



International Conference and Exhibition

SIA PARIS 2021 POWERTRAIN & POWER ELECTRONICS

Hybrid and Pure Electric Drivetrain Technologies
for Next Decade Low Carbon Mobility

9 - 10 JUNE 2021

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Philippe BERNET
Congress General Secretary

The SIA Powertrain Organising Committee and the SIA Automotive Power Electronics (APE) Organising Committee consolidate their successful cooperation to prepare next year SIA POWERTRAIN & POWER ELECTRONICS // Digital Edition 2021 conference.

SIA POWERTRAIN & POWER ELECTRONICS conference will address the full spectrum of electric and hybrid drivetrain technologies paving the way of mobility decarbonization.

- Electrified Thermal Engine & Energy Recovery
- Power Electronics & Electric Technologies
- Electrified Propulsion Systems
- Fuel Cell Systems



Frédéric DUBOIS
Congress co-Chairman,
Stellantis

Along with drivetrain technologies, special focus will be put on two important emerging topics:

- Life Cycle Assessment and Eco-responsible design covering entire product life cycle from emission, energy and resources viewpoint.
- Electromobility ecosystem with charging infrastructure as a key factor for low and zero carbon technologies widespread.



Denis GRIOT
Congress co-Chairman,
Freescale EMEA

Many collaborative initiatives in drivetrain research field are undertaken to support industry recovery. Our conference is aiming at being a forum for them and for Automotive and Electronics industry sectors joint initiative in particular.

2021 SIA POWERTRAIN & ELECTRONICS conference will be 100% digital for the first time. This will be a great opportunity to extend international participation and networking. The digital platform is aiming at reproducing as closely as possible the conditions of the live congress with live conferences, interaction with speakers, chat possibilities with experts and one-to-one virtual business meeting with exhibitors.

We look forward to welcoming you in virtual in June 2021!



Philippe SCHULZ
Congress co-Chairman,
Renault Group

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PRACTICAL INFORMATION

A 100% DIGITAL & LIVE EDITION

Our platform will allow you to:

BEFORE & DURING THE CONGRESS

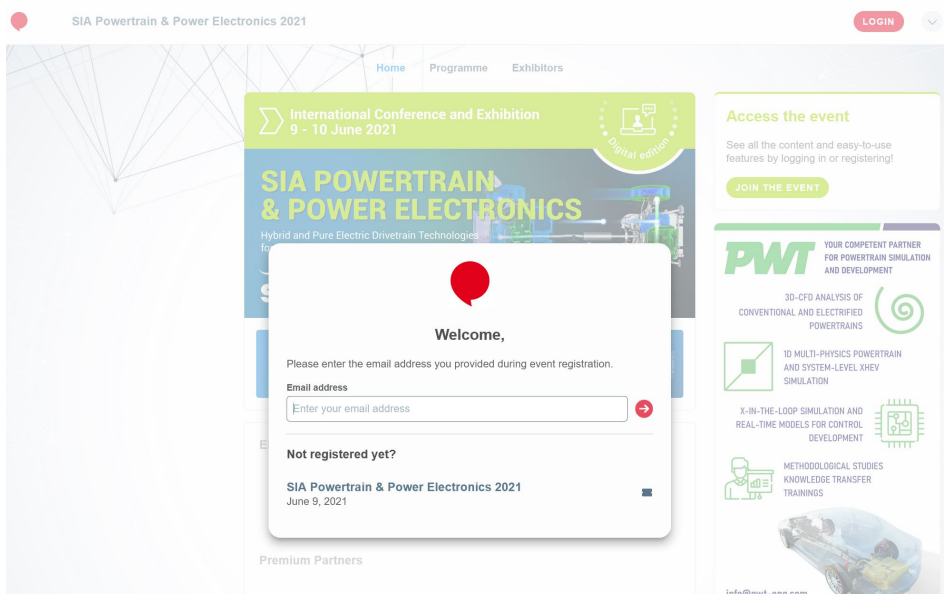
- Create your profile
- Book the conference & demonstration sessions you'd like to attend
- Select the exhibitors you want to exchange with
- Schedule and manage your One-to-One business meetings

