

➤ **UPDATED PROGRAMME**

With the support of
the French Car industry
and the French Association
of Oil & Gas industry and
Renewables

International Conference and Exhibition

SIA 2020 *DIGITAL PLATFORM* **POWERTRAIN & ENERGY**

The complete propulsion solution within its energy framework
for long range passenger cars and commercial vehicles

**32ND
EDITION**

16 - 29 NOVEMBER 2020

**ONLINE DIGITAL
PLATFORM**





Conference Chair
Dr Nouredine
GUERRASSI,

Chief Engineer –
Advanced Engine-
ring Fuel Injection &
Combustion
BorgWarner

Dear Colleagues,

The requirement to address issues of global warming and oil independence is leading the automotive industry to explore simultaneously a wide range of competitive clean power-train technologies in close connection with fuel and energy scenario development.

To evaluate the potential of each solution on GHG emissions, the scientific community and policy maker are pursuing a global system approach following a well-to-wheel basis and life cycle assessment. In this approach, energy production, distribution and usage in the vehicle all contribute to the overall CO₂ emissions reduction potential. As a consequence, the powertrain development should take a **comprehensive system approach including combustion, electrification and fuels to ensure sustainable energy and emissions.** Low carbon technologies for long range vehicles open up new opportunities but there are still important challenges. Their cost remains a major challenge in order to achieve customer acceptance and ensure a successful transition towards low and zero emissions vehicles.

In this context, the organizing committee decided to enlarge the scope of the 32nd SIA Powertrain congress, to consider **the complete propulsion solution within its energy framework with a specific focus on long range passenger cars and commercial vehicles.** Therefore, this new edition is called **SIA POWERTRAIN & ENERGY // 2020** and it will cover all the ongoing developments of highly efficient combustion engines, hybridization and battery & fuel cell electric propulsion. It will also address the energy framework and roadmap concerning renewable energy use in transportation. With the support of **PFA** - French Association of the Car Industry and the support of **EVOLLEN** - French Association of Oil & Gas industry and Renewables.

The last edition of SIA POWERTRAIN & ELECTRONICS conference held in Paris on June 2019 was again a great success, with 770 participants from 17 countries, 63 scientific and technical presentations, a panel session on energy and a Round Table with the top-level representatives of OEMs and Tier1 companies.

We are committed to organizing an even better edition in 2020 and are pleased to invite you to be part of this unique and prestigious event.

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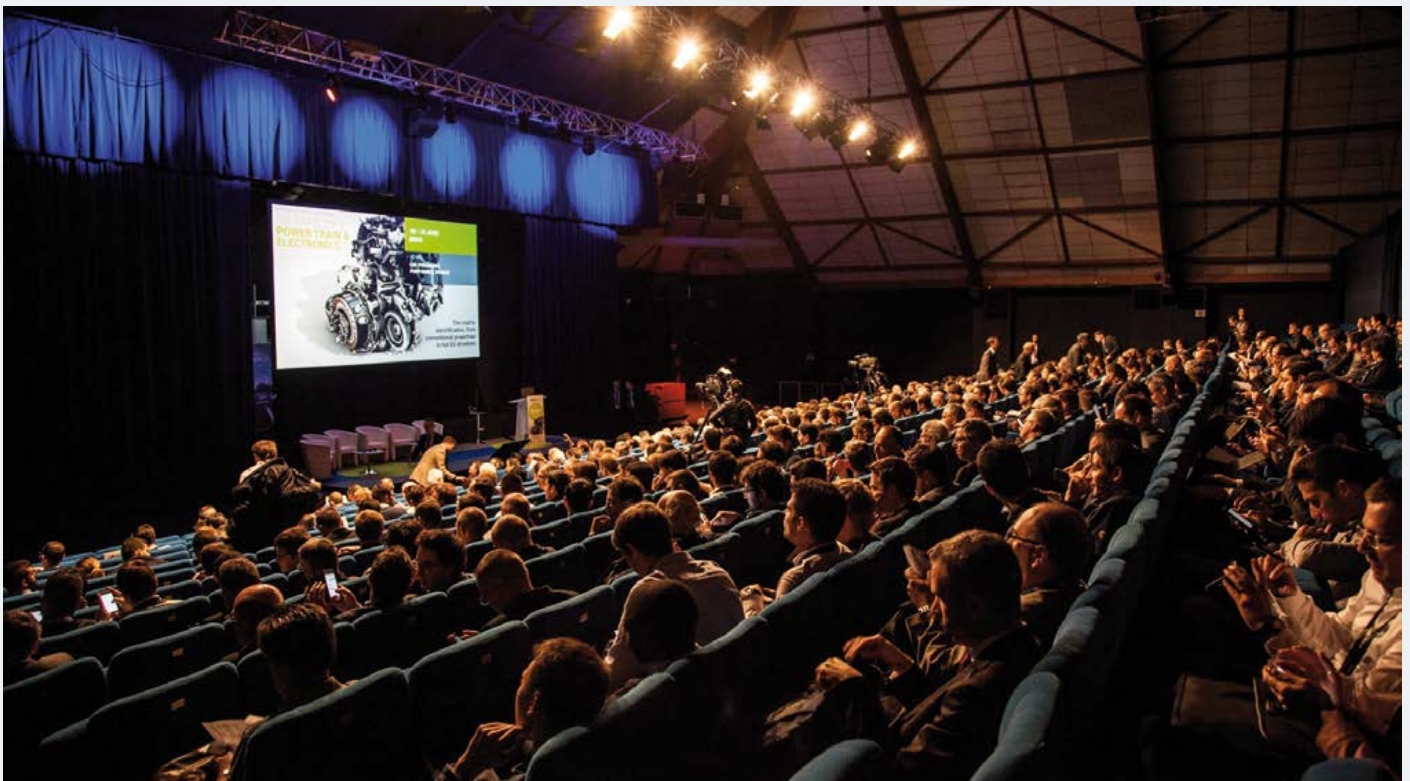
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Damien VERDIER, Vitesco Technologies

