



THIESEL 2026

CONFERENCE ON THERMO-AND
FLUID DYNAMICS OF

CLEAN PROPULSION POWERPLANTS

**FINAL
PROGRAMME**



**8th – 11th September 2026
Valencia (Spain)**



UNIVERSITAT
POLITÉCNICA
DE VALÈNCIA



GENERALITAT
VALENCIANA

WELCOME BY THE RECTOR OF UPV

It is a great honour to welcome you to the **14th Edition of the THIESEL Conference on Thermo-and Fluid Dynamics of Clean Propulsion Powerplants.**

The risks and challenges posed by current geopolitical developments have accelerated an ongoing transition towards more sustainable propulsion systems. Reducing our dependence on fossil fuels will make our societies more sustainable and resilient, ultimately contributing to higher levels of wellbeing, prosperity, and freedom.

The contributions presented at this conference, together with its increasing focus on topics such as decarbonisation, hydrogen, ammonia, and electric mobility, help to define the roadmap towards this transition. Universities, research institutions, and companies all play a fundamental role in this process, working together to develop the knowledge, technologies, and innovations required to build a more sustainable future.

CMT – Clean Mobility & Thermofluids is not only a leading research institute in its field, but also one of the most productive institutes at our university in terms of scientific output, innovation, and collaboration with industry. I would therefore like to express my sincere appreciation to the CMT team and to the organisers of THIESEL 2026 for their commitment and efforts in making this new edition of the conference possible.

CMT also exemplifies the profile and aspirations of the Universitat Politècnica de València: an institution committed to excellence in research while remaining closely connected to industry and society, both locally and internationally. This strong relationship with the business sector is one of our defining characteristics and a key driver of our economic and social impact.

I wish you every success for this conference and hope that you make the most of your visit to our university, an institution where technology, engineering, architecture, business, and the arts come together to generate knowledge, educate talent, foster innovation, and contribute to society through strong international and industrial partnerships.

José E. Capilla
Rector

OVERVIEW AND OBJECTIVES

The THIESEL 2026 Conference focuses on the thermo-and fluid dynamic processes occurring in propulsion powerplants for clean and sustainable transport. The automotive industry faces a number of challenges linked to the electrification and necessary decarbonisation. New generation thermal engines require solutions for injection/combustion concepts based on hydrogen, ammonia, renewable-fuels and e-fuels, but also to reduce thermal losses and increase efficiency. For full societal acceptance of global electrified propulsion systems, the driving range must be increased. To achieve this, research focusses on improving batteries capacity and optimizing the energy management system.

Since research in all these areas is in full swing, the aim of the THIESEL 2026 Conference on Thermo-and Fluid Dynamics of Clean Propulsion Powerplants is to facilitate the exchange of ideas and experiences between Industry, Universities and Research Centres, as well as to create a discussion forum for the most recent advances and for the identification of future lines of research.

LIST OF CONTENTS

3	Committees
4	Session matrix
5	Tuesday 8 th September
5	Wednesday 9 th September
7	Thursday 10 th September
9	Friday 11 th September
11	Poster sessions
13	Conference exhibition
14	Conference location
14	Contact Details
15	How to reach Valencia
15	About Valencia

➤ COMMITTEES

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Prof. Eiichi Murase. Kyushu University - Japan

Dr. Noshin Omar. Avesta Holding - Belgium

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Dr. Steven Pierson. Jaguar Land Rover - UK

