

29<sup>TH</sup> EDITION



SIA

SOCIÉTÉ  
DES INGÉNIEURS  
DE L'AUTOMOBILE



## PROCEEDINGS - ABSTRACTS BOOK 2017-01

International Conference and Exhibition

# SIA POWERTRAIN // VERSAILLES 2017

## The low CO<sub>2</sub> spark ignition engine of the future and its hybridization

 **VERSAILLES, FRANCE**  
7 & 8 June 2017



Innovation in Motion



Ask for a  
**TEST  
DRIVE**



## ENGINEERING SERVICES FROM A TO Z

### FROM POWERTRAIN TO COMPLETE VEHICLE

We offer our global customers the complete range of engineering services from A as in airpath-control over H as in hybrid-electric vehicle to Z as in zero-emission technologies. With passion for tailor-made and innovative automotive technologies, our experts around the globe support you with pioneering developments.

#### **Profit from our competences:**

- > 35 subsidiaries on four continents
- > More than 180 own test benches
- > Close cooperation with leading universities worldwide

- > Engineering Services
- > Benchmarking and Concept Studies
- > Design and CAE
- > Prototyping and Testing
- > Homologation and Certification
- > Engine Development
- > Production Planning
- > Consulting
- > Software and Testing Solutions



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**FEV**

The automotive industry is entering one of the most exciting periods in its history: driving aids, high-tech embedded systems, connected cars, large-scale hybridization... in an ultra-competitive environment.

Automotive powertrains, especially gasoline, are first in line to benefit from these opportunities but also to meet future challenges: provide global solutions at reasonable costs and provide performance benefits with increasing respect for environmental issues. Implementing overall powertrain optimization strategies plus hybrid energy distribution will also confirm transmissions' key role.

In this context, the 2017 SIA Powertrain Congress in Versailles addresses "The low CO<sub>2</sub> gasoline engine of the future and its hybridization." The gasoline engine, hybrid or not, has a major role to play: it supports the international development of the automotive industry by meeting most global market needs, it now offers leading performance through downsizing, and its strong synergy with hybridization helps optimize benefits vs. costs.

We hope that you will enjoy the scientific programme and panel session talks, that you will be amazed by the exhibition and that you will benefit from the great networking. Thank you for making this 2017 edition - the 29<sup>th</sup> of SIA POWERTRAIN Conference - a great success! We look forward to discussing and debating with you during this 2-days event.

The Conference Chairmen  
**Philippe Bernet & Erwann Samson**

SAVE THE DATE



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[www.sia.fr](http://www.sia.fr)



ROUEN 2018

International Conference and Exhibition

**SIA POWERTRAIN // ROUEN 2018**

**30<sup>TH</sup> EDITION**

The Clean Compression Ignition Engine  
For Passenger Cars & Commercial Vehicles

**16 & 17 MAY 2018**

**INSA DE ROUEN (NORMANDY)  
France**



# WE ARE SHAPING MOBILITY FOR TOMORROW

How will people travel in the future, and how will goods be transported? What resources will we use, and how many will we need? The passenger and freight traffic sector is developing rapidly, and we provide the impetus for innovation and movement. We develop components and systems for internal combustion engines that operate more cleanly and more efficiently than ever before. We are also pushing forward technologies that are bringing hybrid vehicles and alternative drives into a new dimension – for private, corporate, and public use. The challenges are great. We deliver the solutions.

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## DOWNLOADS

Technical papers

### Speakers presentations

You will receive an e-mail after the conference with a link to download the PDF speakers' presentations.

Please note that some speakers can refuse to disseminate their presentations.

## PRESS PARTNERS



# From Concept to Completion

automotive  
engineering **iauv**

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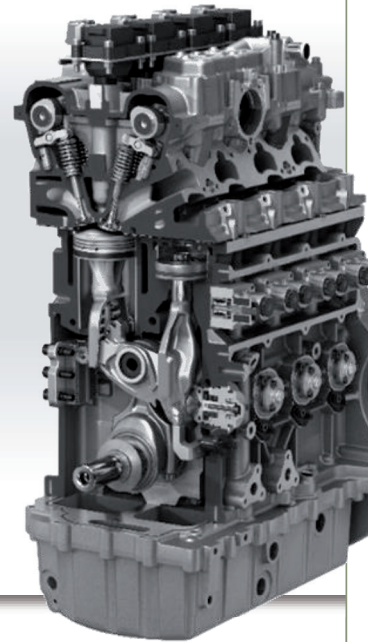
# En route vers 50% de rendement

