

# 3rd International Exhaust Emissions Symposium and Celebrations to mark BOSMAL's 40th anniversary 24-25 May 2012

## FINAL PROGRAMME



## Current and future trends in automotive emissions, fuels, lubricants and test methods - 2012

## **3rd International Exhaust Emissions Symposium and Celebrations to mark BOSMAL's 40th anniversary**

Concerns over the impact of the road transport sector on greenhouse gas emissions and air quality remain high. Road transport emissions are responsible for around 20 per cent of all greenhouse gas emissions in the European Union.

Simultaneously, high yet unstable oil prices combine with this political pressure to make the prospect of alternative fuels and biofuels potentially attractive prospects, but these areas remain controversial.

The global financial crisis has affected all economic sectors, the transport sector included. Automotive manufacturers are now required to launch new models more quickly and cost effectively than ever before, against a backdrop of increased requirements regarding emissions testing.

Despite advances in the area of electrical powertrains and hybrid systems, internal combustion engines remain the most promising option for the near future regarding power systems for personal transportation.

The main drivers that have an influence on current and future personal transportation development are:

- anthropogenic climate change as a techno-ecological issue - legislation aiming to reduce greenhouse gas emissions from the transport sector, global CO<sub>2</sub> legislation targets for new passenger cars and light commercial vehicles,
- emissions regulation development, notably in the EU, USA and Asia; regulation as an innovator: (e.g.: Euro 5(+)/6, US Tier 3, LEV III, 2010 Japanese long-term regulations, new H<sub>2</sub> regulations, etc.),
- harmonisation and standardisation of emissions testing methods and test cycles - the WLTP,
- a broadening of the range of regulated exhaust pollutants - particle number, additional gaseous pollutants,
- evolving consumer demands and tastes: downsizing, ecological credentials as a marketing tool, etc.,
- developments in internal combustion engine powertrain design in response to the existential threat posed by electrical/hybrid concepts.

At the 3rd International Exhaust Emissions Symposium, experts from automotive and engine manufacturers, their suppliers, and the oil industry, will discuss all these emissions-related issues and will report on recent updates, trends and the near future regarding engine exhaust gas emissions.

The technical symposium, and the social programme that will accompany it, are being planned as part of a series of events to mark the 40th anniversary of the foundation of BOSMAL.

### **Dear Customers, Friends and Colleagues,**

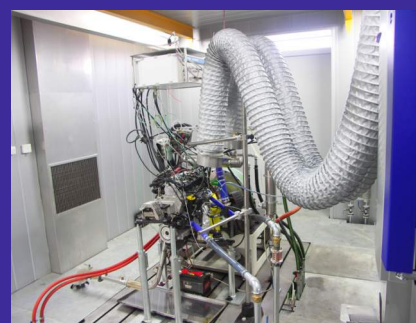
*Back in 2010, we organised the 1st Symposium, followed by the well-attended and well-received 2nd Symposium we hosted last year.*

*Mindful of the highly successful nature of these two events, we would like to invite you, on behalf of the BOSMAL Engineers' Society, the Symposium Organising Committee and ourselves, to participate in the 3rd International Exhaust Emissions Symposium, which will be held at BOSMAL in Bielsko-Biala, Poland.*

*Attendees will gain knowledge of a variety of subjects being presented on gaseous and particulate matter emissions; emissions legislation trends; emissions testing methods and equipment; the latest development trends in vehicular technology concerning improvements in emissions, fuel consumption, and aftertreatment systems; powertrain system development and powertrain test methods; the composition of transport fuels and their influence on emissions. It will be an excellent opportunity to obtain the latest information on the above-mentioned issues and to exchange opinions and share your experience with your colleagues.*

*This year, BOSMAL is celebrating the 40th anniversary of its foundation, and the symposium will form a highly important part of a series of celebrations planned to mark this momentous event.*

*Therefore, it is our great pleasure to invite you all to the third event of this type here at BOSMAL, so that the successes of our previous symposia may be built upon.*



