



ROUEN 2016



SIA

SOCIÉTÉ
DES INGÉNIEURS
DE L'AUTOMOBILE



NEW!
Commercial
vehicle
SESSION

PROGRAMME & USEFUL INFORMATION

International Conference and Exhibition

SIA POWERTRAIN // ROUEN 2016

The Clean Compression Ignition Engine of the Future



INSA DE ROUEN (NORMANDY), FRANCE

1 & 2 June, 2016



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engineering **iauw**

RICARDO

Valeo

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BorgWarner

Innovation in Motion

Miba



BOSCH



SONCEBOZ



Dear participant,

On behalf of the SIA and the organization committee, it is my pleasure and privilege to welcome to Rouen all participants to the 2016 SIA Powertrain conference. The numerous workshop sessions will highlight topics that focus on powertrain business growth and will widen our automotive industry expertise. This conference edition includes new themes on engines for on-and off-highway commercial vehicles which will give to powertrain developers and researchers an overall picture of state-of-the-art technologies.

We are all convinced that the Diesel engine will remain a cost-effective and popular solution for many vehicle owners and will be a key contributor to further reducing CO₂ emissions beyond 2020. This unique worldwide event focused on diesel engine technology and the potential development synergies between passenger cars and commercial vehicle powertrain technologies will provide you with opportunities for discussions with experts and leaders across this area.

I hope that you will enjoy the scientific programme composed of 59 presentations split in four parallel sessions; the new conference opening plenary discussions; the panel session with high level management participants from various vehicle manufacturers and automotive suppliers; the vehicle technology demonstrators and the growing student forum. There will also be more than 30 exhibitors including tier 1 automotive suppliers showcasing their new products and services and ready to discuss their capabilities and opportunities with attendees.

I look forward to interesting discussions and debates.

Yours sincerely,

Conference Chair

Dr Nouredine GUERRASSI,

Chief Engineer Advanced Injection & Combustion Engineering, Delphi Automotive

29TH EDITION



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www.sia.fr



SIA Powertrain Versailles 2017

The low CO₂ spark ignition engine
of the future and its hybridization

JUNE 7 & 8, 2017
**PALAIS DES CONGRÈS
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PANEL SESSION



Christian Chapelle

Head of Drivetrains and Chassis,
Groupe PSA



Olivier Ferlin

Vice President, Powertrain Engineering Lyon,
Volvo



Alain Raposo

Alliance Global Vice President,
Powertrain & EV Engineering,
Alliance Renault Nissan