Cédric ROUAUD, Ricardo

Michael WEISSBÄCK, AVL

Zaimin ZHONG, Tongji University China



PROGRAMME

New European fuel & powertrain Well-To-Wheels Study

Marta YUGO - Concawe Science Executive for Economics & Modelling in the fields of CO₂ and Energy

Post Euro 6/VI emissions regulation for light duty and heavy duty

Panagiota DILARA - Senior Expert / Clean Vehicles Team Leader, European Commission

Future Powertrains for Carbon-Neutral Trucks

Johan ENGEBRATT - VP Powertrain Strategic Development, Volvo Group

Hydrogen and Fuel Cell for Future Mobility

Nicolas LECLERE - Senior Manager Electrified Powertrains, Groupe PSA

Powertrain Technology Mix Outlook 2035

Robert LASSARTESSES - E-Technologies & Advanced Systems General Manager, Groupe RENAULT

| GHG EMISSIONS & LIFE CYCLE ASSESSMENT | HYBRID SYSTEMS SMART MANAGEMENT | ICE EFFICIENCY IMPROVEMENT I | HYDROGEN & FUEL CELLS I |
|--|---|---|---|
| <p>Contribution of light and heavy vehicles to reducing energy demand and CO₂ emissions by 2035 worldwide</p> <p>Jean-Luc BROSSARD, PFA - French Automotive Industry & Mobilities</p> | <p>Advanced Thermal System Control Optimisation on Ricardo "CONNECT HEV" democar</p> <p>Peter FUSSEY, Ricardo</p> | <p>Air system challenges for an ultra-lean SI engine concept</p> <p>Cédric LIBERT, Groupe Renault</p> | <p>Hydrogen Combustion – a Puzzle Piece of Future Sustainable Transportation!</p> <p>Reza REZAEI, IAV</p> |
| <p>Life Cycle analysis - base for decision or object for discussion?</p> <p>Olaf TOEDTER, KIT</p> | <p>Intelligent Driving: Achieving CO₂ Reduction through Advanced Propulsion and Vehicle Control</p> <p>Karim AGGOUNE, BorgWarner</p> | <p>Dual-fuel RCCI OMEx-gasoline combustion to reduce the well-to-wheel CO₂ levels towards the 2025 horizon</p> <p>Olivier POUSSIN, Volvo Group</p> | <p>Fuel Cell Systems for Heavy Duty Applications</p> <p>Marius WALTERS, FEV</p> |
| <p>Greenhouse Gas Emissions of Passenger Vehicles from a Cradle-to-Grave Perspective</p> <p>Victor GORDILLO, Aramco</p> | <p>Powertrain Virtual Testing</p> <p>Hervé COLIN, Groupe Renault</p> | <p>Water injection system for future gasoline direct injection engine</p> <p>Gavin DOBER, BorgWarner</p> | <p>Design Criteria for cost-efficient Hydrogen Storage Systems (HSS's)</p> <p>Axel SEIFERT, Plastic Omnium</p> |
| 48V ARCHITECTURE | ALTERNATIVE FUELS I | ICE EFFICIENCY IMPROVEMENT II | HYDROGEN & FUEL CELLS II |
| <p>Benefit of 48 V mild hybridization of distribution trucks</p> <p>Christophe MAGNET, Vovlo Group</p> | <p>reFuels – rethinking fuels for CO₂ neutral mobility</p> <p>Olaf TOEDTER, KIT</p> | <p>MAHLE Passive Jet Ignition, Whole Area Operation and the Influence of the Ignition System of Pre-Chamber Combustion</p> <p>Adrian COOPER, Mahle Powertrain</p> | <p>Model based design of Fuel Cell powertrains</p> <p>Ralf WASCHECK, IAV</p> |
| <p>48 Volt High Power – Highly Efficient Full Hybrid for Mass Market Segment</p> <p>Stefan LAUER, Vitesco Technologies</p> | <p>e-Fuel production via renewables and their impact on WtW Fleet CO₂ performance</p> <p>Martin ROTHBART, AVL</p> | <p>Definition of the configuration for future CNG SI engines operating with the passive pre-chamber ignition concept</p> <p>Ricardo NOVELLA, CMT - Motores Termicos</p> | <p>FCEV performance assessment during transient driving conditions – the impact of water conditioning</p> <p>Christoph POETSCH, AVL</p> |
| <p>48V Platform Modularity: an answer to e-mobility complexity?</p> <p>Pierre CHOLVY, Valeo</p> | <p>Sustainable pathways towards transportation decarbonization by PtX-Fuels</p> <p>Thomas KÖRFER, FEV</p> | <p>Swumble In-Cylinder Fluid Motion for High Efficiency Gasoline SI Engines: development of the second generation</p> <p>Xavier GAUTROT, IFP Energies Nouvelles</p> | <p>Systemic fuelcell powertrain architecture simulation to optimize durability, efficiency and performances</p> <p>Gautier QUENEY, Faurecia</p> |