**Piotr Bielaczyc, Ph.D.,**

*Chairman of the Organizing Committee*

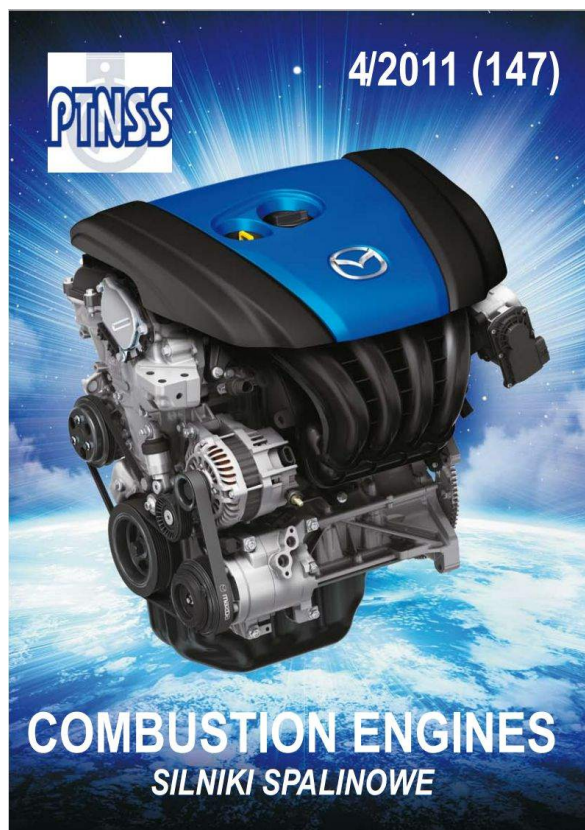
**Antoni Świątek, D.Eng., D.Sc.,**

*President & CEO*



## MEDIA PATRONAGE

Combustion Engines, a scientific magazine published by PTNSS, the Polish Society of Combustion Engines



A summary of the symposium will be published in the 3rd issue of 2012 (3/2012) of Combustion Engines. That issue will also feature Symposium Proceedings on CDRom and Symposium Reportage on DVD.

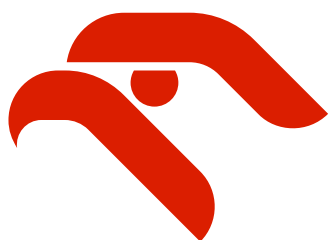
## GAZEO WEB PORTAL

# **gazeo.pl**

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and Celebrations  
to mark BOSMAL's 40th anniversary**

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## 3rd International Exhaust Emissions Symposium and Celebrations to mark BOSMAL's 40th anniversary

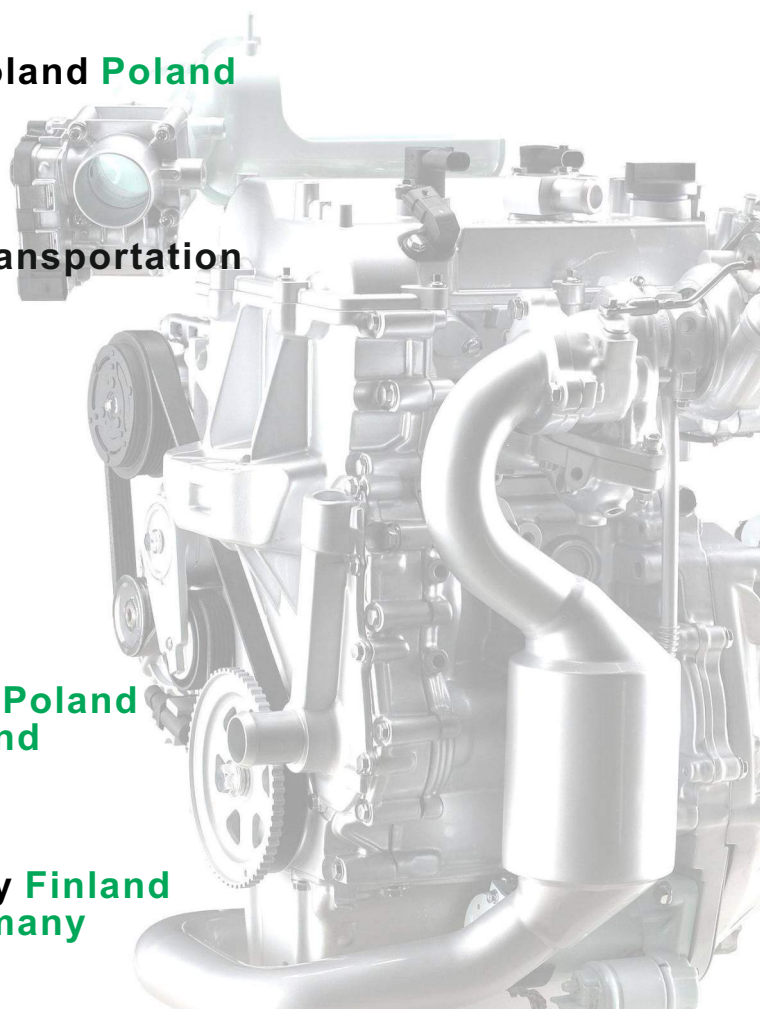
**We are hosting guests from the following countries:**