DURING THE CONGRESS

- Connect to the platform remotely
- Exchange in real-time with key experts & players from around the world
- Experience the live conference and demo programs of your choice
- Interact with speakers

AFTER THE CONGRESS

- Keep in touch with the attendees
- Download valuable information on your meetings and on the conferences
- Access REPLAYS during a week



COMMITTEES MEMBERS

Conference Chair

Frédéric DUBOIS, Stellantis
Denis GRIOT, Freescale EMEA
Philippe SCHULZ, Renault Group

Steering Committee

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Christophe CALLENS, Valeo
Nourredine GUERRASSI, BorgWarner
Emmanuel JEAN, Faurecia
Jochen LANGHEIM, STMicroelectronics
Bertrand LARGY, SIA Experts' Community EVEC
Gaëtan MONNIER, IFPEN
Joël OP DE BEECK, Plastic Omnium

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Molly BOISSIER, SIA
Jean-Marc BOULARD, AVL
Pierre DURET, IFP School
Omar HADDED, IAAPS
Dominique MARTINEAU, Vitesco Technologies
Geoffroy MARTIN, NextMove
Jean-Michel MORELLE, Valeo
Sébastien POTTEAU, EMC
Ralph SALIBA, IAV
Rémy SCHMITT, Robert Bosch

Scientific Committee

Session 1. Electrified Thermal Engine Technologies

Chairman - Gaëtan Monnier, IFPEN

Philippe DE ARAUJO, Garrett Advancing Motion
Frédéric DUBOIS, Stellantis
Victor GASTE, AVL
André JARASSE, Renault Group
Ali MOHAMMADI, Toyota Motor
Virginie MOREL, ARAMCO
Joël OP DE BEEK, Plastic Omnium
Daniel ROETTGER, Ford
Marc SENS, IAV
Philippe SOUHAITE, Stellantis
Matthias THEWES, FEV

Session 2. Electric Machines & Power Electronics

Chairman - Jochen Langheim, STMicroelectronics

Olivier COPPIN, SIA
Manuel GÄRTNER, STMicroelectronics
Eric GIMET, Stellantis
Denis GRIOT, Freescale EMEA
Kimimori HAMADA, APE Japan
Thomas HARDER, ECPE
Gilles LE CALVEZ, Valeo
Petra MÖNIUS, Vitesco Technologies
Jean-Michel MORELLE, Valeo
Mark MUNZER, Infineon
Sophie PERSONNAZ, Valeo
Olivier PLOIX, Renault Group
Olivier POLA, Vitesco Technologies

Session 3. Electrified Propulsion Systems

Chairman - Christophe Callens, Valeo

Clément DUMAND, Stellantis
Pierre GAUDILLAT, AVL
Denis LEVASSEUR, Renault Group
Dominique MARTINEAU, Vitesco Technologies
Jean-Philippe MERCIER, Renault Group
Steffen MEYER, BorgWarner
Jérôme MORTAL, Valeo
Luc MÜLLER, Schaeffler
Sébastien POTTEAU, EMC
Yannick RAYNAUD, Plastic Omnium
Cédric ROUAUD, Ricardo
Erwann SAMSON, Stellantis

Session 4. Electric Mobility Ecosystem

Chairman - Bertrand LARGY, SIA CE EVEC

Thierry BRINCOURT, EDF
Nicolas LECLERE, Stellantis
Pascal MALAVERGNE, Renault Group
Masato ORIGUCHI, Renault Group
Olivier PATURET, Charing - Ionity

