

NEW DIRECT INJECTION 2-STROKE ENGINES INTERNATIONAL WORKSHOP & CONFERENCE

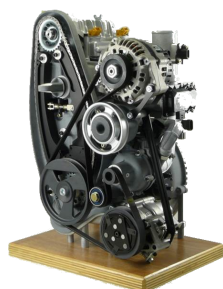
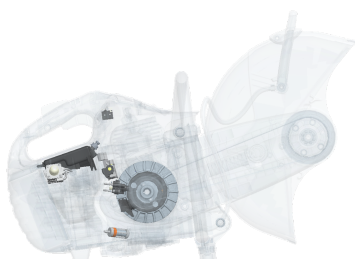


Program

New DI 2-stroke Engines Conference

February 15th, 2018

IFP School, Rueil-Malmaison, France



Dear Colleagues,

The 2nd Edition of the New Direct Injection 2-Stroke Engines International Workshop and Conference will take place on 15th February 2018 at IFP School, after the successful first edition organized at Brunel University on December 4, 2015. As for the first edition, the aim of this new edition is to share the latest research and development results on the new generation of direct injection 2-stroke engines from a number of companies (manufacturers, suppliers, engineering companies) and research institutions and to develop their networking in this field.

During the last 30 years, the conventional carbureted 2-stroke engine started to progressively disappear because of its high pollution due to fuel short-circuiting and misfiring at part load. In parallel number of researchers from all over the world worked to develop a new generation of clean and efficient 2-stroke engines which could also keep the 2-stroke cycle inherent advantages of simplicity, light weight, compactness, low friction and pumping losses, double cycle frequency and high specific power,... These new 2-stroke engines are based on the use of direct fuel injection technology (or at least on the use of stratified scavenging for the small hand held tools) and sometimes combined with advanced combustion processes such as gasoline CAI (Controlled Auto-Ignition). These technologies allow the 2-stroke engine to be able to meet the most stringent emissions limits while demonstrating significant fuel consumption advantages compared to its 4-stroke counterpart. They have now several years of successful production outside automotive, especially for marine outboards, recreational products, hand-held tools, 2-3 wheelers and Unmanned Aerial Vehicles (UAV).

Beside these new DI 2-stroke engines using the rather simple and conventional crankcase scavenged piston ported engine design, more sophisticated innovative and promising DI 2-stroke engine concepts are also under investigations and for some of them close to production.

This international workshop and conference is then expected to cover these two main current directions in the development of new DI 2-stroke engines, the one related to the latest progresses and the new applications of crankcase scavenged DI 2-stroke and also the other one related to these innovative engine concepts.

We are looking forward to seeing you next February 2018 at IFP School.



Workshop & Conference Chair
Pierre DURET

Director, Powertrains & Sustainable Mobility, IFP School

Technical Committee

- Gilles COMA – Renault
- Gaetano DE PAOLA – IFP Energies Nouvelles
- Giovanni FERRARA – Firenze University
- Nigel FOXHALL – BRP-Rotax
- Roland KIRCHBERGER - TU Graz
- Javier LOPEZ SANCHEZ – CMT-UPV
- Sylvain MATTE – BRP
- Ricardo NOVELLA – CMT-UPV
- Fabien REDON – Achates Power
- Eran SHER – Technion - Israel Institute of Technology
- Stéphane VENTURI – IFP Energies Nouvelles
- Wolfgang ZAHN – Stihl
- Hua ZHAO – Brunel University

Organizing Committee

- Elie DEBBAS – IFP School student
- Brigitte DELAGE – IFP School
- Jad GHAZI – IFP School student
- Jouanah GHORI – IFP School
- Vinith Kumar LAKSHMANAN – IFP School student
- Gabriel STEFFENS – IFP School student

Venue:

IFP School

1 Avenue de Bois Préau
92852 Rueil-Malmaison, France
<http://www.ifp-school.com/>



Conference Programme, Thursday, 15 February 2018

8.00 - 8.50 Registration

8.50 Welcome Opening

9.05 SESSION 1 : FROM MICRO TO SMALL 2-STROKE ENGINES
Chaired by Sylvain Matte / BRP

9.05 Theoretical limits of scaling-down Two-Stroke engines

- Eran Sher / Technion Israel Institute of Technology
- Ilai Sher / The Cranfield University

9.25 Compression Wave Injection: CFD analysis of scavenging process and experimental investigation of combustion process

- Stefano Bernardi, Marco Ferrari and Vincenzo Gagliardi / Emak S.p.A.
- Luigi De Simio / Istituto Motori