Mr. Alain Raposo. ACC Automotive Cells Co. - France

Prof. Guillermo Rein. Imperial College London - UK

Dr. Michael Riess. IAV - Germany

Prof. Giorgio Rizzoni. Ohio State University - USA

Prof. Christine Rousselle. Université d'Orléans - France

Dr. P. Kelly Senecal. Convergent Science - USA

Dr. Derek Splitter. Oak Ridge National Laboratory - USA

Prof. Athanasios Tsolakis. University of Birmingham - UK

Mr. Noboru Uchida. New ACE Institute – Japan

Dr. Bianca Vaglieco. CNR-STEMS - Italy

Dr. Oliver Varnier. Jaguar Land Rover - UK

Dr. Alberto Vassallo. Dumarey - Italy

Dr. Timothy Watling. Johnson Matthey - UK

Prof. Margaret Wooldridge. University of Michigan - USA

Dr. Peng Zhao. University of Tennessee - USA

SESSION MATRIX

TUESDAY, 8 th SEPT.	WEDNESDAY, 9 th SEPT.	THURSDAY, 10 th SEPT.	FRIDAY, 11 th SEPT.
	FROM 7:30 h CONFERENCE REGISTRATION	FROM 8:00 h CONFERENCE REGISTRATION	
	8:30 h - 10:15 h SESSION 1.1 AMMONIA INJECTION & COMBUSTION	8:30 h - 10:15 h SESSION 2.1 PRECHAMBERS for SUSTAINABLE FUELS	8:30 h - 10:15 h SESSION 3.1 THERMAL PHENOMENA ANALYSIS
	10:15 h-10:45 h COFFEE BREAK		
	10:45 h - 12:50 h SESSION 1.2 EMISSIONS MEASUREMENT & AFTERTREATMENT	10:45 h - 12:50 h SESSION 2.2 H₂ INTERNAL COMBUSTION ENGINES	10:45 h - 12:50 h SESSION 3.2 MODELING OPTIMIZATION & ANALYSIS
	12:50 h - 14:30 h LUNCH		
	14:30 h - 15:30 h POSTER SESSION 1 COMMERCIAL EXHIBITION VISIT TO CMT's LABS 1	14:30 h - 15:30 h POSTER SESSION 2 COMMERCIAL EXHIBITION VISIT TO CMT's LABS 2	14:30 h - 15:30 h POSTER SESSION 3 COMMERCIAL EXHIBITION
	15:30 h - 17:15 h SESSION 1.3 SUSTAINABLE FUELS INJECTION	15:30 h - 17:15 h SESSION 2.3 PRECHAMBER TECHNOLOGIES	15:30 h-17:40 h SESSION 3.3 CARBON BASED SUSTAINABLE FUELS
	17:30 h - 20:00 h CONFERENCE REGISTRATION	17:15 h - 17:45 h COFFEE BREAK	
	17:45 h - 19:25 h SESSION 1.4 SPARK IGNITION COMBUSTION PHENOMENA	17:45 h - 19:25 h SESSION 2.4 COMPRESSION IGNITION COMBUSTION ENGINES	17:40 h - 18:00 h CONFERENCE CLOSURE
19:30 h - 21:30 h WELCOME ADDRESS AND COCKTAIL			20:30 h - 00:00 h GALA DINNER

PROGRAMME

TUESDAY 8th SEPTEMBER 2026

17:30-20:00	Registration
19:30-20:15	Welcome address José E. Capilla – UPV Rector Raúl Payri - CMT – UPV. Steering Committee Roberto Miguel-Nieto - HORSE, Spain. Keynote lecture
20:15-21:30	Welcome cocktail

Registration will also be open every morning:

- On 9th September from 7:30 am onwards
- On 10th and 11th September from 8:00 am onwards

WEDNESDAY 9th SEPTEMBER 2026

S1.1	AMMONIA INJECTION & COMBUSTION	Chairperson: Zhixia He Jiangsu University, China
8:30-9:00	KEYNOTE LECTURE: Decarbonization of Large Engine Applications Nicole Wermuth. Technische Universität Graz, Austria	
9:00-9:25	Large-Eddy Simulation of Ammonia Direct-Injection Combustion: Comparing Auto-Ignition and Diesel Spray-Assisted Ignition W. Siddiqui ¹ , G. Bracho ² , S. Karimkashi ¹ , J. Hyvönen ³ , V. Vuorinen ¹ ¹ Aalto University, Finland ² Universitat Politècnica de València, Spain ³ Wärtsilä Finland Oy, Finland	
9:25-9:50	Numerical and Experimental Investigation of Ammonia Spray at Engine Relevant Conditions R. Soni ¹ , D. Pinilla-Fernández ² , J.M. García-Oliver ² , G. Bracho ² , C. Gößnitzer ¹ , S. Posch ³ , G. Pirker ¹ ¹ Large Engines Competence Center, Graz, Austria ² Universitat Politècnica de Valencia, Spain ³ Technische Universität Graz, Austria	
9:50-10:15	Understanding NH₃-H₂ Co-Combustion in a Spark-Ignited CFR Engine J. Loprete ^{1,2} , J.P. Trelles ³ , N. Van Dam ³ , J.H. Mack ³ , D. Assanis ^{1,2,4} ¹ Stony Brook University, USA ² Advanced Energy Research and Technology Center, USA ³ University of Massachusetts Lowell, USA ⁴ Institute for Advanced Computational Science, USA	
10:15-10:45	Coffee break	
S1.2	EMISSIONS MEASUREMENT & AFTERTREATMENT	Chairperson: Christian Tomanik CMT-Engineering, Germany
10:45-11:10	Challenges and Solutions of Exhaust Gas Measurement for Alternative Fuels S.C. Eichmann ¹ , T. Bodsch ² ¹ HORIBA Europe, Oberursel, Germany ² HORIBA Europe, Darmstadt, Germany	
11:10-11:35	Experimental Studies on the Effects of Catalyst Layer Porosity and Active Site Amount on NO_x Purification Characteristics in Urea SCR Catalysts F. Yoshida, Y. Ueki, R. Sok, J. Kusaka Waseda University, Japan	
11:35-12:00	A-EAT Demonstration of Reducing Global and Local Vehicle Emissions with Hybrid Powertrain, Dedicated ATS, MtG Advanced Fuel, and an Impact Assessment Using Air Quality Modelling T. Sarica ¹ , E. Laigle ¹ , V. Gordillo ¹ , M. Mitschler ¹ , V. Gaste ² , M. Olteanu ³ , C. Chaillou ¹ ¹ Aramco Fuel Research Center, France ² AVL LMM, France ³ HORSE Technologies, Romania	