Session 5. Eco-Responsible Design

Chairman - Emmanuel JEAN, Faurecia

Philippe CHINA, Total
Catherine GIRARD, Renault Group
Vincent HEURTIER, IAV
Marc LEJEUNE, Volvo
Hans NUGLISCH, Vitesco Technologies
Sophie RICHET, Stellantis
Vincent ROSENSTIEHL, AVL
Rémy SCHMITT, Robert Bosch
Cyprien TERNEL, IFPEN
Jules-Joseph VAN SCHAFTINGEN, Plastic Omnium



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PROGRAMME 9 JUNE 2021

OPENING OF THE CONGRESS

- 08:00 > Day 1 // few tips from SIA team on the digital platform
-
- 08:10 > **Welcome Introduction**
Luc MARBACH, President, Société des Ingénieurs de l'Automobile
-
- 08:20 > **Opening address by Conference Chairmen**
Frédéric DUBOIS, Stellantis
Denis GRIOT, Freescale EMEA
Philippe SCHULZ, Renault Group

INTRODUCTIVE PANEL DISCUSSION

Chairman: Philippe BERNET, SIA PWTE 2021 General Secretary

KEYNOTE #1

- 08:30 > **Powertrain mix of light duty vehicles in Europe from 2020 to 2040**
Stephen MARVIN, R&D Director, PFA

THEMATIC PANEL SESSION

Electrification targets for 2030 : How industry and mobility ecosystem will address them?

Moderator: Stephen MARVIN - PFA

- 09:00 > Mario BRUNNER, Executive Chief Engineer Systems Engineering, AVL
Pierre CLASQUIN, VP EV Charge, Total
Stéphane FREGOSI, CEO, Vitesco Technologies France
Luc HOVAN, VP Operational Excellence, NorthVolt
Matthias JANZEN, Head of Global Sales Automotive, Semikron Power Electronics

10:15 > BREAK // VIRTUAL NETWORKING

SESSION 1.1
ELECTRIFIED THERMAL ENGINES TECHNOLOGIES // EMISSION NEXT CHALLENGES
Chairmen: Victor GASTE, AVL & André JARASSE, Renault Group

SESSION 2.1
ELECTRIC MACHINES & POWER ELECTRONICS // POWER ELECTRONICS SYSTEM DESIGN
Chairmen: Olivier POLA, Vitesco & Thomas HARDER, ECPE

SESSION 3.1
ELECTRIFIED PROPULSION SYSTEMS // ELECTRIFIED DRIVETRAINS
Chairmen: Christophe CALLENS, Valeo & Dominique MARTINEAU, Vitesco

SESSION 4.1
ELECTRIC & HYDROGEN MOBILITY // HYDROGEN & FUEL CELLS
Chairmen: Olivier COPPIN, SIA & Christian MAUGY, Stellantis

- | | | | | |
|---------|--|---|--|--|
| 11:30 > | Electrical heated catalyst product and system: the answer for hybrid gasoline clean engine
Mathieu CAPIRCHIA, FAURECIA Clean Mobility | Power Electronics 2026 - Wide Band Gap Semiconductors - Implementation / Impacts
Olivier PLOIX, Renault Group | No System Engineering? No electric drivetrain!
Moctar COULIBALY, Valeo
Siemens eAutomotive | Driving profile influence on fuel cell range extender vehicle performance and global warming impact
Ricardo NOVELLA, UPV - CMT - Motores Térmicos |
| 12:00 > | Impact of Different Hybrid-Electric Architectures on CO ₂ and NOX Emissions of a Diesel-Powered LCV: a Simulation Study
Emanuele SERVETTO, POWERTECH | Power GaN FET technology in high power applications including traction Inverters
Dilder CHOWDHURY, NEXPERIA | PlugIn for all – Cost efficiency for PHEV powertrain based on dedicated hybrid transmission
Kiarash SABZEWARI, Vitesco Technologies | Thermal Management of Fuel Cells for Medium and Heavy Duty Architectures
Christian MOESER, SCHAEFFLER |
| 12:30 > | Integration of an Electrically Heated Catalyst in a 48V System: Technologies, Impact and System Balancing
François JAYAT, Vitesco Technologies | Compact GaN Charger with Wide Output Voltage Range for the Universal Usage in Electrical Vehicle with Battery Voltages from 200 to 1000 V
Cornelius ARMBRUSTER, Fraunhofer ISE | P4 Systems an alternative to AWD Mechanical Systems?
Pierre CHOLVY, Valeo | Fuel Cell Behavior and Energy Balance onboard a Hyundai Nexa
Jules SERY, IFPEN |