## MCE-5 DEVELOPMENT

- ▶ **Transfère l'innovation** de la Recherche vers l'Industrie
- ▶ **Diminue risques, coûts et durées** d'introduction des technologies nouvelles

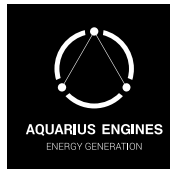
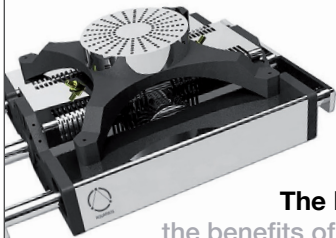
## VCRi by MCE-5

- ▶ **Une première étape ...**



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## The New Series Hybrid Powertrain the benefits of EV's without range limitations.

In a world in which the demand for energy resources is ever increasing while environmental restrictions and regulations become stricter, there is an increasing need for innovative solutions that reconcile these conflicting trends.

Following several years of research and experimentation, Aquarius Engines Ltd. has designed, developed and produced a breakthrough electricity power generator, designed around a free-piston linear ICE engine. This innovative power generator is aimed specifically at the car industry, as well as other markets who can benefit from highly efficient power generators.

This Aquarius Engines' generator, which is dramatically cheaper, cleaner and more efficient than existing engines, is about to revolutionize the market of electric cars as well as the power generators market in general.

This Aquarius Engines' generator has recently undergone reviews by leading engine design and engineering companies, with exceptionally promising results. The company is currently engaged with several of the world's leading car manufacturers, as well as multi-billion companies in the generators industry.

Aquarius Engines was founded several years ago by highly experienced and skilled professionals, who have a proven track record in design, development and improvement of innovative engines. The company is backed by top tier committed investors and has already registered two patents in the US, with over a dozen of additional national and PCT patents applications, filed by Finnegan, a leading intellectual property (IP) law firm.

### The Power Generators by Aquarius.

#### Aquarius Power Generator

The Aquarius Power Generator is a stand-alone, off-grid generator for residential and commercial use. The Aquarius unit is cheaper and more compact than other units and has a higher power-to-weight ratio. In 2014 the market for power generators was estimated at \$16.6 billion, and it is expected to grow to \$25 billion by 2024.

Aquarius Engine **0.8L**  
**32 kW**  
High Power to Weight **100 kg.**  
**2100 rpm**  
**119.38x44x60 cm**



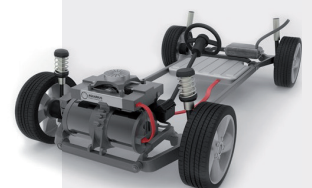
### The Series Hybrid Powertrain by Aquarius.

#### Integrated Power Drive (IPD)

The Aquarius power unit meets the challenges of the electric cars of the future, which require an on-board lightweight, high efficiency and low emission power source. It will allow the electric cars to reach a much broader scope of users.

Aquarius, together with four of its partners, has developed and built a fully integrated IPD (Integrated Power Drive) solution, designed for integration of the Aquarius Engines' generator unit into any HEV or EV vehicle.

**\$20.000**  
**32 kW**  
Engine only 15Kg **80 kg.**  
Battery **10 kWh-100kg**  
**1.600 Km**



A concept car with the new Aquarius IPD integrated solution is scheduled for testing during 2017.

## COMMITTEES

### CHAIRMEN

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**PIERRE DURET** - IFP SCHOOL  
**FEDERICO MILLO** - POLITECNICO DI TORINO  
**ERWANN SAMSON** - GROUPE PSA  
**AMIN VELJI** - KARLSRUHE INSTITUTE OF TECHNOLOGY