PROGRAMME

| HYBRID DRIVETRAIN | ALTERNATIVE FUELS II | REAL DRIVING EMISSIONS | BATTERY SYSTEMS |
|---|--|--|--|
| <p>Modular and highly functional Hybrid Platform for subcompact cars up to full-size SUV Eric SCHNEIDER, IAV</p> | <p>Potential of Ammonia as future zero-Carbon fuel as one possibility for future mobility Christine ROUSSELLE, Université d'Orléans</p> | <p>Thermal management strategies for optimum performance of NOx aftertreatment applied in a demonstrator vehicle Ludwig BUERGLER, AVL</p> | <p>Battery research at Renault Pierre TRAN-VAN, Groupe Renault</p> |
| <p>Forming the Transformation – How Electrification changes the Portfolio of Transmission Components Jerome LAUGEL, Schaeffler</p> | <p>TOTAL HVO100 a low carbon drop-in fuel reducing emissions Cyrille CALLU, Total</p> | <p>Emissions and Immissions – The Diesel perspective. An assessment of the future of internal combustion engines Thomas KOCH, KIT</p> | <p>Demobase project: HIL tests approach for integration assessment of an innovative battery pack in a light electric vehicle Joseph MARTIN, IFP Energies Nouvelles</p> |
| | <p>EC H2020 Engine tests with new types of biofuels and development of biofuel standards - Stability and robustness of actual FAME report Gérald CREPEAU, Groupe PSA</p> | <p>ELEMENTS a compact measurement system for regulated and unregulated emissions Philipp SCHIFFMANN, IFP Energies Nouvelles</p> | |
| DIESEL HYBRID POWERTRAIN | ICE EFFICIENCY IMPROVEMENT III | BATTERY THERMAL MANAGEMENT | ELECTRIC MACHINES AND POWER ELECTRONICS |
| <p>Benefits and Limits of Waste-Heat Recovery with Rankine Cycle for Long-Haul Trucks Thomas REICHE, Vovlo Group</p> | <p>The potential of spark assisted auto-ignition combustions for high indicated efficiency gasoline engines Matthieu CORDIER, IFP Energies Nouvelles</p> | <p>Fast Charging of HV Battery Systems thanks to Efficient Thermal Management David LASUEN, IAV</p> | <p>800V System Permanent Magnet Machine and Multispeed Transmission Camelia JIVAN, Valeo</p> |
| <p>FEV Diesel EMotion – Electrified Diesel Powertrain for Light Commercial Vehicles to Meet Stringent CO2 Emission Norms Thomas KÖRFER, FEV</p> | <p>Highly efficient combustion engines with near zero impact on air quality Martin KRUEGER, Robert Bosch</p> | <p>Battery thermal management systems development and vehicle integration for conventional and ultra-fast charging capabilities Cédric ROUAUD, Ricardo</p> | <p>Challenges and Solutions for Lithium Ion Cell based Energy Storage Systems Markus EKLER, STMicroelectronics</p> |
| <p>On the way towards Zero Impact - Electrified Diesel Drivetrains to support sustainable and affordable Mobility Michael WEISSBAECK, AVL</p> | <p>Study of fuel injection and spark ignition parameters for the SACI concept Richard OUNG, Université d'Orléans</p> | <p>Novel battery thermal management enabling near zero temperature gradient for fast charging while improving safety Rémi DACCORD, Exoes</p> | <p>Power Electronic Components based on Silicon Carbide Devices for Future Vehicle Power Systems Niklas LANGMAACK, TU Braunschweig</p> |
| | <p>Numerical Assessment of an Innovative Piston Bowl Concept in a Light-duty Diesel Engine Federico MILLO, Politecnico di Torino</p> | <p>A nodal thermal model for a large prismatic Li-ion battery cell Marco SIMONETTI, Groupe PSA</p> | <p>Induction Machines for Electric Drive Systems Paul SIMS, Drive System Design</p> |