WEDNESDAY 9TH SEPTEMBER 2026

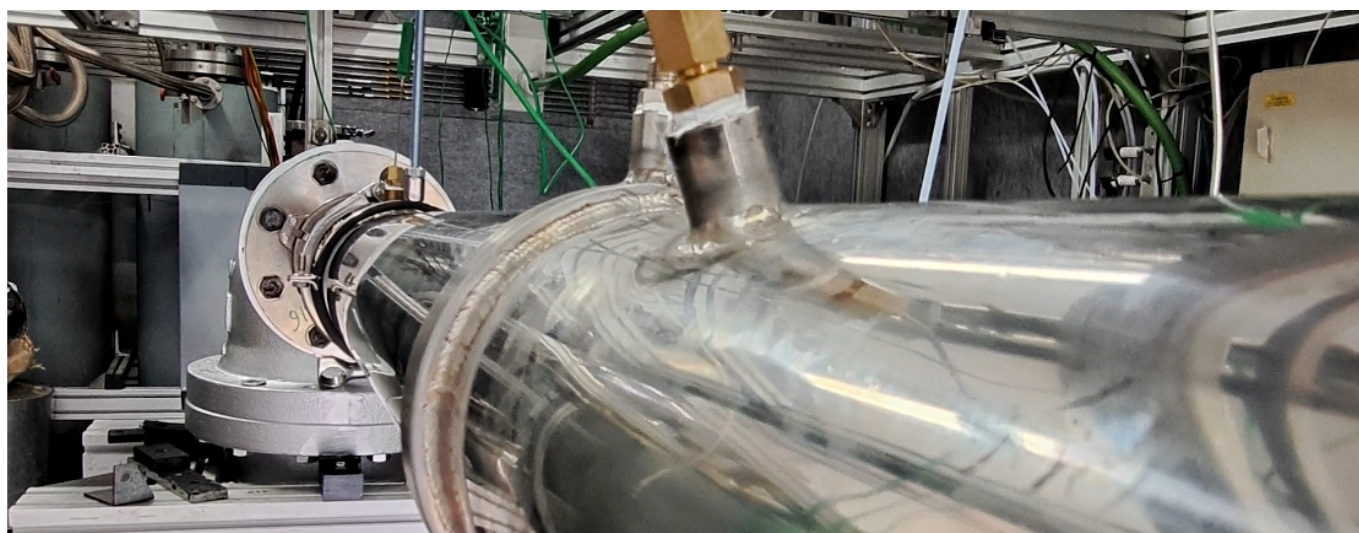
12:00-12:25	Catalytic Aftertreatment Systems for Ammonia-Diesel Dual Fuel Combustion A. Sayeed ¹ , N.D. Khedkar ¹ , M. Wu ¹ , M. Garroum ¹ , A. Cova-Bonillo ¹ , J.M. Herreros ¹ , S. Zeraati-Rezaei ¹ , A. Tsolakis ¹ , P. Millington ² , S. Alcove-Clave ² , A. Tony ² , T. Samuels ² , J. Sanz-Argent ³ ¹ University of Birmingham, UK ² Johnson Matthey Technology Centre, UK ³ Fundación Valenciaport, Spain
12:25-12:50	Robustness of Post SCR NO_x Sensor Placement Under NH₃ Spatial Non-Uniformity: A CFD Ensemble Study I.F. Cozza ¹ , M.P. Centini ¹ , C. Ciaravino ¹ , R. McAlpine ² ¹ Dumarey Automotive Italia, Italy ² General Motors, USA
12:50-14:30	Lunch
14:30-15:30	Poster session 1 / Commercial exhibition / Visit 1 to CMT's laboratories
S1.3	SUSTAINABLE FUELS INJECTION Chairperson: Inés Muñoz Applus IDIADA, Spain
15:30-16:00	KEYNOTE LECTURE: Nozzle Internal Cavitating Flow and Spray of High-Pressure Methanol/Liquid Ammonia injection system Zhixia He. Jiangsu University, China
16:00-16:25	High-Fidelity 3D-CFD Simulation of Hydrogen Injection: Different Modelling Approaches Balancing Accuracy and Computational Efficiency C. Segatori, M. Orlando, A. Scalambro, A. Piano, F. Millo Politecnico di Torino, Italy
16:25-16:50	Injection and Fuel Blending Strategies for Low-Temperature Ignition of Methanol in Compression-Ignition Applications J. Manin, D.K. Eyice, D. Lopez-Pintor Sandia National Laboratories, USA
16:50-17:15	Optical Study on Spray Combustion Characteristics of E-Diesel and its Surrogate under Compression-Ignition Engine-Like Conditions Mohamed Khalaf ¹ , Shuo Feng ¹ , Tiemin Xuan ¹ , Licheng Zhu ¹ , Min Xu ¹ , Jiawei Cao ² , Raúl Payri ³ , Zhixia He ⁴ , Ming Jia ⁵ ¹ School of Energy and Power Engineering, Jiangsu University, China ² Norwegian University of Science and Technology, Norway ³ Universitat Politècnica de València, Spain ⁴ Institute for Energy Research, Jiangsu University, China ⁵ Dalian University of Technology, China
17:15-17:45	Coffee break
S1.4	SPARK IGNITION COMBUSTION PHENOMENA Chairperson: Paul Miles Retired from Sandia National Laboratories, USA
17:45-18:10	Knocking Behavior of Renewable Fuels in a Miller Cycle Gasoline Engine H.F. Schmid, J. Pfeil, T. Koch Karlsruher Institut für Technologie, Germany
18:10-18:35	Effect of Ambient Pressure on Hydrogen Jet Structure and Combustion Characteristics under Controlled Local Equivalence Ratio Conditions Heetae Yang, Youngmin Ki, Justin Jungho Kim, Joonsik Hwang, Choongsik Bae Korea Advanced Institute of Science and Technology, Republic of Korea
18:35-19:00	In-Cylinder Mixture Field Measurements in Spark-Ignited DI Hydrogen Engines M. Peters, I. Alp, J. Erhard, P. Ye, A. Dreizler, B. Böhm Technische Universität Darmstadt, Germany
19:00-19:25	Characterization of the Mixture Preparation Process for a H₂ Combustion System in a Transparent Engine Using Laser-Induced Fluorescence (LIF) and 3D-CFD-Simulation J.N. Geiler ¹ , D. Kumar ² , K.G. Stapf ¹ , P. Gastaldi ² ¹ Robert Bosch - Power Solutions, Germany ² Aramco Fuel Research Center, France

