>	DEVELOPMENT TRENDS IN AUTOMOTIVE POWERTRAIN TEST METHODS
Łukasz PIASECKI <i>EC Test Systems Ltd. Cracow, Poland</i>	CAE SOFTWARE OF SIEMENS IN THE OFFER EC TEST SYSTEMS
Mikołaj MAŁECKI <i>ENVIBRA Ltd. Plewiska, Poland</i>	MODERN TECHNOLOGIES IN MEASUREMENTS AND DIAGNOSTICS ENGINE AND ROTATING MACHINES
Krzysztof SZATKOWSKI <i>Kistler Eastern Europe s.r.o.</i>	PIEZOELECTRIC AND PIEZORESISTIVE PRESSURE SENSORS FOR COMBUSTION ENGINES RESEARCH
Maciej HADRYŚ <i>MAHLE Poland Ltd. Krotoszyn, Poland</i>	MODERN STEEL PISTONS FOR HIGHSPEED DIESEL APPLICATIONS
Ryszard KĘDZIA <i>Mechatronika Educational Equipment Ltd. Poznan, Poland</i>	THE USE OF MODERN EDUCATIONAL STAND IN THE IMPROVEMENT OF THE EDUCATIONAL PROCESS ON THE BASIS OF 20-YEAR EXPERIENCES OF MECHATRONIKA
Andrzej SZĄLEK <i>TOYOTA MIR-WIT Olsztyn, Poland</i>	VISION OF THE FUTURE DRIVE SYSTEMS ACCORDING TO TOYOTA SOLUTION
Andrzej PIĘTAK <i>University of Warmia and Mazury in Olsztyn, Poland</i>	ENGINE DIAGNOSIS OF COMBAT VEHICLES

12.45 - 13.15 Congress Closing Ceremony Conference Center, Congress Hall

13.15 - 14.00 Lunch Conference Center, Restaurant

List of Papers of the Poster Session I

Kazimierz M. ROMANISZYN <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–106 CONCEPTION OF GEAR RATIOS SELECTION BETWEEN THE ENGINE AND THE ELECTRIC MACHINE IN THE HYBRID DRIVE SYSTEMS
Stasys SLAVINSKAS Tomas MICKEVIČIUS <i>Aleksandras Stulginskis University in Kaunas, Lithuania</i>	PTNSS–2015–203 EXPERIMENTAL STUDY ON INJECTION CHARACTERISTICS OF DIESEL-BIOETHANOL FUEL BLENDS
Zdzisław STELMASIAK Jerzy LARISCH Dariusz PIETRAS <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–210 THE INFLUENCE OF NATURAL GAS ADDITIVE ON THE SMOKE LEVEL GENERATED BY DIESEL ENGINES
Paweł GŁOWACKI Borys ŁUKASIK <i>Institute of Aviation, Warsaw, Poland</i>	PTNSS–2015–306 AVIATION PISTON ENGINES ON-CONDITION MAINTENANCE – PROPOSAL
Marianna JACYNA Mariusz WASIAK <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–309 COSTS OF ROAD TRANSPORT DEPENDING ON THE TYPE OF VEHICLES
Marcin ZACHAREWICZ Tomasz KNIAZIEWICZ Aleksy CWALINA <i>Polish Naval Academy in Gdynia, Poland</i>	PTNSS–2015–3313 ASSESSMENT OF TECHNICAL CONDITION OF MARINE AUXILIARY DIESEL ENGINE ON THE BASIS OF ELECTRICAL MEASUREMENTS OF SYNCHRONOUS GENERATOR
Zdzisław CHŁOPEK Jerzy WAŚKIEWICZ <i>Motor Transport Institute, Warsaw, Poland</i>	PTNSS–2015–3315 THE FORECAST OF THE POLLUTANT EMISSION FROM AUTOMOTIVE INTERNAL COMBUSTION ENGINES IN POLAND BY 2030
Krzysztof SICZEK <i>Technical University of Lodz, Poland</i>	PTNSS–2015–3320 RESEARCHES ON THE SOUND LEVEL INDUCED BY OPERATION OF VALVE TRAIN COMPONENTS
Piotr BANASZUK¹, Dariusz SZPICA¹ Jarosław CZABAN¹, Lutz RIBBE² Emil WERESA¹ ¹ <i>Białystok University of Technology, Poland</i> ² <i>Development Observatory of the European Economic and Social Committee</i>	PTNSS–2015–3323 A FRAMEWORK FOR BIOFUEL PRODUCTION SYSTEM IN THE RURAL AREAS
Paweł GŁOWACKI, Michał KAWALEC <i>Institute of Aviation, Warsaw, Poland</i>	PTNSS–2015–3327 AIRCRAFT EMISSIONS DURING VARIOUS FLIGHT PHASES
Krzysztof PARCZEWSKI Henryk WŃĘK, Jan DZIDA <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3331 RISK MITIGATION ROLLOVER SYSTEMS USED IN TRUCKS
Piotr BOGUŚ¹, Mateusz DEDO² Rafał GRZESZCZYK², Adam WRONA² Jarosław MARKOWSKI³, Jerzy MERKISZ³ ¹ <i>Medical University of Gdansk, Rail Vehicle Institute TABOR in Poznan</i> ² <i>Automex Sp. z o.o., Gdansk, Poland</i> ³ <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3335 ESTIMATION OF FUEL SPRAYING FROM DIESEL ENGINE INJECTOR USING MULTIREOLUTION WAVELET ANALYSIS OF VIBROACOUSTIC SIGNALS
Jan MONIETA¹, Adrian SENDECKI² ¹ <i>Maritime University of Szczecin</i> ² <i>DP3, MPSV vessel – Bourbon Evolution 804, working for Chevron in Angola</i>	PTNSS–2015–3338 A DATABASE OF PISTON MARINE DIESEL ENGINES PRODUCED IN H. CEGIELSKI POZNAN S. A. AND ZUT ZGODA
Ireneusz PIELECHA, Wojciech CIEŚLIK Przemysław BOROWSKI, Maciej SKOWRON Wojciech BUESCHKE <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3340 INDEXES OF OPERATION OF COMBUSTION ENGINE WITH DIRECT GASOLINE INJECTION DURING ACCELERATING
Ireneusz PIELECHA, Krzysztof WISŁOCKI Wojciech CIEŚLIK, Przemysław BOROWSKI Maciej SKOWRON, Wojciech BUESCHKE <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3343 PROBLEMS OF DETERMINING OF FUEL SPRAY GEOMETRIC PARAMETERS WHEN BASED ON OPTICAL INVESTIGATIONS
Maciej SKOWRON Ireneusz PIELECHA <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3345 EVALUATION OF DIFFERENCE BETWEEN CONTROLLING SIGNAL AND INJECTOR RESPONSE TIME IN LIQUID FUEL DIRECT INJECTION SYSTEMS