## 3rd International Exhaust Emissions Symposium and Celebrations to mark BOSMAL's 40th anniversary

### Our guests

AVL **Austria**  
BAM **Germany**  
BASF **Germany**  
Birmingham University **England**  
Bosch **Germany**  
Cracow University of Technology **Poland**  
DACA-I **Italy**  
Ecocat **Finland**  
EMPA **Switzerland**  
ENI **Italy**  
European Commission, JRC Energy Institute **Italy**  
Fiat Auto Poland **Poland**  
Fiat Powertrain **Italy**  
General Motors Manufacturing Poland **Poland**  
GMPT-E **USA/Italy**  
HORIBA **Japan/Austria/England**  
Ibiden **Japan/Hungary**  
Istituto Motori CNR **Italy**  
International Council on Clean Transportation  
ISUZU **Polska**  
Koenig Engineering **Germany**  
Lamborghini **Italy**  
Landirenzio **Italy**  
Linde Gas **Poland**  
Lombardini **Italy**  
Nanni Diesel **France**  
Oil and Gas Institute **Poland**  
Petronas **Italy**  
PKN Orlen **Poland**  
Politecnico di Torino **Italy**  
Poznan University of Technology **Poland**  
Radom Technical University **Poland**  
Shell Poland **Poland**  
Spectrolab **Poland**  
Statoil Fuel & Retail **Norway**  
Tampere University of Technology **Finland**  
Technical University Munich **Germany**  
Toyota **Poland**  
TSI **USA/Germany**  
Umicore **Italy/Germany**  
University of Beira Interior **Portugal**  
University of Bielsko-Biala **Poland**  
VM Motori **Italy**  
Warsaw University of Technology **Poland**  
Wartsila **Finland/Poland**  
WDL **England**  
Weiss **Germany**





## Main topics of the Symposium

- Emissions legislation
- Fuel economy
- New methods of PM testing
- Compounds which are potential candidates for emissions regulation
- Emissions test equipment
- Emissions reduction technology
- Aftertreatment system and catalyst technology
- Emissions simulation
- Powertrain development and electrification
- IC Engine test method development
- Vehicular fuel development
- Alternative fuels
- Gaseous fuels: CNG & LPG
- Engine oil development

**Symposium language:**  
English

**Symposium Dinner:**  
**HOTEL PAŁAC KOTULIŃSKICH**  
43-502 Czechowice-Dziedzice  
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[www.palackotulinski.pl](http://www.palackotulinski.pl)

## Organizing Committee:

- Piotr Bielaczyc, Ph.D.- Chairman
- Arkadiusz Waclawek- Coordinator
- Arkadiusz Stojcki
- Agnieszka Kaźmierczak
- Andrzej Szczotka, Ph.D.
- Piotr Pajdowski, Ph.D.
- Joseph Woodburn
- Dariusz Klimkiewicz, Ph.D.
- Andrzej Suchecki, Ph.D.
- Klaudiusz Waniółka
- Marzena Grygierek

## Venue:

**BOSMAL Automotive Research  
& Development Institute**  
Ul. Sarni Stok 93  
43-300 Bielsko-Biała  
Poland

## Accommodation - contact:

- Agnieszka Kaźmierczak  
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+48 33 8130 546

## Please address any organizational questions to:

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## 3rd International Exhaust Emissions Symposium and Celebrations to mark BOSMAL's 40th anniversary

### Ladies and Gentlemen:

I cordially welcome all guests to the Third International Exhaust Emissions Symposium. I welcome our friends, our scientific and business partners and those who are here at our Institute for the first time. I cordially welcome my colleagues from the Scientific Society of Internal Combustion Engines, and our other partners as well. This year's Symposium is special – because it's associated with the fortieth anniversary celebrations of BOSMAL Automotive Research and Development Institute's scientific and research activities.