THURSDAY 10TH SEPTEMBER 2026

S2.1 PRECHAMBERS for SUSTAINABLE FUELS		Chairperson: André Casal-Kulzer Stuttgart Universität, Germany
8:30-9:00	KEYNOTE LECTURE: Hypercar powertrains: past, present and future Dáire Corrigan. Bugatti-Rimac, Italy	
9:00- 9:25	Comparative Optical Analysis of Ammonia-Hydrogen and Methanol Combustion in SI and Passive Prechamber Engines P. Sementa, N. Altieri, B.M. Vaglieco CNR STEMS, Italy	
9:25-9:50	Extending Partial-Load Operation of an Ammonia-Fuelled Spark Ignition Engine via Passive Pre-Chamber Ignition: A Numerical and Experimental Study A. Nodi ¹ , L. Sforza ¹ , A. Onorati ¹ , A. Voris ² , W. F. Northrop ² ¹ Politecnico di Milano, Italy ² University of Minnesota, USA	
9:50-10:15	Non-Monotonic Combustion Dynamics of Methane-Hydrogen Blends in a Low-Speed Pre-Chamber Spark-Ignition Engine MD. T. Khan ¹ , N. Kawahara ¹ , Y. Kobashi ¹ , T. Hirayama ² , A. Shimizu ² , S. Miyamoto ² ¹ Okayama University, Japan ² Kawasaki Heavy Industries, Japan	
10:15-10:45	Coffee break	
S2.2 H ₂ INTERNAL COMBUSTION ENGINES		Chairperson: Steve Whelan
10:45-11:10	Towards Predictive CFD for Hydrogen Engines: A Holistic Validation from Flow Field to Combustion and Heat Transfer A. Avdić ¹ , J. Ziegler ¹ , M. Blessing ¹ , M.E. Kinaci ² , M. D'Elia ² , S. Nambully ² ¹ Daimler Truck AG, Germany ² Convergent Science GmbH, Austria	
11:10-11:35	Experimental Investigation of Hot Spot Induced Ignition in Medium Pressure Hydrogen Jets under DI-H₂ICE Relevant Conditions A. Tinchon ^{1,2} , G. Dober ³ , C. Hespel ² , F. Foucher ² ¹ PHINIA, France ² Université d'Orléans, France ³ PHINIA Luxembourg	
11:35-12:00	Investigation of Operating Strategies for a Hydrogen-Fueled Internal Combustion Engine Using Both SI and CI Combustion Modes under Lean Mixture Conditions Toward Low- and High-Load Extension Kiyeon Kim ¹ , Jeongho Kim ² , Jongyoon Son ¹ , Seungil Lee ² , Seungjae Kim ^{2,3} , Seunghyun Lee ² , Chalee Myung ² , Tran Dang Quoc ⁴ , Kyoungdoug Min ² , Jeongwoo Lee ¹ ¹ Chungnam National University, Republic of Korea ² Seoul National University, Republic of Korea ³ Republic of Korea Naval Academy, Republic of Korea ⁴ Hanoi University of Science and Technology, Vietnam	
12:00-12:25	Turbocharging Feasibility and Performance Analysis in a Closed-Loop Hydrogen-Argon Power Cycle J. Archier ¹ , S. Ahammed ² , A. Andwari ¹ , M. Mikulski ² , D. Contreras-Jiménez ³ , J.R. Serrano ³ , B. Smulter ⁴ , J. Hyvönen ⁴ ¹ University of Oulu, Finland ² University of Vaasa, Finland ³ Universitat Politècnica de València, Spain ⁴ Wärtsilä Finland Oy, Finland	
12:25-12:50	Investigation of Transient and Emission Aftertreatment Performance of a Hydrogen Internal Combustion Engine when using a Lambda Leap Strategy E.J. Fong Cisneros, R. Kodaboina, G. Vorraro, J.W.G. Turner King Abdullah University of Science & Technology, Saudi Arabia	
12:50-14:30	Lunch	