Jerzy MERKISZ¹, Jacek PIELECHA¹ Arkadiusz STOJECKI², Remigiusz JASIŃSKI¹ ¹ Poznan University of Technology, ² BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland	PTNSS–2015–3351 THE INFLUENCE OF TERRAIN TOPOGRAPHY ON VEHICLE ENERGY INTENSITY AND ENGINE OPERATING CONDITIONS
Jerzy MERKISZ, Jacek PIELECHA Piotr MOLIŁ Poznan University of Technology, Poland	PTNSS–2015–3354 THE PROPOSAL OF RDE TEST FOR PASSENGER CARS WITH HYBRID DRIVE
Jerzy MERKISZ, Jarosław MARKOWSKI Dominik KARPIŃSKI, Marta GALANT Poznan University of Technology, Poland	PTNSS–2015–3357 ANALYSIS OF THE HYBRID PROPULSION SYSTEM IN THE ASPECT OF USE IN AN UNMANNED AERIAL VEHICLE
Kamila NAWROT Milosław KOZAK Poznan University of Technology, Poland	PTNSS–2015–3361 THE IMPACT OF FAME BIOFUEL ON SEALING ELEMENTS OF FUEL FILTERS
Paweł FUĆ, Piotr LIJEWSKI Andrzej ZIÓŁKOWSKI, Maciej SIEDLECKI Poznan University of Technology, Poland	PTNSS–2015–3365 TRENDS IN THE TYPE-APPROVAL REGULATIONS IN TERMS OF EXHAUST GAS EMISSIONS FOR VEHICLES OF CATEGORY PC AND LDV
Jacek RUDNICKI Ryszard ZADRAŁ Gdansk University of Technology, Poland	PTNSS–2015–3368 PROBLEMS OF MODELLING TOXIC COMPOUNDS EMITTED BY A MARINE INTERNAL COMBUSTION ENGINE FOR THE EVALUATION OF ITS STRUCTURE PARAMETERS
Jerzy MERKISZ¹, Jarosław MARKOWSKI¹ Grzegorz ŚLUSARZ², Marta GALANT¹ Dominik KARPIŃSKI¹, Paweł WIRKOWSKI² ¹ Poznan University of Technology, Poland ² The 2nd Wing of Tactical Air Force ³ Polish Naval Academy in Gdynia, Poland	PTNSS–2015–3371 COMPARATIVE ANALYSIS OF EXHAUST EMISSION TESTS FOR A TURBINE ENGINE
Paweł DASZKIEWICZ¹, Jerzy MERKISZ² Marek IDZIOR², Maciej BAJERLEIN² Łukasz RYMANIAK² ¹ Rail Vehicles Institute "TABOR" in Poznan ² Poznan University of Technology, Poland	PTNSS–2015–3373 THE EVALUATION HYDROGEN ENRICHMENT OF DIESEL IN TERMS CHANGES OF ENVIRONMENTAL PERFORMANCE ENGINE IGNITION
Łukasz GRABOWSKI, Michał GĘÇA Michał BIAŁY Lublin University of Technology, Poland	PTNSS–2015–3379 THE CITY BUS MODEL IN AVL CRUISE SOFTWARE
Robert ROSZAK Poznan University of Technology, Poland	PTNSS–2015–3383 MODAL ANALYSIS OF THE STRUCTURE FOR CRANKSHAFT IN THE SHIP'S ENGINE FOR THE TWO CASES OF MASS BALANCER
Michał GĘÇA Mirosław WENDEKER Łukasz GRABOWSKI Lublin University of Technology, Poland	PTNSS–2015–3387 THE RESEARCH ON THE OPERATION OF ON-BOARD PHOTOVOLTAIC STRUCTURES INSTALLED IN A CITY BUS WITH A DIESEL ENGINE
Jakub KALKE, Paweł MAZURO Paweł SULIKOWSKI Warsaw University of Technology, Poland	PTNSS–2015–3392 DEVELOPMENT OF THE NUMERICAL SCAVENGING PROCESS ANALYSIS IN OPPOSED-PISTON ENGINES
Piotr BOGUŚ¹, Rafał GRZESZCZYK² Adam WRONA², Mateusz DEDO² Jarosław MARKOWSKI³, Jerzy MERKISZ³ Marek WALIGÓRSKI³ ¹ Medical University of Gdansk, Rail Vehicle Institute TABOR in Poznan ² Automex Sp. z o.o., Gdansk, Poland ³ Poznan University of Technology, Poland	PTNSS–2015–3397 THE POSSIBILITY OF APPLYING WAVELET ANALYSIS FOR DIAGNOSTICS OF THE VALIDITY OF INJECTION PROCESS OF DIESEL ENGINE FUEL INJECTOR BASED ON SELECTED PARAMETERS OF THE REACTIVE CYLINDER VIBRATION PROCESS
Michał ROLA Lublin University of Technology, Poland	PTNSS–2015–3400 THE IMPACT OF DESIGN PARAMETERS OF INJECTION DUCTS ON GAS SUPPLY IN THE SPARK-IGNITION ENGINE
Mateusz SZCZECIŃSKI, Paweł MAZURO Wojciech SKROBEK Warsaw University of Technology, Poland	PTNSS–2015–3404 SCAVENGING PROCESS CFD COMPUTATIONS IN A TWO STROKE OPPOSED-PISTON ENGINE
Marek IDZIOR Edward CZAPLIŃSKI Poznan University of Technology, Poland	PTNSS–2015–3411 THE RESEARCH INTO THE INFLUENCE OF THE TECHNICAL CONDITION OF MOTOR VEHICLES IN OPERATION ON EXHAUST POLLUTANT EMISSIONS