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**JEAN-MARC BOULARD** - IAV  
**PIERRE-YVES GEELS** - AVL  
**NOUREDDINE GUERRASSI** - DELPHI  
**OMAR HADDED** - DRIVE SYSTEM DESIGN  
**EMMANUEL JEAN** - FAURECIA  
**JEAN-CHRISTOPHE LAMODIÈRE** - KISTLER  
**MARC LEJEUNE** - RENAULT TRUCKS  
**GEOFFROY MARTIN** - MOV'EO  
**STÉPHANE MARTINOT** - VALEO  
**JEAN-JACQUES MILESI** - DYNERGIA  
**GAËTAN MONNIER** - IFP ENERGIES NOUVELLES  
**HANS-JOACHIM NUGLISCH** - CONTINENTAL  
**SÉBASTIEN POTTEAU** - EMC-MTT  
**RÉMY SCHMITT** - ROBERT BOSCH

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**CHRISTOPHE BOULY** - FAURECIA  
**GUENTER FRAIDL** - AVL  
**PASCAL HERVET** - VALEO TRANSMISSIONS  
**NEVILLE S. JACKSON** - RICARDO  
**DENIS LEVASSEUR** - RENAULT  
**KYOUGDOUG MIN** - SEOUL NATIONAL UNIVERSITY  
**ALI MOHAMMADI** - TOYOTA MOTOR EUROPE  
**VIRGINIE MOREL** - ARAMCO  
**YASUO MORIYOSHI** - CHIBA UNIVERSITY  
**JÉRÔME MORTAL** - JAGUAR LAND ROVER  
**RICARDO NOVELLA** - CMT MOTORES TERMICOS  
**WALTER PIOCK** - DELPHI AUTOMOTIVE  
**DANIEL ROETTGER** - FORD RESEARCH CENTRE AACHEN  
**JEAN-SÉBASTIEN ROUX** - HONEYWELL  
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- \_ Higher fuel economy
- \_ Lower emission



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PERFORMANCE



CARBON REDUCTION



SERVICE



LIGHTWEIGHT CONSTRUCTION





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total sales  
€15.6 Billion  
Value-added Sales



**35**  
Countries



**225**  
Sites worldwide



**30**  
R&D Centers



**98,700**  
Employees



**6,000**  
Engineers  
& Technicians

December 31<sup>st</sup>, 2016 figures

Faurecia is one of the world's largest automotive equipment suppliers, with three key Business Groups: Seating, Interiors Systems and Clean Mobility. In 2016, the Group posted total sales of €18.7 billion. At December 31, 2016, Faurecia employed 98,700 people in 35 countries at 225 sites and 30 R&D centers. Faurecia is listed on the NYSE Euronext Paris stock exchange and trades in the U.S. over-the-counter (OTC) market.

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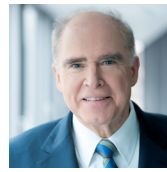
**faurecia**  
inspiring mobility



## PANEL SESSION



**Christian CHAPELLE**  
Head of Powertrains and Chassis  
Groupe PSA



**Helmut LIST**  
President  
AVL



**Bruno COVIN**  
Vice president, Alliance Powertrain  
Strategy  
Renault-Nissan



**Robert MEYER**  
Vice President Corporate Strategy/  
Cooperations  
BMW



**Antony HARPER**  
Director of Engineering Research  
Jaguar Land Rover



**Koichi NAKATA**  
Project General Manager, Advanced  
Engine Design & Engineering Div.,  
Powertrain company  
Toyota

## Sustainable mobility



Providing powertrain innovative solutions  
& supporting our partners to bring  
new products to market

- Electrification vehicle and on-board energy management
- High-efficiency powertrains
- Connected vehicles and engineering software
- Low-carbon fuels and emissions



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## PROGRAMME // 7 JUNE 2017

RICHELIEU ROOM (FLOOR 0)

CONDÉ ROOM (FLOOR +1)

LULLI ROOM (FLOOR -1)

COLBERT ROOM (FLOOR +2)

07:30 &gt; ATTENDEES REGISTRATION - BREAKFAST IN THE EXHIBITION

OPENING PLENARY SESSION &amp; KEYNOTE SPEECHES

08:30 &gt; Opening address by the Conference Chairmen

Philippe BERNET | Renault &amp; Erwann SAMSON | Groupe PSA

08:45 &gt; Global Energy Demand from Road Transportation Vehicles - A View by 2030 by the PFA &amp; BIPE

Catherine GIRARD - Expert Leader, Strategy on Energy and Raw Materials | Renault

09:00 &gt; Renewable fuels: a natural way for green ICE enabling a circular economy

Dario SACCO, Head of Powertrain Research and Technology | Centro Ricerche FIAT

09:15 &gt; The SI Engine: at the end of its development?