Andreas Schamel

Director of Global Powertrain, Research & Advanced Engineering,
Ford



Terutoshi Tomoda

General Manager - Advance Powertrain Development,
Toyota



Martin Verschoor

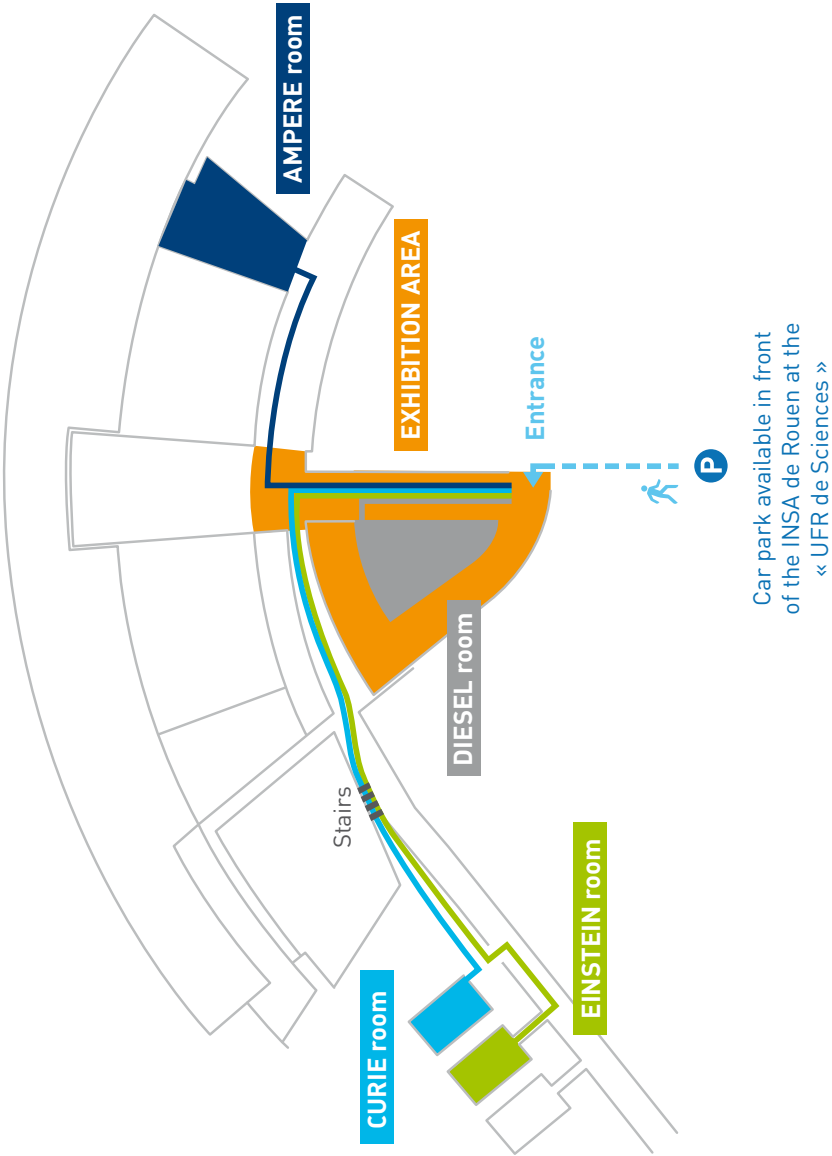
Vice President Engineering,
Powertrain Systems,
Delphi Automotive



Thomas Wintrich

Senior Vice President Engineering - Diesel Systems Business Unit Passenger Cars,
Robert Bosch

CONGRESS PLAN



FOLLOW THE CARPET PATH TO GO THE 4 CONFERENCE ROOMS:



CONFERENCE ROOM "DIESEL"

CONFERENCE ROOM "CURIE"

CONFERENCE ROOM "EINSTEIN"

CONFERENCE ROOM "AMPERE"