Jerzy MERKISZ, Maciej BAJERLEIN Łukasz RYMANIAK, Maciej SIEDLECKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3414 DEVELOPMENT OF ROAD TEST TO EVALUATE THE FUEL CONSUMPTION IN THE URBAN CYCLE FOR CITY BUSES EQUIPPED WITH HYBRID POWERTRAIN
Zbigniew STĘPIEŃ <i>Oil and Gas Institute National Research Institute in Cracow, Poland</i>	PTNSS–2015–3418 MULTIDIRECTIONAL INVESTIGATIONS OF HIGH-ETHANOL FUELS ON DEPOSIT FORMATION IN SPARK IGNITION ENGINES
Jacek CZYŻEWICZ, Jacek KROPIWNICKI Oskar WYSOCKI <i>Gdansk University of Technology, Poland</i>	PTNSS–2015–3421 MODEL OF THE HYDRAULIC PUMP POWERTRAIN OF REFUSE COLLECTION VEHICLE COMPACTION MECHANISM
Oleh KLYUS <i>Maritime University of Szczecin , Poland</i>	PTNSS–2015–3423 THE USING OF PRELIMINARY BIOFUEL TREATMENT IN DIESEL ENGINES
Wojciech JARZYŃSKI¹ Zbigniew KNEBA² ¹ Elpigaz Ltd.: Poland ² Gdansk University of Technology, Poland	PTNSS–2015–3429 RESEARCH ON THE INFLUENCE AND THE METHODOLOGY OF THE CALIBRATION PROCESS FOR DIESEL-LPG DUAL FUEL SUPPLY SYSTEMS
Paweł DASZKIEWICZ¹ Maciej ANDRZEJEWSKI¹ Agnieszka MERKISZ-GURANOWSKA² Hanna STAWECKA¹, Dawid GALLAS¹ ¹ Rail Vehicles Institute “TABOR” in Poznan ² Poznan University of Technology, Poland	PTNSS–2015–3431 THE EXISTING SOLUTIONS TO REDUCE POLLUTANTS EMISSIONS OF RAIL VEHICLES
Aleksander GÓRNIAK, Kamil TRZMIEL Radosław WŁOSTOWSKI, Radosław WRÓBEL <i>Wroclaw University of Technology, Poland</i>	PTNSS–2015–3436 PRELIMINARY INVESTIGATION OF A GASEOUS FUEL COMPOSITION INFLUENCE ON SPARK IGNITION ENGINE PERFORMANCE
Dariusz PIETRAS Artur WOJTALA <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3438 EVALUATION OF SMOKE VALUES OF DIESEL ENGINES USING A FILTER OPACIMETERS ACCORDING TO THE SCALE BOSCH AND FSN
Zdzisław CHŁOPEK Tomasz SZCZEPAŃSKI <i>Motor Transport Institute, Warsaw, Poland</i>	PTNSS–2015–3441 RATING CAUSES THE NON-REPEATABILITY OF AN INTERNAL COMBUSTION ENGINE OPERATING STATES IN THE SETS OF HIS WORK CONDITIONS
Ryszard LEWKOWICZ Piotr PIĄTKOWSKI Ryszard ŚCIEGIENKA <i>Koszalin University of Technology, Poland</i>	PTNSS–2015–3443 THE ANALYSIS OF EFFICIENCY VEHICLE’S AFTER TREATMENTS SYSTEMS ON THE BASIS OF ANNUAL TECHNICAL INSPECTION
Andrzej MRUK Jerzy CISEK <i>Cracow University of Technology, Poland</i>	PTNSS–2015–3446 THE MEASUREMENT AND IDENTIFICATION OF THE PARTICULATE MATTER IN DIESEL ENGINE EXHAUST GASES
Ryszard BUCHALIK, Daniel BUCZKOWSKI Grzegorz PRZYBYŁA <i>Silesian University of Technology, Gliwice, Poland</i>	PTNSS–2015–3450 LABORATORY TESTS OF SMALL POWER GENERATOR DRIVEN BY SI ENGINE
Wojciech GIS Maciej MENES <i>Motor Transport Institute, Warsaw, Poland</i>	PTNSS–2015–3453 THE TEST RESULTS OF AVERAGE ANNUAL MILEAGES OF PASSENGER CARS IN POLAND IN YEAR 2014
Wojciech GIS¹, Maciej MENES¹ Jacek PIELECHA², Maciej GIS³ ¹ Motor Transport Institute, Warsaw, Poland ² Poznan University of Technology, Poland ³ Warsaw University of Technology, Poland	PTNSS–2015–3455 IMPLEMENTATION OF VEHICLES EQUIPPED WITH FUEL CELLS AND HYDROGEN REFUELING INFRASTRUCTURE IN EUROPE
Marta AMBROSEWICZ-WALACIK Kamil DUDA Szymon NITKIEWICZ <i>University of Warmia and Mazury In Olsztyn, Poland</i>	PTNSS–2015–3459 INFLUENCE OF THE KIND AND QUANTITY OF RENEWABLE ENERGY SOURCES ON THE QUALITY OF ALTERNATIVE FUELS USED TO POWER COMPRESSION IGNITION ENGINES
Bartosz ORSZULAK¹, Jerzy MERKISZ¹ Maciej ANDRZEJEWSKI² ¹ Poznan University of Technology, Poland ² Rail Vehicles Institute “TABOR” in Poznan, Poland	PTNSS–2015–3461 EVALUATE THE USEFULNESS OF RESEARCH USING A PASSENGER VEHICLE SIMULATOR TO VERIFY THE APPLICATION OF THE ECO-DRIVING GUIDELINES BY DRIVERS