Frank ALTENSCHMIDT - Development Engineer | Daimler

09:30 &gt; Consideration of Powertrain Rational Evolution through Electrification

Masaaki KUBO - Powertrain advanced engineering Alliance General Manager | Alliance Renault Nissan

09:45 &gt; Technology Trends For Gasoline Injection Systems

Philippe BERCHER - Deputy Engineering Director FIE, Powertrain Systems | Delphi

10:00 &gt; The transformation of powertrain with electrification

Michel FORISSIER - Product Marketing, Research and Development Director | Valeo

10:15 &gt; Panel Discussion with the Keynote Speakers

10:30 &gt; COFFEE BREAK

VARIABLE  
COMPRESSION RATIO  
Philippe BERNET | Renault  
& Erwann SAMSON |  
Groupe PSA

CYLINDER  
DEACTIVATION & CAM  
PHASING  
Geoffroy MARTIN | MOVEO  
& Ricardo NOVELLA | CMT

EGR MANAGEMENT  
Emmanuel JEAN | Faurecia  
& Daniel ROETTGER | Ford

ENERGY MANAGEMENT  
& CONTROL  
Franck ALTENSCHMIDT |  
Daimler & Yasuo MORIYO-  
SHI | Chiba University

11:00 > Combination of Variable  
Compression Ratio and  
Early Intake Valve Closing  
as a Basis for Future  
Highly Efficient Gasoline  
Engines

U. Walther, M. Günther,  
M. Hunger, J. Mueller,  
S. Nicklitzsch, M. Sens | IAV  
S. Zwahr | West Saxon Uni-  
versity of Applied Sciences  
of Zwickau

Potentials of Modern  
Camshaft Phasing  
Systems

P. Solfrank, J. Dietz |  
Schaeffler

Optimisation of Low Pres-  
sure EGR to Reduce BSFC  
on a 3-Cylinder Gasoline  
Turbocharged Direct  
Injection Engine

S. Petrovic, A. Kuske,  
C. Vigild, K. Grieser,  
J. Groeger, C. Weber | Ford

Predictive and Optimal  
Control for Connected  
Hybrid Vehicle

M. Sans | Continental  
Automotive

11:30 > AVL Dual Mode VCS™  
- The Modular and Cost  
Efficient CO<sub>2</sub> Reduction

H. Sorger, W. Schöffmann,  
S. Lösch, A. Kroboth, A.  
Fürhapter, W. Unzeitig,  
G. Fraidl | AVL  
K. Arens, Th. Weiß, M. Hel-  
ler | iwis motorsysteme

Dynamic Skip Fire: The  
Ultimate Cylinder Deacti-  
vation Strategy

M. Younkins, J. Fuerst,  
S. Carlson | Tula Techno-  
logy  
J. Kirwan, E. Jacque,  
S. Mafrika | Delphi Auto-  
motive

LP EGR mixing under RDE  
extended conditions: ana-  
lysis of key parameters  
influencing condensation

I. Vidal García, I. González  
Tabarés, A. Sotelo Álvarez,  
X. Pérez Mauricio |  
BorgWarner

Online Optimal Control of  
a Plug-in Hybrid Electric  
Vehicle with Adaptive  
Battery Discharge Mana-  
gement

T. Miro Padovani,  
A. Ketfi-Cherif | Renault

12:00 > VCR-VVA-High Expansion  
Ratio: A Very Effective  
Way to Miller-Atkinson  
Cycle

C. Constensou, V. Collee |  
MCE-5 Development

Innovative Active Torsio-  
nal Vibrational Damping  
System for Engine Cyl-  
inder Deactivation, Down  
Speeding & Best Comfort

F. Schneider, V. Saxena, A.  
Moser | BorgWarner

Simultaneous Achieve-  
ment of Low Emissions  
and High Efficiency  
through Dedicated  
Exhaust Recirculation

T. Alger, T. Briggs, C. Chad-  
well, B. Denton, D. Robert-  
son, C. Henry, G. Bartley  
| Southwest Research  
Institute

Fuel Economy Benefits of  
Electrified Powertrains  
with Advanced Com-  
bustion Engines: Mild to  
Strong HEV Applications

