

International Conference

HYDROGEN INJECTION & COMBUSTION IN ENGINES

MAY 12TH 2022,
FROM 9:30 A.M

CAMPUS ARTS ET MÉTIERS
DE CHÂLONS-EN-CHAMPAGNE,
FRANCE



With the support of:

The replacement of fossil fuels by hydrogen for internal combustion engines operation is today one of the scientific research topics having a great interest for commercial vehicle manufacturers and equipment suppliers. Since the hydrogen is produced by the electrolysis of water using renewable electricity, combustion engines can thus be considered as decarbonized powertrains in the same way as battery electric propulsion, which is clearly favoured by all car manufacturers. However, this propulsion solution is still not affordable and not yet fully compatible with applications requiring long autonomy such as heavy-duty vehicles, boats, and airplanes, due to the requirement of large size and high weight batteries. Compared to electricity, using hydrogen as an energy carrier is advantageous in terms of volumetric and gravimetric energy storage density. Also, this hydrogen propulsion solution presents many advantages compared to fuel cell electric vehicle especially in terms of packaging, durability, robustness against hydrogen quality and requirement of precious metals such as Platinum, Lithium, Cobalt or Nickel. However, studies and research are still needed to resolve the remaining issues associated with combustion, injection processes and safety.

The importance of this technical subject is such that the Campus Arts et Métiers de Châlons-en-Champagne, the Prisme laboratory of the university of Orléans and the SIA are organizing jointly a specific one conference day focusing on injection and combustion of hydrogen in engines. This conference day will provide relevant suggestions to make this technology commercially viable. Conference topics include fundamentals of hydrogen combustion, details on the different mixture formation strategies and their emissions characteristics, measures to convert existing injection and combustion systems.

This day will provide an opportunity to meet the leading specialists in this field, from the automotive industry, the associated equipment manufacturers, from the alternative energies industry, and representatives of major research laboratories and universities. With even better environmental performance, the hydrogen internal combustion engine will be able to take full advantage of its position as a carbon neutral power drive.



Nouredine GUERRASSI

SCIENTIFIC COMMITTEE

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Nouredine GUERRASSI, BorgWarner / Campus Arts et Métiers de Châlons-en-Champagne
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PROGRAMME 12TH MAY 2022

SESSION 1 • HYDROGEN INJECTION & COMBUSTION PROCESSES

Chairman: Nouredine Guerrassi

08:30 > Attendees registration & coffee

Welcome introduction by the campus Arts et Métiers of Châlons-en-Champagne & opening address by the conference Chairmen

09:30 > Pr. Giovanni RADILLA / Director, campus Arts et Métiers of Châlons-en-Champagne

Opening address by the Conference Chairmen & SIA
Nouredine Guerrassi, Fabrice Foucher & Frédéric Charon

09:45 > Hydrogen engine powertrains for future mobility solution
Andreas Kufferath and Erik Schuenemann / Robert Bosch

10:15 > H2 injection system and its application on a passenger car gasoline engine
Laurent Doradoux / BorgWarner

10:45 > Optimization of the mixture formation in DI hydrogen combustion engines by modified injector nozzle design
Lorenz von Roemer and Cyrille Frottier / IAV
Anja Fink / TU Berlin

11:15 > Dedicated tools to investigate hydrogen injection and combustion
Florence Duffour / IFP Energies Nouvelles

11:45 > LUNCH BREAK

SESSION 2 • HYDROGEN INTERNAL COMBUSTION ENGINE TECHNOLOGY

Chairman: Fabrice Foucher

13:00 > Synthesis paper from the SIA Powertrain Technologies Experts Community on hydrogen internal combustion engine
Jöel OP De Beeck / Plastic Omnium

13:30 > Hydrogen combustion engine for Off-Road vehicles
Andreutti Roberto / Liebherr

14:00 > Shaping HD H2-ICE's towards enhanced fuel efficiency with Near-Zero Emissions
Thomas Körfer / FEV

14:30 > BREAK IN THE EXHIBITION

15:00 > MH8: retrofit path Diesel to H2 SI
Jean-Marc Neveu / Volvo Powertrain

PANEL SESSION

15:30 > GENERAL DISCUSSION & CONCLUSION
Bosch, BorgWarner, IAV, IFPEN, Plastic Omnium, Liebherr, FEV, Volvo

16:30 > END OF THE CONFERENCE

REGISTRATION FORM

International Conference / Hydrogen Injection and Combustion in Engines

May, 12th, 2022 - Ref: 2022-09

Please complete and return this form to: SIA - 79, rue Jean-Jacques Rousseau – F-92158 Suresnes Cedex
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REGISTRATION FEES

- 468 € TTC** (390 € HT) - SIA members
- 576 € TTC** (480 € HT) - Non members
- 312 € TTC** (260 € HT) - Co-authors*, small firms (< 100 people**), Univ-Labs, PhD student, Member of SIA Expert
- 0 €** - Speaker***, Exhibitor, Steering Committee

> Group discount (≥ 3 pers). Contact martin.pierrelee@sia.fr

*2 co-authors max

** Small firms, researchers and laboratories must not come under the control big firms > 100 employees

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REGISTRATION CONDITIONS

- Registration fees include participation in the conference, refreshment breaks, lunches. Where it is not possible to send the payment together with the form, each registration should be accompanied by an official purchase order. Failing reception of an official purchase order or payment on the day of the congress, we regret that you will not be allowed entry to the congress.
- When we have received the registration form, we will send you a confirmation message and an invoice. Please indicate the accounts department address when necessary.
- Until **April 12th**, you can cancel your registration in a written form. After this date, the entire registration will be retained. Registered participants not able to attend may nominate a substitute and inform us in a written form.
- Cancellation conditions (in addition to the GTC): in view of the current constraints linked to the COVID health crisis. If the congress has to be postponed or cancelled, you will be automatically reimbursed or offered a credit note for a future edition.