Aleksander GÓRNIAK, Anna JANICKA Maria SKRĘTOWICZ, Kamil TRZMIEL Radosław WŁOSTOWSKI, Radosław WRÓBEL Maciej ZAWIŚLAK <i>Wroclaw University of Technology, Poland</i>	PTNSS–2015–3463 CONDITIONING OF A BIOMASS GASIFICATION PRODUCT GASES FOR SUPPLYING A COMBUSTION ENGINE
Tomasz KNEFEL¹, Jacek NOWAKOWSKI¹ Andrzej SUCHECKI², Krzysztof BRZOZOWSKI¹ ¹ <i>University of Bielsko-Biala, Poland</i> ² <i>BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland</i>	PTNSS–2015–3465 THE IMPACT OF FAME IN DIESEL FUEL ON THE EMISSION HARMFUL EXHAUST COMPONENTS OF COMPRESSION IGNITION ENGINE
Andrzej SUCHECKI¹, Jacek NOWAKOWSKI² Tomasz KNEFEL², Józef SOCHACKI¹ ¹ <i>BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland</i> ² <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3467 IMPACT ASSESSMENT OF TECHNOLOGICAL CHANGES ON SELECTED PERFORMANCE DIESEL ENGINES
Michał OLCZYK, Jerzy KORZEC Piotr BIELACZYK, Adam SORDYL <i>BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland</i>	PTNSS–2015–3473 CNG AND DIESEL FUEL SUPPLY SYSTEM IN THE CI ENGINE AS AN ALTERNATIVE FOR TRADITIONAL FUEL SYSTEMS
Piotr BIELACZYK, Andrzej SZCZOTKA Piotr PAJDOWSKI, Joseph WOODBURN <i>BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland</i>	PTNSS–2015–3477 THE POTENTIAL OF CURRENT EUROPEAN LIGHT DUTY LPG-FUELLED VEHICLES TO MEET EURO 6 REQUIREMENTS
Grzegorz BORUTA¹, Arkadiusz OLEJNIK¹ Andrzej PIĘTAK¹, Mieczysław STRUŚ² ¹ <i>University of Warmia and Mazury In Olsztyn, Poland</i> ² <i>Wroclaw University of Technology, Poland</i>	PTNSS–2015–3483 TESTING THE INTENSITY OF THE CARBON DEPOSITS ACCUMULATION ON FUEL INJECTOR NOZZLES FOR DIFFERENT BIO-FUELS
Artur JAWORSKI, Hubert KUSZEWSKI Kazimierz LEJDA, Adam USTRZYCKI Paweł WOŚ <i>Rzeszow University of Technology, Poland</i>	PTNSS–2015–3487 EFFECT OF SELECTED LIQUID LPG INJECTION PARAMETERS ON THE CONCENTRATION OF TOXIC COMPOUNDS IN SPARK IGNITION ENGINE
Winicjusz STANIK¹, Aleksander MAZANEK¹ Janusz JAKÓBIEC² <i>Oil and Gas Institute National Research Institute in Cracow, Poland</i> ² <i>AGH University of Science and Technology, Cracow, Poland</i>	PTNSS–2015–3490 STUDY OF DIESEL OIL CONTAINING 7% (V/V) OF FAME AND CETANE BOOST ADDITIVE FOR THE ASSESSMENT ITS UTILITY AND PURITY OF INJECTORS
Marta AMBROSEWICZ-WALACIK Tomasz DANIELEWICZ <i>University of Warmia and Mazury In Olsztyn, Poland</i>	PTNSS–2015–3494 PYROLYTIC OIL AND PETROLEUM FRACTIONS OBTAINED BY PYROLYSIS OF VEHICLE TIRES AS AN ENERGY SOURCES FOR COMPRESSION-IGNITION ENGINES
Marta AMBROSEWICZ-WALACIK Andrzej PIĘTAK <i>University of Warmia and Mazury In Olsztyn, Poland</i>	PTNSS–2015–3496 EVALUATION OF THE QUALITY OF DIESEL FUELS USED FOR POWERING DIESEL ENGINES RECEIVED FROM OLSZTYN SELECTED PETROL STATIONS
Waldemar BUSZ Adrian WALASZYK <i>CSM „Auto-elektronika Kędzia”, Poznan, Poland</i>	PTNSS–2015–3501 OPTIMIZE THE TESTING PROCESS COMMON RAIL FUEL INJECTORS
Wojciech KARPIUK, Grzegorz KINAL Rafał SMOLEC <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3504 ANALYSIS OF THE EFFECTS OF RAPE FUELS ON ELEMENTS MODERN INJECTION SYSTEMS IN DIESEL ENGINES
Leszek WONTKA Tomasz KNIAZIEWICZ <i>Polish Naval Academy in Gdynia, Poland</i>	PTNSS–2015–3506 MODELLING OF MECHANICAL LOSSES IN MARINE DIESEL ENGINE
Bogdan POJAWA <i>Polish Naval Academy in Gdynia, Poland</i>	PTNSS–2015–3508 STUDYING THE EFFECTS OF CHANGES IN AMBIENT CONDITION PARAMETERS ON THE TORQUE CHARACTERISTICS OF A NAVAL GAS TURBINE
Andrzej AMBROZIK, Tomasz AMBROZIK Dariusz KURCZYŃSKI, Piotr ŁAGOWSKI <i>Kielce University of Technology, Poland</i>	PTNSS–2015–3511 MODERN EXPERIMENTAL SET-UP FOR INVESTIGATIONS INTO STRATEGIES FOR THE CONTROL AND FUELLING OF SPARK IGNITION ENGINES
Michał RODAK, Maria SKRĘTOWICZ Anna JANICKA, Maciej ZAWIŚLAK <i>Wroclaw University of Technology, Poland</i>	PTNSS–2015–3513 NUMERICAL ANALYSIS OF VOLATILE ORGANIC COMPOUNDS CONCENTRATION IN A C SEGMENT VEHICLE INTERIOR

Mieczysław STRUŚ Wojciech POPRAWSKI Mariusz REWOLTE <i>Wroclaw University of Technology, Poland</i>	PTNSS–2015–3517 EFFICIENCY OF RAW MATERIAL SELECTION FOR THE SECOND GENERATION BIOXDIESEL BIOFUEL FOR DIESEL ENGINES
Maciej LISOWSKI <i>West Pomeranian University of Technology, Szczecin, Poland</i>	PTNSS–2015–3519 SIMULATION RESEARCH ON ENVIRONMENTAL IMPACT PARAMETERS FOR FILLING THE CYLINDER ENGINE
Grzegorz WCISŁO^{1,2}, Natalia LABAK¹ ¹ <i>Agricultural University of Cracow</i> ² <i>Malopolskie Centre for Renewable Energy Sources "BioEnergia", Cracow, Poland</i>	PTNSS–2015–3521 DETERMINATION OF THE IMPACT OF THE TYPE OF CORN OIL USED FOR PRODUCTION OF BIOFUELS ON THE FRACTIONAL COMPOSITION OF CME
Stanisław W. KRUCZYŃSKI¹, Piotr ORLIŃSKI¹ Marcin K. WOJS¹, Marlena OWCZUK² Anna MATUSZEWSKA² ¹ <i>Warsaw University of Technology, Poland</i> ² <i>Automotive Industry Institute in Warsaw, Poland</i>	PTNSS–2015–3524 RATING OCCURRENCE OF KNOCK COMBUSTION IN A DUAL FUEL CI ENGINE POWERED BY ADDITION OF BIOGAS
Dariusz PIERNIKARSKI <i>Lublin University of Technology, Poland</i>	PTNSS–2015–401 COMPARISON OF STRUCTURAL AND OPERATIONAL PARAMETERS OF SELECTED EURO VI ENGINES USED IN LONG DISTANCE COMMERCIAL VEHICLES
Emilia BASZANOWSKA¹, Zbigniew OTREMBA² ¹ <i>Gdynia Maritime University</i> ² <i>Poznan University of Technology, Poland</i>	PTNSS–2015–403 ULTRAVIOLET-INDUCED FLUORESCENCE OF LUBRICATE OILS
Michał OLCZYK, Bartosz HEJNY Piotr BIELACZYK, <i>BOSMAL Automotive R&D Institute Ltd. Bielsko-Biala, Poland</i>	PTNSS–2015–409 AN OVERVIEW OF PARTICLE NUMBER EMISSION FROM DIRECT INJECTION SI ENGINE IN SCOPE OF NEW LEGISLATION RULES