M. Shahbakhti | Michigan  
Technological University  
A. Solouk | Ford

12:30 &gt; LUNCH BREAK

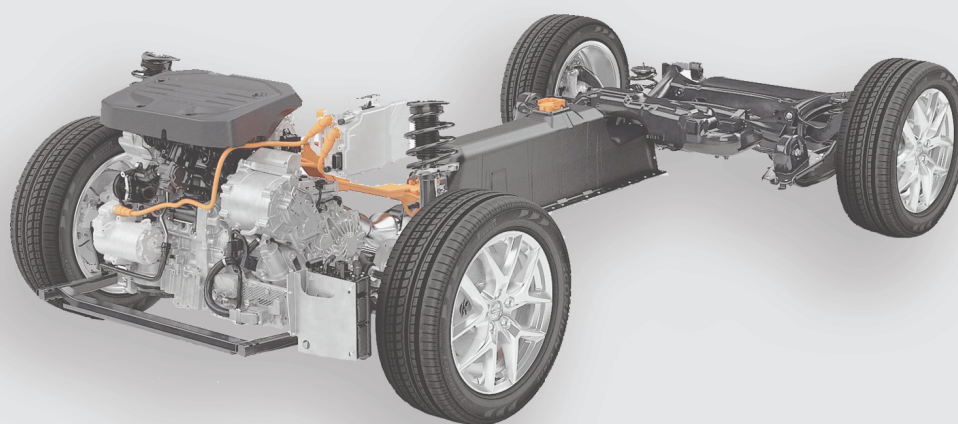
## EXPERIMENTAL DATA ACQUISITION

ON-BOARD INSTRUMENTATION | TEST CAMPAIGNS | DATA PROCESSING



## DEMO CAR / LAB CAR

PROTOTYPING | INTEGRATION | ADAPTATION



### MEET ADACCESS AT SIA POWERTRAIN

new DEMOS exhibition on our stand

#### APPLICATIONS //

- ENERGY PERFORMANCE ANALYSIS
- BENCHMARKING
- MODEL CALIBRATION
- SYSTEM VALIDATION
- PROTOTYPING & TESTING
- DEVELOPMENT OF PROOF OF CONCEPT
- PRODUCTION OF SPECIFIC TEST BENCHES

#### CONTACT US //

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## PROGRAMME // 7 JUNE 2017

RICHELIEU ROOM (FLOOR 0)

CONDÉ ROOM (FLOOR +1)

LULLI ROOM (FLOOR -1)

COLBERT ROOM (FLOOR +2)