13:00 > LUNCH BREAK // VIRTUAL NETWORKING

PROGRAMME 9 JUNE 2021

	SESSION 1.2 ELECTRIFIED THERMAL ENGINES TECHNOLOGIES // LUBRIFICATION & SYSTEM MANAGEMENT Chairmen: Daniel ROETTGER, Ford & Ali MOHAMMADI, Toyota	SESSION 2.2 ELECTRIC MACHINES & POWER ELECTRO- NICS // WIDE BAND GAP APPLICATIONS Chairmen: Manuel GÄRTNER, STMicroelectronics & Mark MÜNZER, Infineon	SESSION 3.2 ELECTRIFIED PROPULSION SYSTEMS // NEW MOBILITY Chairmen: Jérôme MORTAL, Valeo & Cédric ROUAUD, Ricardo	SESSION 4.2 ELECTRIC & HYDROGEN MOBILITY // ELECTRIC MOBILITY ECOSYSTEM Chairman: Bertrand LARGY, SIA CE VEEE
14:30 >	In-cylinder pressure sensor (ICPS) a powerful approach to lower CO ₂ emissions for gasoline and hybrid engines Bertrand VAROQUIE, Vitesco Technologies	Enhancing SiC Trench MOSFET performance by advanced gate control Martin GLEICH, INFINEON Technologies	e-Drive 48V concept for Urban Mobility Guillem ENJALBERT, Valeo	Smart Grid, necessary support and opportunities for the massive electrification of automotive industry Damien-Pierre SAINFLOU, Stellantis
15:00 >	Impact of Lubricating oil on Particle Emissions Marcus GOHL, APL Group	Robust PowerGaN devices for high performance dc-dc and OBC converters Eric MOREAU, EXAGAN-ST	The era of Skateboard EV platforms: how to integrate hydrogen storage in the platforms of the future Joël OP DE BEECK, Plastic Omnium	Charging infrastructures modelling, using long distance trip database Hugo BASSET, EP Tender
15:30 >	Optimal ICE operation and independent EV mode: how the fuel system contributes to the overall xHEV powertrain efficiency in a world of geofencing, OBFCM, RDE Yannick RAYNAUD, Plastic Omnium	Thermally optimized High Speed Drive Inverter Design using Surface Mount Silicon Carbide Devices Niklas LANGMAACK, TU Braunschweig, IMAB	Cross-platform electric powertrain optimisation for developing modular product families Bence FALVY, Drive System Design	E-Vehicle and Charging Station – Charging station: Charge and energy control Eric SEMA, Vector
16:00 >	BREAK // VIRTUAL NETWORKING			
	PANEL DISCUSSION Chairman: Philippe BERNET, SIA PWTE 2021 General Secretary			
17:00 >	EXECUTIVE PANEL SESSION Moderator: Frédéric CHARON, SIA Michel FORISSIER, Chief Engineering & Marketing Officer, Valeo Martin KRUEGER, SVP Engineering Market Segment Passenger Cars, Robert Bosch Alain RAPOSO, ECP Powertrain Technologies Unit, HYUNDAI Thierry TINGAUD, CEO France, STMicroelectronics Yann VINCENT, CEO, ACC			
18:30 >	End of 1 st day // Attendees can stay logged in for virtual networking			