List of Papers of the Poster Session II

Wojciech CIEŚLIK¹, Ireneusz PIELECHA¹ Andrzej SZALEK² ¹ <i>Poznan University of Technology, Poland</i> ² <i>Toyota and Lexus Academy in Toyota Motor Poland Company Ltd. Warsaw, Poland</i>	PTNSS–2015–202 ASSESSMENT OF PARAMETERS OF THE HYBRID DRIVE SYSTEM IN VEHICLES IN URBAN TRAFFIC CONDITIONS
Wojciech SERDECKI Piotr KRZYMIEŃ <i>Poznan University of Technology, Poland</i>	PTNSS–2015–206 DISTRIBUTION OF RING PRESSURE OVER A WORN CYLINDER LINER SURFACE
Władysław MITIANIEC Konrad BUCZEK <i>Cracow University of Technology, Poland</i>	PTNSS–2015–301 MODIFICATION OF FOUR-STROKE ENGINE FOR OPERATION IN TWO-STROKE CYCLE FOR AUTOMOTIVE APPLICATION
Jarosław KAŁUŻNY¹, Antoni ISKRA¹ Michael GIERSIG², Krzysztof KEMPA³ ¹ <i>Poznan University of Technology, Poland</i> ² <i>Freie University Berlin, Germany</i> ³ <i>Boston College, USA</i>	PTNSS–2015–307 THE APPLICATION OF CARBON NANOTUBES FOR REDUCING THE FRICTION LOSSES OF INTERNAL COMBUSTION ENGINE
Mariusz GRABA, Jarosław MAMALA Andrzej BIENIEK <i>Opole University of Technology, Poland</i>	PTNSS–2015–3311 ESTIMATING THE VALUE OF DECOMPOSITION EMISSIONS OF NITROGEN OXIDES IN THE COMPRESSION IGNITION ENGINE
Zdzisław CHŁOPEK <i>Motor Transport Institute, Warsaw, Poland</i>	PTNSS–2015–3314 THE MODELING BASIS OF THE POLLUTANT EMISSION AND THE FUEL AND ENERGY CONSUMPTION FOR INTERNAL COMBUSTION ENGINES OF MOTOR VEHICLES
Antoni ISKRA, Piotr KRZYMIEŃ Emil WRÓBLEWSKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3318 GEOMETRY OF THE IMPROVED LAYER OVER A PISTON SKIRT
Maciej BIELIŃSKI, Tomasz BOROWCZYK Wojciech KARPIUK, Marek IDZIOR <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3322 ASSESSMENT OF THE IMPACT TURBOCHARGER DAMAGE ON SELECTED PARAMETERS OF THE SPARK IGNITION ENGINE
Ireneusz PIELECHA <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3324 THERMODYNAMIC ASPECTS OF THE OPERATION OF ENGINE WITH GASOLINE DIRECT FUEL INJECTION FOR IDLE SPEED
Krzysztof PARCZEWSKI Kazimierz M. ROMANISZYN <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3330 METHODS OF TESTING OF VEHICLES LATERAL STABILITY BASED ON THE STUDY OF PHYSICAL MODELS

Wojciech CIEŚLIK¹, Ireneusz PIELECHA¹ Łukasz KAPUSTA² ¹ Poznan University of Technology, Poland ² Warsaw University of Technology, Poland	PTNSS–2015–3333 THE CONCEPT OF COMBUSTION SYSTEM WITH USE OF RECIRCULATED EXHAUST GAS IN THE SPARK IGNITION ENGINE
Łukasz ZIELIŃSKI, Damian WALCZAK Stanisław RADKOWSKI, Krzysztof SZCZUROWSKI <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3337 THE EFFECT OF PERFORMANCE PARAMETERS OF DUAL FUEL CI ENGINE ON ITS VIBROACOUSTICAL ACTIVITY
Emil WERESA, Jarosław CZABAN Dariusz SZPICA, Piotr BANASZUK <i>Białystok University of Technology, Poland</i>	PTNSS–2015–3339 IMPACT OF FUEL BIO-COMPONENT IN THE FORM OF VEGETABLE OIL ON COOPERATING PAIRS WEAR
Zbigniew KORCZEWSKI Patrycja PUZDROWSKA <i>Gdansk University of Technology, Poland</i>	PTNSS–2015–3342 ANALYTICAL METHOD OF DETERMINING DYNAMIC PROPERTIES OF THERMOCOUPLES USED IN MEASUREMENTS OF QUICK – CHANGING TEMPERATURES OF EXHAUST GASES IN MARINE DIESEL ENGINES
Ireneusz PIELECHA, Przemysław BOROWSKI Krzysztof WISŁOCKI, Maciej SKOWRON Wojciech BUESCHKE, Wojciech CIEŚLIK <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3344 FAST-VARYING PROCESSES IN-CYLINDER CI ENGINE IN HIGH EGR CONDITIONS
Jarosław CZABAN, Dariusz SZPICA Emil WERESA, Piotr BANASZUK <i>Białystok University of Technology, Poland</i>	PTNSS–2015–3348 FUEL EXPLOITATION PROPERTIES OF DIESEL AND VEGETABLE OIL MIXTURES
Jerzy MERKISZ¹, Jacek PIELECHA¹ Wojciech GIS², Maciej GIS³ Remigiusz JASIŃSKI¹ ¹ Poznan University of Technology, Poland ² Motor Transport Institute, Warsaw, Poland ³ Warsaw University of Technology, Poland	PTNSS–2015–3352 ANALYSIS OF EXHAUST EMISSION FROM HEAVY DUTY VEHICLES IN REAL TRAFFIC CONDITIONS
Jacek PIELECHA, Jerzy MERKISZ Jarosław MARKOWSKI, Remigiusz JASIŃSKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3355 THE STUDY OF PARTICULATE EMISSIONS FROM SMALL AIRCRAFT EQUIPPED IN JET ENGINE
Kazimierz WITKOWSKI <i>Gdynia Maritime Academy, Poland</i>	PTNSS–2015–3358 DIAGNOSIS OF INJECTION SYSTEM MARINE DIESEL ENGINE WITH THE USE OF THE HEAT RELEASE CHARACTERISTICS
Łukasz GRABOWSKI, Mirosław WENDEKER Grzegorz BARAŃSKI, Michał GĘCA <i>Lublin University of Technology, Poland</i>	PTNSS–2015–3362 EXPERIMENTAL INVESTIGATION OF THE ELECTRIC POWER GENERATION EFFICIENCY IN CITY BUS
Paweł MAGRYTA¹, Mirosław WENDEKER¹ Rafał SOCHACZEWSKI², Adam MAJCZAK¹ ¹ Lublin University of Technology, Poland ² State School of Higher Education in Białą Podlaską, Poland	PTNSS–2015–3366 STRENGTH ANALYSIS OF CNG INJECTOR FOR DIRECT SUPPLY SYSTEM OF THE DIESEL ENGINE
Rafał SOCHACZEWSKI, Mirosław WENDEKER Grzegorz BARAŃSKI, Adam MAJCZAK <i>Lublin University of Technology, Poland</i>	PTNSS–2015–3369 CNG INJECTOR BENCH TESTS OF A DIRECT INJECTION SYSTEM
Maciej ANDRZEJEWSKI¹ Jerzy MERKISZ², Mateusz NOWAK² ¹ Rail Vehicles Institute “TABOR” in Poznań, Poland ² Poznań University of Technology, Poland	PTNSS–2015–3372 THE EFFECT OF CI ENGINE SPEED ON THE EMISSION OF TOXIC COMPOUNDS IN THE EXHAUST GASES
Jarosław MARKOWSKI, Jacek PIELECHA Jerzy MERKISZ, Mateusz NOWAK <i>Poznań University of Technology, Poland</i>	PTNSS–2015–3375 ASSESSMENT OF THE RELATIVE POWER OUTPUT OF THE SPARK-IGNITION ENGINE BASED ON THE VALUES OF THERMODYNAMIC PARAMETERS OF EXHAUST AND THE CRANKSHAFT ROTATION SPEED
Jerzy MERKISZ, Maciej SIEDLECKI Andrzej ZIÓŁKOWSKI, Paweł FUĆ Piotr LIJEWSKI <i>Poznań University of Technology, Poland</i>	PTNSS–2015–3380 METHODS OF REDUCING EMISSION FROM HDV EURO VI ENGINES
Marek BRZEŻAŃSKI¹, Przemysław MEŻYK² ¹ Cracow University of Technology, Poland ² Research and Development Centre of Mechanical Appliances OBRUM Ltd., Gliwice, Poland	PTNSS–2015–3385 STARTERS OF COMBUSTION ENGINES IN MILITARY VEHICLES