|       | ADVANCED ENGINE CONCEPTS<br>Ali MOHAMMADI   Toyota Europe & Andy WARD   Ricardo   | PARTICULATE EMISSIONS MITIGATION<br>Nadim ANDRAOS   FEV & Jean Marc BOULARD   IAV  | EFFICIENT ENGINE & IGNITION<br>Hans NUGLISCH   Continental & Marc SENS   IAV  | HYBRID TRANSMISSIONS<br>Jérôme MORTAL   Jaguar Land Rover & Alex TYLEE   DSD                                 |
|-------|---|--|---|--|
| 14:00 | > Investigation of Combustion Engine Concepts for the use in an Electrified Powertrain<br>V. Bevilacqua, G. Corvaglia, M. Böger, M. Penzel, K. Fuoss, G. Grauli   Porsche   | Emissions from Vehicle Exhaust of Gaseous Precursors of Atmospheric Particles<br>K. Sartelet, Y. Kim, C. Seigneur   CERECA   | Increasing Modern Spark Ignition Engine Efficiency: Optimization of intake ports dedicated to Miller cycle, high dilution and increased compression ratio<br>J. Trost, O. Laget, M. Cordier, F. Duffour, X. Gautrot   IFPEN                               | Electric Drive Units for Hybrid/Electric Vehicles<br>F. Garbo, A. Michaelides, J. Mortal   Jaguar Land Rover |
| 14:30 | > A Modular Base Engine Architecture for 48V Mild Hybrid Applications<br>P Grzeschik, J. Scharf, T. Uhlmann, M. Souren, A. Balazs, S. Sonnen, A. Koch, B. Stapf, C. Nebbia   FEV  | Gasoline Particulate Filters - Market and Technology Trends and their Impact on Calibration<br>M. Görgen, S. Herrmann, M. Hendriks, M. Nijs, J. Scharf   FEV<br>S. Sterlepper   Institute for Combustion Engines, RWTH Aachen University | Engine and Aftertreatment Strategies for Lean Gasoline Engines to Meet Real Driving Emissions Legislation<br>E. Koehler, R. Osborne, M. Keenan, T. Downes   Ricardo   | 2L/100km Eolab to global PHEV-HEV project solution<br>N. Fremau, A. Ketfi, A. Vignon   Renault               |
| 15:00 | > 200kW/l: Modular Engine Family Stretch for Highest Commonality and Performance<br>M. Neubauer, P. Kapus, D. Hilbert, W. Schöffmann, K. Prevedel, C. Wolf   AVL  | Performance of advanced Gasoline Particulate Filter Material for Real Driving Conditions<br>D. Waters, D. Thier, Y. Ito, M. Yamashita, C. D. Vogt, K. Kato, T. Shimoda, T. Aoki, M. Makino   NGK   | Homogenous Lean Burn Combustion for Gasoline Engines: A Comparison between High Energy Spark Ignition and High Frequency Corona Ignition Systems<br>A. Paa, G. Rottenkolber, M. Wörner, C. Spang, T. Friedrich   University of Applied Sciences Esslingen | PREX 3: Next generation of DHT with full on demand Actuation<br>P. Janssen, Y. Zhang   FEV                   |
| 15:30 | > Extremely Downsized Gasoline Demonstrator Vehicle<br>M. Bassett, J. Hall, T. Cains   MAHLE Powertrain<br>R. Wall   Aeristech  |  | A Novel Low-Temperature Plasma Ignition System Applied to a GHP Engine<br>O. Matsumoto   Sustainable Engine Research Center<br>T. Kuboyama, Y. Moriyoshi   Chiba University<br>T. Nakamura, Y. Kinuzawa   Toyota<br>K. Tanoue   Ohita University          | The Future for the Connected Drivetrain Systems<br>S. Shepherd   Drive System Design                         |
| 16:00 | > COFFEE BREAK  |  |   |  |
|       | PANEL SESSION<br>Moderator: Laurent Meillaud, Automotive Journalist   |  |   |  |
| 16:30 | > Christian CHAPELLE - Head of Powertrains and Chassis   Groupe PSA<br>Bruno COVIN - Vice president, Alliance Powertrain Strategy   Renault-Nissan<br>Antony HARPER - Director of Engineering Research   Jaguar Land Rover<br>Helmut LIST - President   AVL<br>Robert MEYER - Vice President Corporate Strategy/Cooperations   BMW<br>Koichi NAKATA - Project General Manager, Advanced Engine Design & Engineering Div., Powertrain company   Toyota |  |   |  |
|       | CLOSING ADDRESS   |  |   |  |
| 18:30 | > Jacques Graizon - SIA Chairman & Prof. Helmut LIST for the 10 years of AVL LMM in AVL Group   |  |   |  |
| 18:45 | > COCKTAIL IN THE EXHIBITION  |  |   |  |



# FROM MIND TO MOTION

**AN EMISSIONS CONTROL CHALLENGE?  
WE'LL BRING YOU A TAILOR-MADE  
SOLUTION SMALL IN SIZE AND BIG  
IN RELIABILITY.**

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## PROGRAMME // 8 JUNE 2017

RICHELIEU ROOM (FLOOR 0)

CONDÉ ROOM (FLOOR +1)

LULLI ROOM (FLOOR -1)

COLBERT ROOM (FLOOR +2)