THURSDAY 10TH SEPTEMBER 2026

14:30-15:30	Poster session 2 / Commercial exhibition / Visit 2 to CMT's laboratories	
S2.3	PRECHAMBER TECHNOLOGIES	Chairperson: Dimitrios Karageorgiou Aramco Fuel Research Center, France
15:30-16:00	KEYNOTE LECTURE: Next-Generation Efficiency: Leveraging Active Pre-Chamber Combustion in Multi-Fuel Engine Systems Francesco Pesce. Dumarey Automotive, Italy	
16:00-16:25	Comparative Assessment of Passive and Active Pre-Chamber Combustion Systems for High-Efficiency Gas Engines F. Accurso ¹ , V. Gorietti ¹ , F.C. Pesce ¹ , L. Marchitto ² , C. Tornatore ² , A. Mariani ² , V. Pennino ² , A. Giardino ³ ¹ Dumarey Automotive Italia, Italy ² CNR-STEMS, Italy ³ Isotta Fraschini Motori, Italy	
16:25-16:50	Performance and Efficiency Comparison of Passive and Active Pre-Chamber Ignition Systems in Spark-Ignition Engines M. Korkmaz ¹ , A. Assabiki ¹ , S. Juressen ² , S. Pino ¹ ¹ Champion Ignition, Germany ² Federal-Mogul Burscheid, Germany	
16:50-17:15	Effect of Pressure and Equivalence Ratio on Jet Characteristics of an Active Hydrogen-Fueled Pre-Chamber J.F.P.W. Maas, L.M.T. Somers, N.C.J. Maes Eindhoven University of Technology, The Netherlands	
17:15-17:45	Coffee break	
S2.4	COMPRESSION IGNITION COMBUSTION ENGINES	Chairperson: Manuel Lage Business Development Advisor, Spain
17:45-18:10	NO₂/NO_x Ratio and Unburned Hydrocarbon Emissions in a H₂-Diesel and NH₃-Diesel Dual-Fuel Engine H. Guo, A. Bebar, D. Stevenson, K. Austin National Research Council Canada, Canada	
18:10-18:35	Fuel Property Effects on Diesel Combustion and Exhaust Emissions: Paraffinic Fuel Case B. Shin, N. Uchida New ACE Institute, Japan	
18:35-19:00	Methanol Mixing-Controlled Compression Ignition Enabled Via Homogeneous Charge Compression Ignition of Dimethyl Ether Through Catalytic Decomposition of Methanol D.A. Splitter ¹ , G. Jatana ¹ , J.P. Szybist ¹ , Y. Park ¹ , D. Tyrewala ¹ , K.I. Svensson ² , D.T. Montgomery ² ¹ Oak Ridge National Laboratory, USA ² Caterpillar Inc., USA	
19:00-19:25	Impact of a Nitrate-Based Additive on Ammonia Compression Ignition Engine Ignited by HVO Pilot Injection R. Samson ¹ , F. Foucher ² , C. Mounaïm-Rousselle ^{2,3} ¹ EURENCO, France ² Université d'Orléans, France ³ Institut Universitaire de France, France	



FRIDAY 11TH SEPTEMBER 2026

S3.1 THERMAL PHENOMENA ANALYSIS		Chairperson: Yolanda Bravo VALEO, Spain
8:30-9:00	KEYNOTE LECTURE: An Environmental Scan of Transportation and Fuels Policy Trends in the U.S. Paul Miles. Retired from Sandia National Laboratories, USA	
9:00- 9:25	Assessment of Climate Control Systems Impact on Vehicle Energy Performance S. Gil-Sayas ^{1,2} , A. Broatch ¹ , G. Fontaras ² ¹ Universitat Politècnica de València, Spain · ² EC Joint Research Centre, Italy	
9:25-9:50	Design, Fabrication and Experimental Characterisation of a Cylindrical Thermal Dummy Cell for Battery Thermal Management Applications A. Salman ¹ , A. Nourian ¹ , M. Babaie ² , S. Mahboubi Heydarabad ¹ , J. Jahan Panah ³ , A. Andwari ³ ¹ University of Salford, UK · ² University of Leeds, UK · ³ University of Oulu, Finland	
9:50-10:15	High-Speed Infrared Thermography of Convective and Radiative Wall Heat Transfer in Jet-Mixed Turbulent Hydrogen Combustion F. Shimizu ¹ , M. Bardi ² , H. Quintens ^{2,3} , E. Daudre ^{2,3} , C. Bramoullé ² , T. Aizawa ¹ ¹ Meiji University, Japan · ² IFP Energies nouvelles, France · ³ Université de Poitiers, France	
10:15-10:45	Coffee break	
S3.2 MODELING OPTIMIZATION & ANALYSIS		Chairperson: Julien Manin Sandia National Laboratories, USA
10:45-11:10	Accelerating Model-Based Powertrain Optimisation: Meeting the Future Demands of Regulation Based on Real-Driving Scenarios L. Bates ¹ , J.G. Prior ² , S. Whelan ¹ ¹ HORIBA MIRA, UK · ² Loughborough University, UK	
11:10-11:35	A Flexible Lap Time Simulation Framework for Energy Management and Control of Hybrid Power Units M. Piunti, V. Ravaglioli, G. Silvagni, S. Scaiola Università di Bologna, Italy	
11:35-12:00	Multi-Objective Optimization of Engine Parameters for Improving Fuel Economy and Exhaust Emissions of Hybrid Agricultural Powertrain via Improved Crowding-Adaptive NSGA-II Considering Typical Operating Conditions Jingyu Zhu ¹ , Qinghan Yang ¹ , Keiya Nishida ^{1,2} , Mingliang Wei ³ ¹ Dalian University of Technology, China · ² University of Hiroshima, Japan ³ State Key Laboratory of Intelligent Agricultural Power Equipment, China	
12:00-12:25	Multi-Layered, Backend-Based, Model-Predictive Operating Strategy for a Serial PHEV M. Böhme ¹ , M. Gerdtz ¹ , C. Trapp ² ¹ Universität der Bundeswehr München, Germany · ² Technische Universität Graz, Austria	
12:25-12:50	Insights for an International Framework for Research-Oriented Automotive Life Cycle Assessment A. Bouter ^{1,2} , G. Di Pierro ¹ , G.L. Patrone ¹ , E. Paffumi ¹ , M. Lopez-Juarez ² , G. Fontaras ¹ ¹ EC Joint Research Centre, Italy · ² Universitat Politècnica de València, Spain	
12:50-14:30	Lunch	
14:30-15:30	Poster session 3 / Commercial exhibition	
S3.3 CARBON BASED SUSTAINABLE FUELS		Chairperson: José M. García-Oliver Universitat Politècnica de València, Spain
15:30-16:00	KEYNOTE LECTURE: NVH Challenges for Electrified Fuel-Cell & ICE Air-Handling systems Chris Hollingbery. Cummins, UK	
16:00-16:25	Effect of Neat Sustainable Aviation Fuels on Mechanical Behavior of Two Polymeric Materials Used in Aircraft A. Domínguez-Piedrafita ¹ , A. Romero ^{1,2} , R. García-Contreras ^{1,2} ¹ Institute of Applied Research for the Aeronautical Industry - UCLM, Spain ² School of Industrial and Aerospace Engineering - UCLM, Spain	
16:25-16:50	Effect of Intake Management and Active Stratification on Combustion and Emissions of Dimethyl Ether Ignited Ammonia-Fueled Engine Yuxiao Qiu ¹ , Yanyuan Zhang ² , Yingnan Yang ² , You Zhang ² , Ying Ding ¹ , Dong Han ¹ , Zhen Huang ¹ ¹ Shanghai Jiao Tong University, China · ² SJTU-Wuxi Carbon Neutral Energy & Power Institute, China	
16:50-17:15	From Acceleration to Pressure: ML-Based Virtual Sensing across Hydrogen and Methanol Spark-Ignition Engines M. Babić ^{1,2} , C. Laubichler ¹ , P. Christoforetti ² , P. Kappacher ² , S. Buchberger ² , E. Schutting ² , S. Posch ² ¹ Large Engines Competence Center, Austria · ² Technische Universität Graz, Austria	
17:15-17:40	Methanol/Ethanol Diffusive Combustion Initiated by Spark-Ignited Pilot Sprays T. Fuyuto, R. Ueda, K. Fukui, T. Kondo, K. Nishikawa, Y. Wakisaka Toyota Central R&D Labs., Japan	
17:40-18:00	CLOSURE: José-Ramón Serrano	
20:30-00:00	GALA DINNER	