Antoni ISKRA, Maciej BABIAK Emil WRÓBLEWSKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3391 CHARACTERISTICS OF FRICTION LOSSES OF ALUMINUM AND STEEL PISTONS FOR DIESEL ENGINE PASSENGER CAR
Piotr BOGUŚ¹, Rafał GRZESZCZYK² Adam WRONA², Mateusz DEDO² Jarosław MARKOWSKI³, Jerzy MERKISZ³ Marek WALIGÓRSKI³ ¹ <i>Medical University of Gdansk , Rail Vehicle Institute TABOR in Poznan</i> ² <i>Automex Sp. z o.o., Gdansk , Poland</i> ³ <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3396 NUMERICAL ANALYSIS OF THE REACTIVE CYLINDER VIBRATION SIGNAL CAUSED BY FUEL STREAM IN TERMS OF USING OBTAINED RESULTS TO EVALUATE THE FITNESS OF THE INJECTOR
Andrzej SUCHETA <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3399 THE EFFECT OF OXYGEN ENRICHMENT OF DEPLETED AIR ON EQUILIBRIUM GAS COMPOSITION IN COMBUSTION PRODUCTS AND SELECTED PARAMETERS OF THE THEORETICAL OTTO CYCLE
Dariusz SZPICA, Jarosław CZABAN Emil WERESA, Piotr BANASZUK <i>Bialystok University of Technology, Poland</i>	PTNSS–2015–3401 NUMERICAL SIMULATION OF THE OPERATION CYCLE OF COMPRESSION-IGNITION ENGINE FED WITH PVO-DIESEL MIXTURE
Adrian CHMIELEWSKI, Kamil LUBIKOWSKI Jędrzej MACZAK, Krzysztof SZCZUROWSKI <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3410 GEOMETRICAL MODEL OF COGENERATION SYSTEM BASED ON A 1MW GAS ENGINE
Stanisław POLANOWSKI <i>Gdynia Maritime University, Poland</i>	PTNSS–2015–3412 APPROXIMATION OF THE TABLES OF THE AIR MOLAR SPECIFIC HEAT OF THE DRY AIR IN THE RANGE OF COMPRESSION
Piotr ORLIŃSKI¹, Marcin K. WOJS¹ Paweł MAZURUK², Paweł KRUCZYŃSKI² ¹ <i>Warsaw University of Technology, Poland</i> ² <i>BU Power Systems Poland / Perkins Poland</i>	PTNSS–2015–3417 INFLUENCE OF BIODIESEL ON INJECTION NOZZLE COKING
Paweł KOMORSKI Grzegorz M. SZYMAŃSKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3419 ACOUSTIC MODELS OF BUS INTERIOR REGARDING THE DIFFERENT POINTS OF WORKING COMBUSTION ENGINE
Paweł KORTAS¹, Jacek KROPIWNICKI² ¹ <i>Section of repair of rolling stock at PKP Intercity inc., Poland</i> ² <i>Gdansk University of Technology, Poland</i>	PTNSS–2015–3422 ANALYSIS OF ACCUMULATION POSSIBILITY OF ENERGY DISSIPATED IN THE BRAKING PROCESS OF TRAIN DRIVEN BY HYBRID LOCOMOTIVE
Arkadiusz RYCHLIK¹, Łukasz KIBALCZYK² ¹ <i>University of Warmia and Mazury In Olsztyn, Poland</i> ² <i>KLM – Energy Ltd., Smukówko, Poland</i>	PTNSS–2015–3427 APPLICATION OF GLYCERINE FOR POWERING PISTON DIESEL ENGINES OF LARGE POWER
Maciej ANDRZEJEWSKI¹, Ireneusz PIELECHA² Paweł DASZKIEWICZ¹ Agnieszka MERKISZ-GURANOWSKA² Łukasz STAWIECKI² ¹ <i>Rail Vehicles Institute “TABOR” in Poznan, Poland</i> ² <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3430 THE HYBRIDIZATION OF PROPULSION SYSTEMS OF MASS TRANSPORT VEHICLES
Zdzisław STELMASIAK Jerzy LARISCH Dariusz PIETRAS <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3432 THE EFFECT OF NATURAL GAS ADDITION ON SELECTED OPERATING PARAMETERS FIAT 1.3 MULTIJET ENGINE POWERED DUAL-FUEL
Tomasz OSIPOWICZ, Karol F. ABRAMEK Tomasz STOECK <i>West Pomeranian University of Technology, Poland</i>	PTNSS–2015–3437 TESTING OF MODERN COMMON RAIL FUEL INJECTORS
Piotr ŚWIĄTEK Paweł FUĆ <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3439 ANALYSIS OF COMBUSTION ENGINE DESIGN DIFFERENCES BETWEEN VEHICLE AND ULTRALIGHT AIRCRAFT ENGINES
Piotr PIĄTKOWSKI <i>Koszalin University of Technology, Poland</i>	PTNSS–2015–3442 INDIRECT METHOD OF IN-CYLINDER SWIRL GENERATION
Piotr BERA <i>AGH University of Science and Technology, Cracow, Poland</i>	PTNSS–2015–3444 A COMPARISON OF THE FUEL CONSUMPTION CHARACTERISTIC IN DYNAMIC STATES WITH THE GENERAL CHARACTERISTIC OF THE COMBUSTION ENGINE