## 08:00 &gt; WELCOME COFFEE IN THE EXHIBITION

|         | MICRO & MILD HYBRIDS<br>Pierre Yves GEELS   AVL<br>& Sebastien POTTEAU  <br>EMC-MTT                                     | FUEL INJECTION<br>Rémy SCHMITT   BOSCH<br>& Philippe SOUHAITE  <br>Groupe PSA  | BOOSTING<br>TECHNOLOGIES<br>Gunther FRAIDL   AVL &<br>Gaétan MONNIER   IFPEN  | VIRTUAL ENGINE<br>DESIGN<br>Kyoungdoug MIN   Seoul<br>National University &<br>Jean Sebastien ROUX  <br>Honeywell   |
|---------|---|--|---|---|
| 08:30 > | Next Gen 48 Volt Hybrids<br>by New Architectures and<br>Connectivity<br>F. Graf, S. Lauer   Continen-<br>tal Automotive | Port Fuel Injection:<br>Combustion Efficiency<br>Improvement & PN<br>Reduction<br>C. Genin   Continental<br>Automotive   | VNT™ Turbocharger for<br>Gasoline "Miller" Engines<br>N. Bontemps, J-S. Roux, D.<br>Jeckel   Honeywell<br>A. Schloßhauer   Institute<br>for Combustion Engines,<br>RWTH Aachen University<br>D. Lückmann, R. Aymanns<br>  FEV | Fully virtual Develop-<br>ment of a EU7 compliant<br>Gasoline Combustion<br>System, using an efficient<br>OD/1D/3D based Develop-<br>ment Approach<br>N. Genty, N. Iannucci,<br>A. Raulot, A. Tellier  <br>Groupe PSA<br>L. Boettcher, E. T. Faulseit,<br>C. Frottier, M. Riess,<br>M. Sens   IAV |
| 09:00 > | 12+12V and 12+48V<br>Hybridization: A Modular<br>Approach and Transmis-<br>sion Impacts<br>O. Coppin   Valeo            | Realising Mixture Forma-<br>tion Benefits with a Dual<br>Port Fuel Injection (PFI)<br>System<br>A. Kevric, P. Richardson,<br>H. Kaneta, M. Iwamuro,<br>T. Mizobuchi, H. Shibata  <br>DENSO | AC Cooler for Elec-<br>trical Supercharger<br>Compressed Air<br>E. Droulez   Valeo  | Numerical Study on the<br>Particle Number Emission<br>of Different Charge<br>Motion and Injection Strat-<br>egies in a DI-SI Engine at<br>High Engine Load<br>D. Notheis, A. Velji, T. Koch,<br>M. Bertsch   KIT  |
| 09:30 > | The Hybridised Layshaft<br>Transmission<br>B. Chiswick, M. Lorenzo,<br>M. Hole   Drive System<br>Design                 | Near-Field Velocity Mea-<br>surement of a Multihole<br>GDI Injector<br>Y. Cao, J-B. Blaisot, S. Ida-<br>hcen, C. Lacour   CORIA  | Enhanced Gasoline<br>Engine Performance with<br>Water Injection<br>J. Op de Beeck, L. Duez  <br>Plastic Omnium  | Simulation of Fast<br>Transients of GDI<br>Engines using Large-Eddy<br>Simulation<br>B. Roux, J. Bohbot, G. Pilla,<br>M. Cordier, A. Poubeau,<br>S. Jay   IFPEN   |

## 10:00 &gt; COFFEE BREAK &amp; STUDENTS POSTER SESSION !

|         | REAL DRIVING<br>EMISSIONS<br>CHALLENGES<br>Jean Christophe LAMO-<br>DIERE   AVL & Philippe<br>BERCHER   Delphi                   | KNOCK MITIGATION<br>Alain FOCH   Renault &<br>Jean Jacques MILESI  <br>Dynergia  | GASOLINE AUTO-<br>IGNITION CONCEPTS<br>Virginie MOREL   ARAMCO<br>& Pierre DURET   IFP<br>School   | ADVANCED<br>TRANSMISSIONS<br>Omar HADDED   DSD &<br>Pascal HERVET   Valeo  |
|---------|--|--|--|--|
| 11:00 > | Increasing RDE Robust-<br>ness using Methods of<br>Statistical Learning<br>F. Springer, M. Hegmann,<br>M. Knaak, D. Reppel   IAV | The Effect of Thermal<br>Boundary Conditions on<br>Knock Characteristics in<br>a Single Cylinder Spark<br>Ignited Engine<br>S. Cho, C. Song, K. Min  <br>Seoul National University<br>M. Kim   Myeongji University<br>K-P. Ha, B. Kim, I. Suh  <br>Hyundai Motor Group | Transition between SI and<br>CAI Operating Modes in<br>an Automotive, Low Cost,<br>Gasoline, 2-Stroke Engine<br>J. Benajes, J.J. Lopez, J.<br>Valero-Marco   CMT-Mo-<br>tores Térmicos<br>G. Coma, C. Libert   Renault | E-Clutch as an Enabler<br>for the Hybridisation of<br>Manual Transmissions<br>L. Muller, M. Kneißler,<br>T. Eckenfels   Schaeffler |