POSTER SESSIONS

Three poster sessions are planned to enable the presentation of interesting work that could not be included in the Conference regular sessions.

Poster titles followed by **(PP)** indicate that the full peer-reviewed paper is available in the conference proceedings. Poster titles followed by **(PA)** indicate that an extended abstract is available in the conference proceedings. For the rest of the titles followed by **(-)**, neither paper nor abstract is available.

The poster sessions are planned after lunch on Wednesday 9th, Thursday 10th and Friday 11th September, between 2:30 pm and 3:30 pm.

Conference participants are invited to visit the poster sessions and discuss the issues with their authors.

WEDNESDAY 9TH SEPTEMBER 2026

Time slot (4 min. pitch)	POSTER SESSION 1	Chairpersons: Marcos Carreres, Benjamín Plá, Pedro Quintero Universitat Politècnica de València, Spain
14:30h 1	Efficiency and NO_x Optimization of Active Prechamber Ammonia-Hydrogen Internal Combustion Engine with MLP (PP) Yang Yuan, Jun Deng, Quanbo Shang, Liguang Li Tongji University, China	
14:34h 2	Emission Characteristics of Ammonia/Dimethyl Ether Blends in Internal Combustion Engines (PP) T. Franken ¹ , C. Mounaïm-Rousselle ^{2,3} , F. Mauss ¹ ¹ BTU Cottbus-Senftenberg, Germany · ² Université d'Orléans, France · ³ Institut Universitaire de France, France	
14:38h 3	Modeling NO_x and N₂O Emissions from Ammonia Combustion in a Spark-Ignition Heavy-Duty Engine (PA) S. Saenz, J.M. Trujillo, C.E. Dumitrescu West Virginia University, USA	
14:42h 4	Effects of Ammonia Energy Ratio, Injection Timing, and Load on Combustion and Emissions in an Ammonia-Gasoline SI Engine (-) Ying Ding, Junhao Yi, Zezhong Wang, Dong Han, Zhen Huang Shanghai Jiao Tong University, China	
14:46h 5	Investigation of Diesel Injection Strategies on Engine Performance, Emissions, and Flame Development in Ammonia-Diesel Dual-Fuel Combustion (PA) Chansoo Park ¹ , Cheolwoong Park ¹ , Minki Kim ¹ , Hyeongjun Jang ^{1,2} , Kyunghun Kim ² , D. Kim ² , J. Lee ² ¹ Korea Institute of Machinery and Materials, Republic of Korea · ² Chungnam National University, Republic of Korea	
14:50h 6	Overview of an Engine System Employing an Onboard Reformer for Single-Fuel Ammonia Operation (PA) T. Takeuchi Toyota Industries Corporation, Japan	
14:54h 7	The Potential in Emissions Reduction of a Direct-Injection Liquid Ammonia CI Engine by Co-Optimization of Ammonia Injection Timing and Oxygen Enrichment (PA) J. Cao, D.R. Emberson, T. Løvås ¹ Norwegian University of Science and Technology Norway	
14:58h 8	Combustion Characteristics of a Two-Stroke Engine Fueled with Liquid Ammonia/Diesel Blends (PA) Pengbo Dong ¹ , Yuxuan Liu ¹ , Jiangping Tian ¹ , Qiongzhi Liu ¹ , Fanjie Tang ¹ , Keiya Nishida ^{1,2} , Zechuan Cui ¹ , Wuqiang Long ¹ ¹ Dalian University of Technology, China · ² Hiroshima University, Japan	
15:02h 9	A Comparison of Alternative Fuels Spray Characteristics from a Marine Pump-Line Nozzle Injector (PP) V. Sileghem, Q. Dejaegere, S. Verhelst Ghent University, Belgium	
15:06h 10	CFD and Experimental H₂ Slip Assessment in a Dual Fuel Diesel-H₂ Marine Engine (PA) N. Romero-Anton, G. Lopez-Ruiz, R. Marcos-Saenz del Burgo, Z. Azkorra-Larrinaga, Z. Uriondo-Arrue Euskal Herriko Unibertsitatea, Spain	
15:10h 11	Role of Bubble Nucleation Model in Flash-Boiling of High-Volatility Fuel Sprays (PA) Mohammad R. Shakeel, Xinlei Liu, Hong G. Im King Abdullah University of Science & Technology, Saudi Arabia	
15:14h 12	Combustion and Emission Analysis of Synthetic Drop-In Fueled Heavy-Duty Engines under Various Ambient Temperatures and Loads (PP) H. Cheng ¹ , R. Sok ¹ , J. Kusaka ¹ , Y. Sakai ² , B. Shin ³ , N. Uchida ³ ¹ Waseda University, Japan · ² Ibaraki University, Japan · ³ New ACE Institute, Japan	