PROGRAMME // 1 JUNE

07:30	ATTENDEES REGISTRATION & WELCOME BREAKFAST			
	DIESEL			
	Opening Plenary Session			
08:30	Opening Address / Noureddine Guerrassi , Conference Chair			
08:45	European Regulation Update and Measurement Procedures Laurent Benoît , President, Groupe UTAC CERAM			
09:00	Challenges related to Future RDE Compliance Factors : Technical Solutions and Environmental Efficiency / Pierre Macaudière , Senior expert Aftertreatment Systems and Fuels - Groupe PSA			
09:15	Powertrain Technology and High Efficiency Vehicles Ron Lee , Powertrain Director - Jaguar Land Rover			
09:30	Heading towards Higher Diesel Powertrain Efficiencies – Tailored Electrification and Hybridization Stefan Pischinger , President - FEV			
09:45	Diesel Engine Technologies and Calibration Methods to fulfill Future Legislation Demands Gerhard Buschmann , EVP, IAV			
10:00	Panel discussion with the keynote speakers			
10:30	COFFEE BREAK			
	DIESEL Future Light Duty Powertrain P. Pelletier, Renault P. Duret, IFP School	CURIE 48V & Mild Hybrid 1 J. Mortal, Jaguar Land Rover E. Samson, Groupe PSA	EINSTEIN Engine & Vehicle Calibration for RDE 1 J-C. Lamodière, Kistler B. Demortier, Continental Automotive	AMPERE Commercial Vehicles Fuel Injection & Combustion M. Lejeune, Volvo F. Millo, Politecnico di Torino
11:00	Combustion System Design and Development Process for Modern Automotive Diesel Engines A. Vassallo , General Motors	An Overall Approach for Mild Hybrid Diesel Powertrain for LCV Fuel Consumption Reduction P. Bernet , Renault	Transient Emissions Control for Diesel Engines: a Calibration Workflow for Model Based Software and Upcoming Transient Regulatory Cycles D. Taindjis , Delphi Automotive	Fuel Injection Equipment for Euro VI Heavy-Duty Engines G. Millet , Volvo Group Trucks
11:30	Ingenium: all New 4-Cylinder Diesel Engine H. Busch , Jaguar Land Rover	Emissions Optimization of a Light Duty Hybrid Diesel Vehicle through the Use of Innovative Energy Management Strategies L. Thibault , IFP Energies Nouvelles	Hello, Virtual World! Will the Combustion-System Sensor Network Revolutionize In-The-Loop Testing of Engines and Powertrains? F. Pfister , AVL	Fuel Injection Systems to Power the Next Generation of CV Engines R. Williams , Delphi Automotive
12:00	VCR for Modern Diesel Engines – Enabler for Extended Freedom in the Demanding Trade-Off between Emission and CO ₂ Norms T. Körfer , FEV	Reducing NO _x Emissions from Diesel Engines & improving CO ₂ Emissions with the Support of Electrified Components in 12 and 48V T. Coppin , Valeo	Increasing the NO ₂ /NO _x Ratio in Diesel Engines to enhance Exhaust Aftertreatment M. Rössler , KIT	Model Based Approach of Combustion Development for Commercial Vehicle Engine L. Fornari , FPT Industrial

PROGRAMME // 1 JUNE

12:30	LUNCH BREAK			
	DIESEL Fuel Injection Systems V. Rosensthiel, AVL-LMM G. de Paola, IFP Energies Nouvelles	CURIE Turbocharging & EGR A. Mohammadi, Toyota J. Macek, Czech Technical University	EINSTEIN NOx Aftertreatment A. Velji, KIT E. Jean, Faurecia	AMPERE Commercial Vehicles Future Powertrain N. Andraos, FEV J-M. Boulard, IAV
14:00	Clean Diesel Approach for future Requirements T. Wintrich , Robert Bosch	Direct Exhaust Heat Recovery into Water cooled Charge Air Cooler as Technical Brick for Improved Cold Start Functionality Z. Soukeur , Valeo	Analysis of a Combined SCRF plus SCR System by Testing and Modeling S. Skarlis , Exothermia	Improving Power and Efficiency of Future Off-Road Diesel Engines N. Marie , John Deere
14:30	Injector Closed Loop Control Using the Switch-Technology for Diesel Passenger Cars J-L. Beduneau , Delphi Automotive	The Influence of Advanced Boosting on Transient NOx Control in LV Diesel Engines E. Bouvier , Honeywell	Initial Comparison of Schlieren and Mie Imaging of a Heated AUS-32 (Urea) Spray D. Cosby , Continental Automotive	Developping a Full Electric Turbocharger to achieve decoupling of the Compressor and Turbine for Heavy-Duty Diesel Engines B. Richards , Aeristech
15:00	New Piezo PCRs5 Common Rail System for Efficient and Clean Diesel Engines V. Dian , Continental Automotive	Gain scheduling State Feedback Controller Synthesis of an Electrical EGR Valve Actuator A. Achir , Groupe PSA	Optical Characterization of Urea Water Solution along an Exhaust Pipe M. Cordier , IFP Energies Nouvelles	Exploring the Next Frontier in Efficiency with the Achates Power Engine F. Redon , Achates Power
15:30	COFFEE BREAK			
16:00	DIESEL PANEL SESSION (Moderator: Laurent Meillaud) Christian Chapelle, Head of Drivetrains and Chassis - Groupe PSA Olivier Ferlin, VP Powertrain Engineering - Volvo Alain Raposo, Alliance Global VP Powertrain & EV Engineering - Renault Andreas Schamel, Director of Global Powertrain, Research and Advanced Engineering - Ford Terutoshi Tomoda, General Manager - Advanced Powertrain Development - Toyota Martin Verschoor, Vice President Engineering, Powertrain Systems - Delphi Automotive Thomas Wintrich, Senior Vice President Engineering Diesel Systems - BU Passenger Cars - Robert Bosch			
18:00	COCKTAIL IN THE EXHIBITION			
19:00	SHUTTLE SERVICE - From the INSA de Rouen to Gala Dinner			
20:00	Gala Dinner			
23:00	SHUTTLE SERVICE - From Gala Dinner to the hotels			