Władysław MITIANIEC <i>Cracow University of Technology, Poland</i>	PTNSS–2015–3447 PERSPECTIVES OF APPLYING OF WATER-COAL EMULSION IN HEAVY DUTY STATIONARY DIESEL ENGINES
Marcin SZLACHETKA <i>Lublin University of Technology, Poland</i>	PTNSS–2015–3452 INVESTIGATION OF FUEL FILM FORMATION AND ITS DISAPPEARANCE DURING THE INJECTION OF THE PETROL AND BIOFUEL E85
Jerzy MERKISZ¹, Jacek PIELECHA¹ Wojciech GIS², Maciej GIS³ Remigiusz JASIŃSKI¹ ¹ <i>Poznan University of Technology, Poland</i> ² <i>Motor Transport Institute, Warsaw, Poland</i> ³ <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3454 COMPARATIVE ASSESSMENT OF EXHAUST EMISSION BUSES: POWERED CNG AND DIESEL
Wojciech GIS, Jerzy WAŚKIEWICZ Maciej MENES <i>Motor Transport Institute, Warsaw, Poland</i>	PTNSS–2015–3456 SOCIO-ECONOMIC AND ENVIRONMENTAL EFFECTS OF THE USE OF BIOGAS IN THE NATIONAL, URBAN BUS TRANSPORT
Maciej BAJERLEIN¹, Paweł DASZKIEWICZ² Michał DOBRZYŃSKI¹, Łukasz RYMANIAK¹ Maciej SIEDLECKI¹ ¹ <i>Poznan University of Technology, Poland</i> ² <i>Rail Vehicles Institute "TABOR" in Poznan, Poland</i>	PTNSS–2015–3460 THE ANALYSIS OF EMISSION FROM CNG CITY BUS IN TERMS OF PROCEDURES NTE AND THE EU 582/2011
Paweł FUĆ, Piotr LIJEWSKI Maciej BAJERLEIN, Marta GALANT Maciej SIEDLECKI <i>Poznan University of Technology, Poland</i>	PTNSS–2015–3462 ENVIRONMENTAL AND ECONOMIC ASPECTS OF OPERATION OF VARIOUS CONFIGURATIONS OF URBAN BUS DRIVE SYSTEMS
Marek LUTOWICZ <i>Polish Naval Academy in Gdynia, Poland</i>	PTNSS–2015–3464 INTERFERENCE METHOD TO MEASURE ENGINE INSTANTANEOUS ANGULAR SPEED
Jacek CZARNIGOWSKI¹ Andrzej PRYZOWICZ^{2,1} ¹ <i>Lublin University of Technology, Poland</i> ² <i>Advisory Office PLUS,</i>	PTNSS–2015–3466 TEST STAND FOR LONG-TERM TESTING IN EXTREME THERMAL CONDITIONS PULSE GAS INJECTORS
Andrzej WOLFF <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3468 NUMERICAL ANALYSIS OF HEAT TRANSFER IN CYLINDER OF A MARINE TWO-STROKE ENGINE
Adam CHARCHALIS <i>Gdynia Maritime University, Poland</i>	PTNSS–2015–3475 LABORATORY TEST STAND FOR EVALUATION OF EFFECTIVENESS OF CLEANING OF MARINE ENGINES EXHAUST GASES
Grzegorz BORUTA <i>University of Warmia and Mazury in Olsztyn, Poland</i>	PTNSS–2015–3482 STATISTICAL EVALUATION OF THE INTENSITY OF THE CARBON DEPOSITS ACCUMULATION ON FUEL INJECTOR NOZZLES FOR DIFFERENT BIO-FUELS
Kazimierz LEJDA, Hubert KUSZEWSKI Krzysztof LEW <i>Rzeszow University of Technology, Poland</i>	PTNSS–2015–3486 THE INFLUENCE OF PHYSICOCHEMICAL FUEL PROPERTIES ON OPERATING PARAMETERS IN DIESEL ENGINE
Hubert KUSZEWSKI, Artur JAWORSKI Kazimierz LEJDA, Adam USTRZYCKI Paweł WOŚ <i>Rzeszow University of Technology, Poland</i>	PTNSS–2015–3488 THE STUDY OF DERIVED CETANE NUMBER FOR ETHANOL-DIESEL BLENDS
Jolanta ŻAK Piotr GOŁĘBIOWSKI <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3491 COMPARATIVE ANALYSIS OF THE RAIL AND ROAD TRANSPORT IN THE CO₂ EMISSION
Sławomir TKACZYK <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3495 THE METHOD FOR SELECTION AND COMBINING THE MEANS OF TRANSPORTATION ACCORDING TO THE EURO STANDARDS
Andrzej BIENIEK, Jarosław MAMAŁA Mariusz GRABA, Krzysztof PRAŻNOWSKI <i>Opole University of Technology, Poland</i>	PTNSS–2015–3499 POSSIBILITIES TO IMPROVE EMISSION PROPERTY OF COMPRESSION IGNITION ENGINE BY APPLYING OF CATALYTIC FUEL ADDITIVES
Michał ŚMIEJA¹, Sławomir WIERZBICKI¹ Jarosław MAMAŁA² ¹ <i>University of Warmia and Mazury in Olsztyn, Poland</i> ² <i>Opole University of Technology, Poland</i>	PTNSS–2015–3503 APPLICATION OF ETHERNET PROTOCOL FOR COMMUNICATION IN ONBOARD DIAGNOSTIC SYSTEMS