➤ POSTER SESSIONS

THURSDAY 10TH SEPTEMBER 2026

Time slot (4 min. pitch)		POSTER SESSION 2	Chairpersons: Marcos Carreres, Benjamín Plá, Pedro Quintero Universitat Politècnica de València, Spain
14:30h	13	Combined Numerical and Experimental Study of Mixture Formation Strategies and their Impact on Anomalies in Heavy-Duty PFI Hydrogen ICE (PP) S. Plöckinger, P. Kappacher, E. Schutting, C. Trapp Technische Universität Graz, Austria	
14:34h	14	Velocity Field Measurements on Direct Injections for Spark-Ignited Hydrogen Engines (PA) İ. Alp, A. Wöste, M. Peters, A. Dreizler, B. Böhm Technische Universität Darmstadt, Germany	
14:38h	15	Hydrogen Direct Injection Effects on Mixture Formation and In-cylinder Flow in Spark-Ignition Engines (PA) E. Rolland ¹ , B. Traut ¹ , M. Peters ¹ , N. Jovicic ² , P. Jochmann ² , B. Böhm ¹ , C. Hasse ¹ ¹ Technische Universität Darmstadt, Germany ² Robert Bosch - Power Solutions, Germany	
14:42h	16	Combined Experimental and Numerical Turbulence Characterization in Hydrogen-Fueled Internal Combustion Engines (PA) B. Traut ¹ , P. Ye ¹ , S. Holguin ¹ , V. Schuh ¹ , M. Schneider ¹ , C.E. Frouzakis ² , H. Nicolai ³ , B. Böhm ¹ , C. Hasse ¹ ¹ Technische Universität Darmstadt, Germany ² ETH Zurich, Switzerland ³ McGill University, Canada	
14:46h	17	Hydrogen-Diesel Dual-Fuel: Maximizing Hydrogen Energy Share (PA) S. Latten, T.R. Valk, M.C.M. Cuijpers, L.M.T. Somers, N.C.J. Maes Eindhoven University of Technology, The Netherlands	
14:50h	18	Effect of Hydrogen Energy Share on Efficiency, Combustion Stability and Emissions in Methanol-Hydrogen Dual-Fuel Operation of a Heavy-Duty Spark-Ignition Engine (PA) M.S. Panithasan, R. Xu, J.W.G. Turner King Abdullah University of Science and Technology, Saudi Arabia	
14:54h	19	Enhanced Knock Detection in Hydrogen Engines Using Time-Frequency Signal Analysis (PP) B. Kinkhabwala ¹ , U. Wagner ¹ , S. Srihari ² , T. Koch ¹ ¹ Karlsruher Institut für Technologie, Germany ² Amrita School of Engineering, India	
14:58h	20	Experimental Investigations on the Effects of Intake Temperature, Compression Ratio, Injection Strategy and Water Injection on Pre Ignition in a Hydrogen-Fueled SI Research Engine (PP) D. Serrano, B. Londos, X. Gautrot, O. Laget IFP Energies nouvelles, France	
15:02h	21	Measurement of Lubricant Oil Consumption Characteristics in Hydrogen Engines: Investigation of Effects from Transient Operation and Abnormal Combustion (PP) H. Arakawa ¹ , Z. Wang ¹ , Y. Moriyoshi ¹ , T. Kuboyama ¹ , M. Gohl ² , R. Wulff ² , M. Knissel ² , M. Braun ² , T. Vogt ² ¹ Chiba University, Japan ² Automobil-Prüftechnik Landau, Germany	
15:06h	22	1D Modelling for the Crankcase Ventilation Optimization of an H2 Engine (PP) P.-E. Prétot ¹ , D. Chalet ¹ , J. Migaud ² , A. Link ³ , M. Pittl ⁴ ¹ Université de Nantes, France ² MANN+HUMMEL France, France ³ MANN+HUMMEL GmbH & Co. KG, Germany ⁴ MANN+HUMMEL Service s. r. o., Czech Republic	
15:10h	23	Electric Powertrain Design for a Dual Swappable Battery Two-Wheeler (PA) A. Wadekar ¹ , J.J. Panah ² , S. Mehranfar ² , A. Andwari ² , M. Jabbari ¹ , M. Babaie ¹ ¹ University of Leeds, UK ² University of Oulu, Finland	
15:14h	24	Production of Strategic Fuels from ELT for the Armed Forces: A Model for Energy Resilience and National Defense (-) E. J. Jiménez-Regén ¹ , F. J. Bastante ¹ , P. Dorado ² , M. Carmona ² ¹ Ejército de Tierra, Spain ² Universidad de Córdoba, Spain	