PROGRAMME // 2 JUNE

	DIESEL	CURIE	EINSTEIN	AMPERE
	48V & Mild Hybrid 2 P. Bernet, Renault S. Potteau, Valeo	Diesel & Alternative Fuels Combustion J-C. Ricaud, Arts et Métiers ParisTech N. Jackson, Ricardo	Engine & Vehicle Calibration for RDE 2 J-J. Milesi, Dynergia C. Guardiola, Universitat Politècnica de València - CMT	Commercial Vehicles Innovative Concepts for Fuel Economy R. Schmitt, R. Bosch S. Michon, Volvo
08:30	Cost Efficient CO ₂ Reduction – Vehicle Results based on 12V and 48V Architectures M. Weissbäck , AVL	Towards the Synergistic Co-Design of a Naphtha Fuel and a Compression Ignition Engine V. Morel , Aramco	O2C (from Optimization to Calibration) an Alternative to ECU Maps smoothing Algorithms applied to Emission Calibration V. Heurtier , IAV	Thermal Management System for Heavy Duty Engines N. Granottier , Volvo Group
09:00	The Future of 48V Systems in the Transmission S. Shepherd , Drive System Design	Optical Investigation of the Effect of Injection Timing and Equivalence Ratio on Dual-Fuel CNG/Diesel Combustion Characteristics J. Apeloig , CORIA	How to control the Impact of External Factors to ensure the Reproducibility of RDE Test Runs? N. Yedikardachian , V-Motech	Rankine System Design for Heavy Duty Truck Application J. Hergott , Faurecia
09:30	Electrical Supercharging and Mild Hybrid Electrification applied to a Future Diesel Powertrain Application P. Chandler , Jaguar Land Rover	Combined Effects of Split Injection Strategies and n-Butanol/ Diesel Fuel Blends on Combustion and exhaust Emissions in a Single-Cylinder Compression Ignition Engine G. Valentino , Istituto Motori - CNR	Virtual Powertrain as a Valuable Support for Calibration: an Innovative Workflow to Minimize the Overall Engine Calibration Effort E. Brice , D2T	Cylinder Deactivation for Heavy Duty Diesel Engines T. Kraxner , TU Graz