Jacek DYBAŁA, Tomasz MYDŁOWSKI Artur MAŁECKI, Krzysztof BOGDZIŃSKI <i>Warsaw University of Technology, Poland</i>	PTNSS–2015–3505 DYNAMOMETER AND TEST STAND FOR LOW POWER INTERNAL COMBUSTION ENGINE
Ryszard ZADRĄG¹, Tomasz KNIAZIEWICZ² ¹ <i>Gdansk University of Technology, Poland</i> ² <i>Polish Naval Academy in Gdynia, Poland</i>	PTNSS–2015–3507 IDENTIFICATION OF DIAGNOSTIC PARAMETER SENSITIVITY DURING DYNAMIC PROCESSES OF A MARINE ENGINE
Zdzisław STELMASIAK, Jerzy LARISCH Dariusz PIETRAS <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3510 SELECTED PROBLEMS OF ADAPTATION CAR DIESEL ENGINE FOR DUAL FUEL SUPPLYING
Tomasz AMBROZIK¹, Merve BOZKIR² Mateo Ramon MARTINEZ³, Mustafa UCAR² ¹ <i>Kielce University of Technology, Poland</i> ² <i>Malatya Junior Technical College, Turkey</i> ³ <i>University of Castilla la Mancha, Spain</i>	PTNSS–2015–3512 THE OPERATION PARAMETERS OF AN ENGINE SUPPLIED WITH DIESEL OIL AND B20 FUEL
Andrzej RÓŻYCKI <i>University of Technology and Humanities in Radom, Poland</i>	PTNSS–2015–3516 OPPORTUNITY OF APPLICATION OF THE KNOCK PHENOMENON AND SMOKE EMISSION FOR THE CONTROL OF COMMON-RAIL INJECTION PARAMETERS
Krzysztof DANILECKI Jacek ELIASZ <i>West Pomeranian University of Technology, Poland</i>	PTNSS–2015–3518 TWO-PHASE SEQUENTIAL TURBOCHARGING SYSTEM WITH TWO UNEQUAL-SIZE TURBOCHARGERS. POSSIBILITIES FOR DEVELOPMENT
Zdzisław STELMASIAK, Jerzy LARISCH Dariusz PIETRAS <i>University of Bielsko-Biala, Poland</i>	PTNSS–2015–3520 SOME PROBLEMS OF CONTROLLING THE CARS DIESEL ENGINE POWERED DUAL FUEL
Grzegorz WCISŁO^{1,2}, Bolesław PRACUCH² ¹ <i>Agricultural University of Cracow</i> ² <i>Malopolskie Centre for Renewable Energy Sources "BioEnergia", Cracow, Poland</i>	PTNSS–2015–3522 DETERMINATION OF THE RHEOLOGICAL PROPERTIES OF BIOFUELS CONTAINING CME BIOCOMPONENT
Witold WIŚNIEWSKI, Piotr KALINA <i>Institute of Aviation, Warsaw, Poland</i>	PTNSS–2015–3529 COMBUSTION ENGINES IN INSTITUTE OF AVIATION
Jacek CZARNIGOWSKI <i>Lublin University of Technology, Poland</i>	PTNSS–2015–402 EXPERIMENTAL RESEARCH OF CONTROL PARAMETERS INFLUENCE ON MAS FLOW FROM PULSE INJECTOR
Jerzy GIRTLEK <i>Gdansk University of Technology, Poland</i>	PTNSS–2015–407 POSSIBILITY OF ESTIMATING RELIABILITY OF DIESEL ENGINES BY APPLYING THE THEORY OF SEMI-MARKOV PROCESSES AND MAKING OPERATIONAL DECISIONS BY CONSIDERING RELIABILITY OF DIAGNOSIS ON TECHNICAL STATE OF THIS SORT OF COMBUSTION ENGINES
Paweł WOŚ, Artur JAWORSKI Hubert KUSZEWSKI, Kazimierz LEJDA Adam USTRZYCKI, <i>Rzeszow University of Technology, Poland</i>	PTNSS–2016–101 TECHNICAL AND OPERATING PROBLEMS YIELDED FROM SETTING UP THE OPTIMUM VALUE OF GEOMETRIC COMPRESSION RATIO IN PISTON ENGINES

CONGRESS LOCATION AND TRAVEL DETAILS

The proceedings of the Congress will be held in the **Conference Center UWM**.

Address location: Dybowskiego 11 Str, 10-719 Olsztyn, POLAND.

GPS location: 53°45'02.8"N, 20°27'30.7"E (53.750773, 20.458531)

Details of the travel:

- **Train communication** to Olsztyn
 - direct links are available from various cities of Poland
 - for more detailed information on train connection please visit: <http://www.pkp.com.pl>
- **Taxi** in Olsztyn:
 - NAJ-TAXI 89 19666
 - TaxiOlsztyn 89 19622
 - Greentaxi 89 19192
 - Taxi 89 19191
- **Public transport**

From the Railway station/Bus station to:

 - Congress Center: lines 3 and 22 (bus stop Conference Center)
 - Hotel Kopernik: lines 3 and 22 (bus stop Plac Roosevelta)
 - Dormitories: lines 3 and 22 (bus stop University Stadium)
 - Hotel Park: line 22 (bus stop Hotel Park)

To the Conference Center (bus stop University Stadium) from:

 - Hotel Copernic: lines 3, 9, 15, 22
 - Dormitories: 600 m walk
 - Hotel Park: 600 m walk
- **Congress shuttles**

Fives buses will run collecting guests to special events on 22nd June 2015:

 - From Hotel Park to Gala Concert in Warminsko-Mazurska Philhamonic Hall – two buses will be waiting in the hotel parking place at 17.50. Departure – 18.00
 - From Hotel Kopernik to Gala Concert in Warminsko-Mazurska Philhamonic Hall – two buses will be waiting in front of the hotel at 17.50. Departure – 18.00
 - From Dormitories – to Gala Concert in Warminsko-Mazurska Philhamonic Hall – one bus will be waiting opposite the university stadium, in front of Faculty of Technical Sciences (11 Oczapowskiego str.) at 17.50. Departure – 18.00
 - After the concert five buses will drive the participants to Gala Dinner from Philhamonic Hall Parking Place.
- **Individual transport**

GPS location of congress important places:

– Conference Center UWM	53°45'02.8"N 20°27'30.7"E	(53.750773, 20.458531)
– Park Hotel	53°44'49.6"N 20°27'40.8"E	(53.747114, 20.461335)
– Kopernik Hotel	53°46'19.3"N 20°28'19.4"E	(53.772031, 20.472068)
– "Kortowska" restaurant	53°45'30.8"N 20°27'12.4"E	(53.758554, 20.453449)
– "Przystań" restaurant	53°46'52.1"N 20°27'04.0"E	(53.781154, 20.451119)

Important places – localization on maps