From the moment of coming into existence, in 1972, BOSMAL has concentrated on solving key and mostly complicated technical issues concerning development and industrialization of vehicles, their components and subassemblies. Current, very rapid automotive technology development trends - which are forced by enormous pressure on energy consumption reduction needed to drive vehicles and minimization of toxic compounds in exhaust gasses – have caused a concentration of BOSMAL's resources and knowledge on advanced tests and engines and development of transmission and drivetrain elements. Engineering experience and “state of the art” laboratories allow us to continue the aforementioned BOSMAL strategy and mission – setting ourselves the target of a significant contribution to European automotive development.

Being aware of the inestimable benefits which are obtained by joint discussion between scientific institutions, research centers and industry, we arrange forums for the exchange of experience and scientific knowledge, the expression of which is – among others – the annual organization of the International Exhaust Emissions Symposia in Bielsko-Biała. I hope that this meeting will be an opportunity to listen to interesting presentations, exchange opinions and form new relationships.

I hereby deem the Third International Exhaust Emissions Symposium open; further deliberations will be led by the main organizer of the event, Dr Piotr Bielaczyc.

BOSMAL President  
Antoni Świątek, D.Eng., D.Sc.

**BOSMAL - 40 years ago**



**BOSMAL - nowadays**





## 3rd International Exhaust Emissions Symposium and Celebrations to mark BOSMAL's 40th anniversary

### Final Programme

**Thursday, 24<sup>th</sup> May 2012**

**09:00 - 09:20 Symposium Opening**

- Antoni Swiatek, President, BOSMAL Automotive R&D Institute

**Keynote speaker**

**09:20 - 10:00 - Michael P. Walsh, Board Chairman, International Council on Clean Transportation, USA  
- **Global Trends in Motor Vehicle Pollution Control - A 2012 Update****

**10:00 - 10:30 - Coffee break & AVL Cameo Software Presentation**

**Session 1 - Emissions Legislation/Test Methods Development**

Chair: Michael Walsh, USA & Piotr Bielaczyc, Poland

**10:30 - 11:00 - Piotr Bielaczyc, BOSMAL, Poland - **Automotive Emissions Legislation/Test Method Development Over the Last 40 Years and Future Predictions for the Next 40 Years****

**11:00 - 11:30 - Les Hill, HORIBA, UK - **Recent Developments and Trends in Exhaust Emissions Legislation****

**11:30 - 12:00 - Wolfgang Thiel, Technical University Munich, Germany - **Measuring Near Zero Automotive Exhaust Emissions - a Big Challenge****

**12:00 - 12:30 - Christos Dardiotis, Alessandro Marotta, Giorgio Martini, Pierre Bonnel, Monica Tutuianu, Martin Weiss, European Commission, JRC Energy Institute, Italy - **JRC's Contribution to the Revision of the European Type Approval Procedure for Light Duty Vehicles****

**12:30 - 13:00 - Kurt Engeljehring, AVL, Austria - **Emission Test and Measurement Challenges on Hybrid Vehicle****

**13:00 - 14:00 - Lunch**

**Session 2 - Powertrain Development/Test Method Development/Hybrids**

Chair: Giovanni Cipolla, Italy

**14:00 - 14:30 - Giovanni Cipolla, Politecnico di Torino, Italy - **Euro 7 Emissions Challenge for IC Engine****

**14:30 - 15:00 - Ignazio Gentile, FIAT/CHRYSLER, FIAT Powertrain, Italy - **Cylinder Head Integrated Manifold on Gasoline Turbo Engines****

**15:00 - 15:30 - Eike Martini, AVL, Austria - **Emission Calibration Yesterday, Today and Tomorrow****

**15:30 - 16:00 - David Mauke, EMPA Swiss Federal Laboratories for Materials Science and Technology, Switzerland- **CNG and CNG Hybrid Vehicles: A Potential Concept to Reduce CO<sub>2</sub> Emissions?****

**16:00 - 16:30 - Coffee break & Poster Presentation**

**Session 3 - Catalyst Technology & Emission Reduction Methods for CI&SI Engines**

Chair: Jorge Barata, Portugal & Andre R R Silva, Portugal

**16:30 - 17:00 - Gerardo Carelli, S. Eckhoff, S. Franoschek, W. Müller, Umicore, Italy/Germany  
- **Efficient NO<sub>x</sub> Aftertreatment Technologies for Clean Diesel****