PROGRAMME // 2 JUNE

10:00 COFFEE BREAK + Students Poster Session !				
	DIESEL	CURIE	EINSTEIN	AMPERE
	Air Quality & Emissions Reduction N. Marie, John Deere T. Koch, KIT	Fuel Atomisation & Sprays M. Gavaises, City University London O. Haddad, Drive System Design	Advanced Engine Control D. Roettger, Ford P-Y. Geels, AVL-LMM	Innovative Engine Design J. Manns, IAV V. Morel, Aramco
11:00	Evaluation of NOx-Formation of Modern Diesel Engines, Current Legislation and Emission Impact on Environment and Human Health T. Koch , KIT	Diesel Spray and Combustion Development using Nozzle Flow Visualization, Spray and Combustion Analyses M. Ikemoto , Toyota	Engine Management System for Diesel Engine Applications toward 2020 S. Visser , DENSO	Air Path Concept for Low NOx Emissions C. Vigild , Ford
11:30	The Potential of Cost Effective LNT-Based Diesel NOx Aftertreatment for Real Driving Emissions T. Downes , Ricardo	Spray Characteristics of Diesel Fuel Blends with Variable Nozzle Geometry M. Cardenas , RWTH Aachen Univ.	Model-Based Turbine Inlet Isentropic Pressure Observer Model S. Petrovic , Ford	Modeling Investigation of Design Approaches for Low Heat Rejection Diesel Engines G. de Paola , IFP Energies Nouvelles
12:00	Optimized NOx Trap for Combination with an Active SCR Application C. Lahousse , Umicore	Diesel Injector Real Geometry acquired by X-Ray Micro-Tomography for detailed in-Nozzle CFD Simulations A. Theodorakaos , City University London	ICPS based Combustion Control: An Efficient Way to Reduce Engineering Margin for Diesel Engines B. Varoquie , Continental Automotive	A Study on the Intake Line Length in Automotive Diesel Engine Transient Conditions: Wave Propagation versus LP-EGR Transport Trade-Off H. Climent , Universitat Politècnica de Valencia - CMT
12:30	Advanced SCR Compact Mixers J. Michelin , Faurecia	Investigations of the Spray Structure of Small Diesel Injections using Spray Momentum Measurements and their Link to Injector Performance G. Dober , Delphi Automotive	Control-Oriented NOx Prediction Method in Light-Duty Diesel Engine S. Lee , Seoul National University	Variable Valve Train in Diesel Engines as Key Technology for Compliance with Future Emission Limits and Further Downsizing M. Brauer , IAV
STUDENTS POSTER AWARD CEREMONY !				
13:00 LUNCH BREAK				
DIESEL				
Closing Plenary Session - G. Martin, Mov'eo - G. Monnier, IFPEN				
14:30	Jean-Luc Moullet, Research Funding - Commissariat Général à l'Investissement			
15:00	Alain Raposo, Renault			
15:30	Mickael Weissbäck, AVL			
16:00	Conclusion - N. Guerrassi			
16:15	END OF THE CONFERENCE			

VEHICLE TECHNOLOGY DEMONSTRATORS



Ricardo Adept concept combines low-cost 48V mild-hybrid technologies to reduce 1.5L Diesel C-segment class-leading CO₂ emissions by a further 15-20%, showing the path to 70g/km CO₂. 48V technologies include 12.5kW belt starter generator, low-cost advanced lead-carbon battery pack, electric ancillaries and electric turbine-generator for exhaust heat recovery.



AVL

12V e-SC for 75g CO₂ RSA Megane Gen2

- Efficiency Engine Concept (1.5L)
- 12V e-SC as enabler for downsizing
- for cost & CO₂ sensitive market segments
- global concept
- well prepared for RDE
- developed up to demo-vehicle



V-Motech has set-up a specific competence cluster dedicated in exhaust measurement and analysis to perform RDE LDV tests. V-Motech's technical skills completes the PEMS technology which allows the concentration measurement of five gases while adding and Exhaust Flow Meter (Pitot tube device) and an ODB system to obtain the vehicle diagnostics.



The Delphi 48-Volt demo car combines a 1.6 L diesel engine with an electrical supercharger and 48V mild hybrid components to deliver both fuel consumption and performance benefits. The 48V belt-driven starter generator (12 kW) incorporates start-stop and regenerative braking energy recovery expected to deliver 10 percent CO₂ reduction. The e-charger, used as a second compression stage, compensates for the turbo-lag inherent to mechanical turbo-compressors. This enables substantial vehicle transient response and NOx emissions control benefits. Delphi technologies fitted in the vehicle include power electronics components, powertrain control, 48V power-distribution, wiring harnesses and connectors.

Robert Bosch

For about ten years Bosch Diesel Systems has preferably used internal demonstrator platforms to build up and test newly developed systems. The third demonstrator platform currently in use is based on a compact class car equipped with a 1.7 l engine, optimized combustion system and an application of high-pressure and low-pressure EGR which was extended to almost the entire characteristic map. The nominal power is 110 kW, the torque is 340 Nm. In addition, a mild-hybrid concept can be integrated in order to reduce both, fuel consumption as well as emissions.