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## PROGRAMME // 8 JUNE 2017

RICHELIEU ROOM (FLOOR 0)

CONDÉ ROOM (FLOOR +1)

LULLI ROOM (FLOOR -1)

COLBERT ROOM (FLOOR +2)

11:30 > New modelling process to estimate real-world emissions  
P. Barker | RICARDO

Knock Investigation through Optical Diagnostics in a Turbocharged GDI Engine using Fuels with Different Octane Number  
P. Sementa, F. Catapano, S. Di Iorio | CNR ISTITUTO MOTORI

Injection Strategy for GCI Engine at Low Load  
P. M. Pinazzi, F. Foucher | University of Orléans

Freewheeling Concept: Hybrid Benefits for Manual Transmission at Low Cost  
G. Bartley, S. Fraser | Drive System Design

12:00 > RDE Testing for the Future. Digital Transformation and Realtime-Simulation of Real Driving Emissions and Fuel Consumption  
C. Poetsch, F. Pfister, J. C. Wurzenberger, F. Le Rhun | AVL

Knock Mitigation Techniques for Highly Boosted Downsized SI Engines  
V. Doria, A. Stroppiana, M. Ferrera | Centro Ricerche FIAT- EMEA FCA Powertrain  
S. Luisi | EMEA FCA Powertrain  
F. Millo, M. Mirzaeian, D. Porcu | Politecnico di Torino

Advancement of GDCI Engine Technology for US 2025 CAFE and Tier3 Emissions  
M. Sellnau, M. Foster, W. Moore, K. Hoyer, J. Sinamon, B. Klemm | Delphi

Novel Actuation and Control for a Multi-Speed Powershifting Transmission for Electrified Vehicles  
A. C.O. Smith, R. Taylor, R. J. Barnes | Vocis

12:30 > vRDE - A Virtual Extension of the RDE Tool Chain  
H. Mezher, M. Wenig, C. Armbruster | Gamma Technologies

Octane-on-Demand as an Enabler for Lowering CO<sub>2</sub> Footprint of Mobility: From Engine Tests to Vehicle Demonstration and Life Cycle Analysis  
V. Morel, M. Bedon, V. Gordillo Zavaleta | Aramco  
L. de Francqueville, G. Bourhis, F. Vidal-Naquet, S. Charmasson, S. Dosda | IFPEN

Progress in Light-Duty OPGCI Engine Design and Testing  
R. Hanson, F. Redon, S. Strauss, A. Salvi | Achates Power

TRANSCEND - Ultra-Wide Ratio Hybrid DCT  
S. Nesbitt | Jaguar Land Rover

13:00 &gt; POSTER AWARD CEREMONY !

13:15 &gt; LUNCH BREAK

## NEW ENGINES INTRODUCTION

Federico MILLO | Politecnico di Torino &amp; Amin VELJI | Karlsruhe Institute of Technology

14:30 > The New Renault 1.0 MPI Engine  
Ph. Grataloup, A. Jarasse, O. Chambert, M. Cuyeu, D. Drange, S. Pruski, F. Alizon, B. Gourdel, J.P. Le Lagadec, S. Bauchet | Renault

15:00 > PSA Group's Proposals to Improve the Engine of the Year 2015 & 2016  
F. Gouzonnat, S. Dessarthe, N. Goursoot, P. Souhaite, S. Izelfanane, S. Le Coq | Groupe PSA

15:30 > Ingenium SI engine - Control strategies to deliver a world-class engine  
N. Brockley, J. Saunders, M. McAllister, F. Borean | Jaguar Land Rover

## CLOSING SESSION

16:00 > Gasoline Powertrains: Fascinating Challenges for Mobility and Environment  
Patrice MAREZ - Powertrain System Senior Expert - Vice President | Groupe PSA

16:30 > Conference synthesis & Conclusion by the Conference Chairmen  
Philippe BERNET | Renault  
Erwann SAMSON | Groupe PSA

16:45 &gt; END OF CONFERENCE



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