9.45 Empowering handheld 2-Stroke engines with a low cost injection system

- Wolfgang Zahn / ANDREAS STIHL AG & Co. KG

10.05 Q&A

10.20 Coffee Break

10.50 SESSION 2 : POPPET VALVES DI 2-STROKE ENGINES
Chaired by Fabien Redon / Achates Power

10.50 Development of a fuel-efficient Two-Stroke diesel engine for medium passenger cars : numerical design and experimental tests of an uniflow scavenged engine

- Jérémy Galpin, Gaetano De Paola & Ludovic Nowak / IFP Energies Nouvelles
- Fano Rampanarivo / Renault

11.10 Research on 2-Stroke poppet valve engines

- Hua Zhao / Brunel University

11.30 Computational analysis of the sensitivity of the gasoline PPC concept to the injector definition in a poppet valves 2-Stroke CI engine

- Jesús Benajes, J. Javier López, Ricardo Novella & Josep Gómez-Soriano / CMT-Motores Térmicos
- Gilles Coma / Renault

11.50 Benchmark of two different Two-Stroke diesel engine architectures, standard uniflow scavenging and opposed-piston architectures, in comparison with a state of the art four-stroke diesel engine

- Fano Rampanarivo / Renault
- Jérémy Galpin & Gaetano De Paola / IFP Energies Nouvelles
- Kévin Thein, Ricardo Novella & Jesús Benajes / CMT-Motores Térmicos

12.10 Q&A

12.30 Lunch Break and Poster Session

14.00 Short engine exhibition tour

14.20 SESSION 3 : DI 2-STROKE ENGINES FOR MOTORCYCLES & RANGE EXTENDER
Chaired by Eran Sher / Technion Israel Institute of Technology

14.20 Numerical simulation and experimental study of a Low Pressure Direct Injection system for small Two-Stroke engines

- Giovanni Ferrara, Francesco Balduzzi, Luca Romani & Giovanni Vichi / University of Florence

14.40 Will Euro 5 regulation for 2-wheelers ban the Two-Stroke engines ?

- Roland Kirchberger / Graz University of Technology

15.00 Potential of a production DI Two-Stroke engine adapted for motorcycle and range extender applications

- Pierre Duret / IFP School
- Stéphane Venturi Antonio Sciarretta / IFP Energies Nouvelles
- Nigel Foxhall Walter Hinterberger / BRP-Rotax

15.20 Q&A

15.35 Coffee Break

16.05 SESSION 4 : INNOVATIVE DI 2-STROKE ENGINES : FROM CONCEPT TO PRODUCTION
Chaired by Pierre Duret / IFP School

16.05 Two-Stroke engines for hybrid applications

- E. Mattarelli, C.A. Rinaldini, T. Savioli, M. Borghi, G. Cantore & B. Zardin / University of Modena and Reggio Emilia
- V. Gopalakrishnan, A. Warey & M. A. Potter / General Motors Global Research and Development
- L. Morfino / PRIMAVIS

16.25 Achates opposed piston engine developments

- Fabien G. Redon / Achates Power

16.45 Inside the new 850cc BRP-Rotax 2 Stroke DI snowmobile engine

- Nigel Foxhall / BRP-Rotax

17.05 Q&A

17.20 CLOSING

Venue access:



New Direct Injection 2-Stroke Engines
IFP School Conference



How to get there?

By Car

Paris-Porte Maillot, take D913 direction La Défense – Saint-Germain-en-Laye

By Public Transport

RER-A, direction Saint-Germain-en-Laye +
Option 1: Get to Rueil-Malmaison, take Bus 244 to Genevieve Couturier or Bus 27 to Bois-Préau.
Option 2: Get to La Défense + Bus 258 towards (Rueil-Malmaison, La Jonchère) to Bois-Préau



IFP Energies nouvelles
1 & 4, Avenue de Bois-Préau
92852 Rueil-Malmaison Cedex – France
Tel: +33 1 47 52 60 00

Restaurant La Fournaise and Hotels

- **Restaurant La Fournaise:** 3 Rue du Bac, Ile des Impressionnistes (78400, Chatou)
- **Hotel Novotel Rueil Malmaison:** 21 Ave. Edouard Belin (92566, Rueil Malmaison), +33 1 47 16 60 60
- **Hotel Inter-Hotel Rueil Centre:** 1 Place Richelieu (92500, Rueil Malmaison), +33 1 47 08 20 20
- **Hotel Qualys-Hôtel:** 20 Avenue Albert 1er (92500, Rueil Malmaison), +33 1 47 32 20 92

Ticketing Website for Online Registration

<https://www.weezevent.com/new-di-2s-conference>

- Registration Fees: 80 Euros
- Free registration for the first 10 students
- Optional Welcome Dinner at Restaurant La Fournaise (14th of February, 19.30h): 50 Euros