Valeo

The AVL 48V Diesel mild hybrid democar comprises Valeo's electric supercharger and belt-driven starter-generator, coupled to a lead-acid battery. The system allows a 20% power increase and a 15% CO₂ emissions reduction.

EXHIBITION AND SPONSORING

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ADACCESS

RICARDO

HORIBA
Automotive Test Systems

WELCOME TO STUDENTS !



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One of the key roles of SIA is to promote the automotive industry as a career of choice for young engineers.

SIA has invited students to present their work - results from projects carried out at school/ university or during internships - on posters that are displayed in the exhibition area.

Come and meet the students who will be glad to discuss their work with you!

PRESENTED POSTERS IN THE EXHIBITION

- Towards a real-time tractor model for engine in the loop
- Optimization of fuel consumption for a series electric hybrid vehicle
- Urban vehicle energetic system
- Hybrid car without gearbox
- Car hybridation using CAN protocol
- SZEngine 4th generation race engine
- Energy efficiency comparison between electric HEV and hydraulic HHV
- Energetic analysis and sizing of 4WD Hybrid SUV
- A direct injection 2-stroke in-line twin cylinder spark ignition engine for a motorcycle application
- A design of experiment method for B10 transition
- Study of a DI 2 stroke engine as a range extender for a Euro 6d urban sport vehicle
- Mild-hybrid modeling and optimization for a heavy duty truck application
- Storage of animal fats and used cooking oil biodiesel under oxidative and low temperature conditions
- Influence of using AFME in a B10 biodiesel on pollutant emissions
- And if our food consumption could have an effect on our diesel...
- Additivation of UCOME and AFME for diesel engines
- Transforming waste cooking oil and chicken fat into biodiesel
- Sizing a downsized engine for range extender: computer simulation modeling & analysis
- Hybridization of parcel delivery vehicle
- Achieve new European diesel regulation by using animal fat
- Additive manufacturing for a new cylinder head design
- Comparative study of energy consumption and costs using the integration of multi-speed transmissions for battery electric vehicles
- Engine mapping and comparison of the injection duration with simulations

2 JUNE

During the afternoon, exhibiting companies will welcome the students to their booth, to discuss automotive industry's career opportunities.



PICK-UP SERVICE & BUS **cars adrien**

EXAMPLES OF HOTELS

BEST WESTERN - HOTEL DU VIEUX MARCHÉ
HÔTEL D'ANGLETERRE
SUITE NOVOTEL ROUEN NORMANDIE
HÔTEL IBIS CENTRE RIVE DROITE
MERCURE ROUEN CENTRE CATHÉDRALE
CŒUR DE CITY ROUEN CATHÉDRALE

June 1

Departure: 7:00 am

June 2

Departure: 7:30 am

Bus Stop

Halte Routière
11 rue des Charrettes
76 000 Rouen

LOOK FOR CARS ADRIEN BUS

HÔTEL MERCURE ROUEN CHAMPS DE MARS
HÔTEL IBIS ROUEN CHAMPS DE MARS

June 1

Departure: 7:15 am

June 2

Departure: 7:45 am

Bus Stop

Hotel Mercure Champ de Mars

LOOK FOR CARS ADRIEN BUS

GALA DINNER – 1 JUNE, FROM 20:00

All hotels of the above list are served by bus after the dinner + Novotel Rouen Sud + IBIS Rouen parc expo + Campanile Rouen Sud Zénith + INSA car park.

- Some of them are closed to each other. Bus driver can decide to drop off attendees at only one stop.
- Because of narrow streets in Rouen city centre, some buses will not have the possibility to drop off attendees in front of their hotel.

PUBLIC TRANSPORTATION

METRO Stop at "Technopôle" (30 minutes from the city centre).

Ask for free tickets at the welcome desk of the congress.

TAXIS JAUNES

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