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15 - 16 JUNE 2022

**PARC DES EXPOSITIONS,
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PROGRAMME 10 JUNE 2021

07:30 > OPENING OF THE CONGRESS DAY 2				
	SESSION 1.3 ELECTRIFIED THERMAL ENGINES TECHNOLOGIES // COMBUSTION SYSTEMS Chairmen: Virginie MOREL, Aramco & Marc SENS, IAV	SESSION 2.3 ELECTRIC MACHINES & POWER ELECTRONICS // MOTORS, CONTROLS & SENSING Chairmen: Olivier COPPIN, SIA & Sophie PERSONNAZ, Valeo	SESSION 3.3 ELECTRIFIED PROPULSION SYSTEMS // BATTERY SYSTEMS Chairmen: Clément DUMAND, Stellantis & Yannick RAYNAUD, Plastic Omnium	SESSION 5.1 ECO-RESPONSIBLE DESIGN // LCA FOR ALTERNATIVE PROPULSION SYSTEMS Chairmen: Philippe CHINA, Total & Marc LEJEUNE, Volvo Trucks
08:00 >	SWUMBLE 3-cylinder high efficiency gasoline engine for future electrified powertrains Thomas LEROY, IPFEN	Highly efficient and modular: Custom-made electric powertrains for commercial vehicles Raphaël KLIMA, Schaeffler	Integrated housing for optimized competitiveness of Battery System and including an integrated High-Performance Thermal-Management Christian COTTE, Faurecia	Hydrogen powertrains in competition to fossil fuel and battery electric systems Christoph DANZER, IAV
08:30 >	Theoretical development and experimental validation of a methodology to reproduce multi-orifice pre-chamber jets in an optical accessible RCEM J. Javier LOPEZ, CMT - Motores Térmicos	Improvements in EV Efficiency made possible by Dynamic Motor Drive Roland MILLEN, Tula Technology	Innovative Method for Coupled, Multiphysical Simulation of Battery Modules Tolga BOZALP, Volkswagen	LCA for BEV : methodology and hotspots Caroline MIR, Renault Group
09:00 >	Active pre-chamber development for ultra diluted combustion gasoline engine Stéphane CHEVILLARD, IPFEN	High Speed Inductive Position Sensors for E-machines Lorenzo LUGANI, Melexis	Accelerating EV Adoption – Getting the Performance/ Cost Balance Right in BMS and Traction Inverter Systems Design Timothé ROSSIGNOL, Analog Devices	A look into the Life Cycle Assessment of passenger vehicles running on e-fuels and advanced biofuels Marta YUGO, CONCAWE & Victor GORDILLO ZAVALETA, Aramco
09:30 >	Extra time to exchange with speakers	Highly integrated oil cooling solutions for power electronics and electric motor Cédric ROUAUD, Ricardo	Demobase project: HIL tests approach for seamless integration of battery pack in light electric vehicle Joseph MARTIN, IPFEN	Ethanol fuel content impact on regulated and unregulated emissions on EU6c and EU6d-Temp vehicles Jean-Fritz FORTUNE, IPFEN
10:00 > BREAK // VIRTUAL NETWORKING				
FISITA PANEL DISCUSSION Chairmen: Christophe AUFRERE - VP Technical, FISITA 				
KEYNOTE #2 11:00 > The general environment strategy of Renault with a focus on the place of circular economy with the emblematic project Re-Factory as a concrete application of this strategy Virginie SAUVET-GOICHOT - Climate Project leader, Renault Group				
FISITA Round-Table Life Cycle Assessment, Global Opportunities and Challenges Moderator: Christophe AUFRERE - VP Technical, FISITA 				
11:30 > Michelle GARDNER - Vice President, Global Hardware Components and Subsystems, GM Gerfried JUNGMEIER - Joanneum Research, LIFE - Institute for Climate, Energy and Society, Graz, AUSTRIA Dahai MENG - Environmental & Material Senior Manager, NIO Virginie SAUVET-GOICHOT - Climate Project leader, Renault Group Hewu WANG - Professor, Tsinghua University Grace ZANG - Senior Manager COEHS, NIO				
12:30 > STUDENTS BEST POSTER AWARD CEREMONY !				
12:45 > LUNCH BREAK // VIRTUAL NETWORKING				