**17:00 - 17:30 - Silke Jürgens, Albonair, Germany; Toni Kinnunen, Teuvo Maunula, Ecocat, Finland  
- **Emission Techniques and Related SCR Systems by Ecocat and Albonair****

**17:30 - 18:00 - Chris Whelan, Wai Chun Tang, WDL, UK - **Design and Development of a Turbo-Expander for Charge Air Cooling****

**20:00 - ... **Symposium Dinner in Kotulinski Palace (<http://www.palackotulinskich.pl>)****

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Friday, 25<sup>th</sup> May 2012

### **Session 4 -Particle Number & Particle Size Distribution Measurement Development**

Chair: Bianca Maria Vaglieco, Italy

09:00 - 09:30 - Thomas Krinke, TSI, Germany - **Transient Measurements of Particle Size Distributions from Engine Exhaust**

09:30 - 10:00 - Panu Karjalainen, Topi Rönkkö, Jorma Keskinen, Tampere University of Technology, Finland - **Vehicle Technologies and Nucleation Mode Particles**

10:00 - 10:30 - Silvana Di Iorio & Bianca M.Vaglieco, Istituto Motori - CNR, Italy - **Particle Size Distribution in Internal Combustion Engine Fuelled with Different Biofuels**

10:30 - 10:45 - Coffee break

### **Session 5 - Fuel and Engine Oil Development**

Chair: Jerzy Merkisz, Poland & Miroslaw Wyszynski, UK

10:45 - 11:15 - Roberto Peirano, Fausto Alberici, Alberto Colombo, Petronas Lubricants, Italy - **Racing Fuels Pre-Screening Test Bench Methodology**

11:15 - 11:45 - Knut Skårdalsmo, Bob Seymour, Åsa Håkansson, Statoil Fuel & Retail, Norway - **Evaluation of a Premium Diesel Deposit Control Additive**

11:45 - 12:15 - Miroslaw Wyszynski, Farshad Eslami, Jakub Piaszyk, Tahee Park, University of Birmingham, UK - **Speciation of Gaseous Emissions, Solid Particulates and Deposits using GC-MS and TGA-GC-MS**

12:15 - 12:45 - Zdzislaw Cieslikowski, Orlen, Poland - **Is LPG really Competitive to Petrol?**

12:45 - 13:15 - Stephen Merryweather, Daniel Zweifel, DOW Europe, USA/Switzerland, Mathias Woydt, BAM, Germany - **DOW PAG Engine Oil - Fuel Economy through Engine Oils Based on Polyalkylene Glycols**

13:15 - 13:45 - Massimo Manni, Eni, Italy - **An Environment-Oriented Approach in the Development of Passenger Car Engine Oils**

### **13:45 - 14:00 Symposium summary & closing ceremony**

Jerzy Merkisz, Poznan University of Technology/BOSMAL, Poland

14:00 - 15:00 - Lunch

15:00 - 16:00 - Visit to BOSMAL's Testing Laboratories

### **Written papers, with poster presentation (no oral presentation)**

- Piotr Bielaczyc, Antoni Swiatek, Andrzej Szczotka, Joseph Woodburn, BOSMAL, Poland  
- **An Analysis of Ammonia Emissions from Light-Duty Vehicles Operating on Gasoline, Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG)**  
- written only

- Piotr Bielaczyc, Andrzej Szczotka, Joseph Woodburn, BOSMAL, Poland  
- **An Investigation of Different Gasoline-Ethanol Blends' Influence on Performance and Exhaust Emissions from a Light-Duty Gasoline Vehicle** - written only

- Piotr Bielaczyc, Andrzej Szczotka, Joseph Woodburn, BOSMAL, Poland - **An Analysis of Low Ambient Temperature Conditions' Influence on Excess Emissions and Fuel Consumption from Modern Spark Ignition Passenger Cars** - written only



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### Symposium Dinner\*

Thursday, 24<sup>th</sup> May 2012



- 18:00 Transport from BOSMAL to Kotulinski Palace and Hotel Vienna
- 19:30 Transport from Hotel Vienna to Kotulinski Palace
- 20:00 Opening of the Symposium Dinner
- 00:00 Closing of the Symposium Dinner and transport to Hotel Vienna
- 00:30 Last transport to Hotel Vienna

\* Dress code: formal (suit and tie; no black tie)



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# Bielsko - Biała