PROGRAMME 10 JUNE 2021

	SESSION 1.4 ELECTRIFIED THERMAL ENGINES TECHNOLOGIES // FUELS Chairmen: Gaetan MONNIER, IFPEN & Joël OP DE BEECK, Plastic Omnium	SESSION 2.4 ELECTRIC MACHINES & POWER ELECTRONICS // PACKAGING Chairmen: Jochen LANGHEIM, STMicroelec- tronics & Olivier PLOIX, Renault Group	SESSION 3.4 ELECTRIFIED PROPULSION SYSTEMS // SYSTEM TES- TING AND VALIDATION Chairmen: Pierre GAUDILLAT, AVL & Sébastien POTTEAU, EMC	SESSION 5.2 ECO-RESPONSIBLE DESIGN // ECO DESIGN Chairmen: Emmanuel JEAN, Faurecia & Rémy SCHMITT, Robert Bosch
14:00 >	Ultra-lean Combustion System Optimization for H2-fuelled ICEs via Synergistic Application of 1D- and 3D-CFD Alberto VASSALLO, Punch Torino	Latest advances in wide bandgap semiconductor processes and related packaging technologies are accelerating the deployment of novel high-performance EV power trains Filippo DI GIOVANNI, STMicroelectronics	Smart Virtual Testing - Attribute Optimisation for Future Propulsion Systems Shan-An KAO, Ford	Renault, Trend toward decarbonization in 2030-2050: Eco-responsible design strategy on (Energy and) Materials Stéphane MOREL & Catherine GIRARD, Renault Group
14:30 >	Numerical investigation of thermal insulation coating on spark-assisted compression ignition combustion using e10 gasoline Eleftherios GORGORAPTIS, ARAMCO Overseas	High power density solution for DC link on 48 V inverter application with Hybrid Aluminum Electrolytic Capacitors Fabio MELLO, TDK Electronics	Evaluation of Advanced Control Strategies for Energy Management of Hybrid Electric Vehicles (HEV) Using a Virtual Vehicle Co-Simulation Platform Pedro MAROTO, Applus+ IDIADA	Affordable and Sustainable Mobility (ASuM): a 360° approach for 2030 and beyond Bernard SAHUT, Stellantis
15:00 >	Towards carbon neutrality: Dual-Fuel RCCI Hybrid Truck Concept fueled with Synthetic Fuels Olivier POUSSIN, Volvo Group	Competitive implementation of a high value power module assembly line in a high cost country Jacques FAVRE, aPSI3D	Complete validation of e-mobility systems Jean-Christophe PIN, EMC	Contributions of the supply chain to eco-responsible design Lionel MELETON, CETIM
15:30 >	BREAK // VIRTUAL NETWORKING			
	PLENARY SESSION Chairmen: Noureddine GUERRASSI, BorgWarner & Philippe SCHULZ, Renault Group			
16:00 >	Fail-aware and Fail-safe Powertrain for Electric Cars Wolfgang WONDRAK, Mercedes Benz & Jorge PEREZ, ZF			
16:20 >	Role of H2-derived Fuels to Decarbonize Road Transport Pierre-Olivier CALENDINI, ARAMCO Overseas			
16:40 >	Potential and challenges of the H2 internal combustion engine from experimental and numerical investigation Florence DUFFOUR, IFPEN			
	CLOSING SESSION			
17:00 >	Closing Remarks by Conference Chairmen Frédéric DUBOIS, Stellantis Denis GRIOT, Freescale EMEA Philippe SCHULZ, Renault Group			
17:15 >	End of congress / Attendees can stay logged in for virtual networking			

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