POSTER SESSIONS

FRIDAY 11TH SEPTEMBER 2026

Time slot (4 min. pitch)		POSTER SESSION 3	Chairpersons: Marcos Carreres, Benjamín Plá, Pedro Quintero Universitat Politècnica de València, Spain
14:30h	25	Study on the Impact of PODE₃ Reduced Mechanism on Spray Combustion Simulation (PP) Wei Li ¹ , Ziyang Zhang ¹ , Tiemin Xuan ¹ , Zhixia He ² , Qian Wang ¹ , Raúl Payri ³ ¹ School of Energy and Power Engineering, Jiangsu University, China ² Institute for Energy Research, Jiangsu University, China ³ Universitat Politècnica de València, Spain	
14:34h	26	Cycle-by-Cycle Thermodynamic Analysis of a Euro 6 Diesel Engine Tested Under Transient Operation with Two Sustainable Paraffinic Fuels (PA) S. González-Ruiz, R. García-Mail, S. Carrasco-Sánchez, O. Armas, J.A. Soriano, L. Sánchez, P. Fernández-Yáñez Universidad de Castilla-La Mancha, Spain	
14:38h	27	Analysis of Fuel Composition Effects on Ion Current Signals with Varying Ignition Timing under Gasoline-Gas Co-Combustion in a Spark Ignition Engine (PA) K. Yasuda, K. Hayashi, Y. Yamasaki The University of Tokyo, Japan	
14:42h	28	Predictive Simulations of Gaseous and Two-Phase Injection of Renewable Fuels in IC Engines (PP) H.G. Im, M.R. Shakeel, X. Liu, A. Zaihi, R. Menaca, P. Chen, A. Marzooq King Abdullah University of Science and Technology, Saudi Arabia	
14:46h	29	Mechanisms of Combustion-Induced High-Frequency Pressure Vibrations in Spark-Ignition Engines (-) T. Kuboyama Chiba University, Japan	
14:50h	30	Recent Advances on Research into Wankel Rotary Engines (-) G. Vorraro, H. G. Im, J.W.G. Turner King Abdullah University of Science & Technology, Saudi Arabia	
14:54h	31	Performance Analysis and Model-Based Optimization of Compression Ignition Engine fed with HVO/Diethylene Glycol Diethyl Ether Fuel Blends (PP) A. Foglia ¹ , D. Cervone ¹ , C. Pianese ¹ , I. Arsie ² ¹ Università degli Studi di Salerno, Italy ² Università degli Studi di Napoli Partenope, Italy	
14:58h	32	Cost-efficient PFI SI CNG-ICE for Mobile Applications: Coordinated Fuel-Airpath Control Concept Using Innovative Cycle-By-Cycle Air Flow Measurement and Control Component for Minimized Aftertreatment (PP) O. Bikas ² , P. van Gompel ³ , E. Plekkepoel ² , G. Bikas ¹ ¹ Ohm Technische Hochschule Nürnberg, Germany ² EPR-Mobility Sarl, Luxembourg ³ TNO, The Netherlands	



➤ CONFERENCE EXHIBITION

As in previous years, an exhibition will be held with a selection of stands representing high-profile companies connected to the development of powertrains. There will be some presentations made by the exhibitors in the main conference hall and participants are invited to attend them. The timetable for these is below.

WEDNESDAY 9TH SEPTEMBER 2026

14:40-15:00 **The Use of Ultra-fast Gas Analyzers for Modern Engine Development**
J. Parnell. Cambustion. United-Kingdom

15:00-15:20 **CONVERGE For Sustainable Mobility**
E. Kinaci. Convergent Science. Austria

THURSDAY 10TH SEPTEMBER 2026

14:40-15:00 **Advanced Gas Turbine Test Bench for Aerospace and UAV Applications**
R. Tabet. HORIBA Automotive. Germany

HORIBA

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➤ CONFERENCE LOCATION

The conference will take place in the Nexus Auditorium of the Universitat Politècnica de València, Valencia (Spain) on September 8th – 11th, 2026.

Address: Avinguda dels Tarongers / Avenida de los Naranjos. Building 6G.

Entry by gates K or L, close to the tram station Tarongers (lines 4 and 6). EMT public buses 93 and 98 (stops: Tarongers-Facultat d'Economia and Tarongers-Galileo Galilei).

See the UPV map: <https://www.upv.es/plano/plano-2d-en.html>



➤ CONTACT DETAILS

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➤ HOW TO REACH VALENCIA

- **By plane:** Valencia has an international airport, Manises, located at approximately 4 kms. from the city centre. There are regular scheduled national and international flights from several European airlines. A regular bus line links the airport to the Central train station of Valencia, located in the heart of the city. In addition, two metro lines link the airport to all major city points in Valencia.
- **By road:** The city of Valencia also offers excellent communication by road. The A-7 Mediterranean Motorway that runs north to south provides easy connection to Catalonia and France in the north and to Alicante, Murcia and Andalucía in the south. There are also good road connections to the rest of Spain, in particular the A-3 dual motorway to Madrid.
- **By rail:** Valencia has also very good train connections. The high speed train Euromed links several times a day Barcelona to Valencia in approximately 3 hours. The journey between Madrid and Valencia by the regular high speed link AVE takes about 2 hours.



➤ ABOUT VALENCIA

Valencia is a cosmopolitan and lively city on the East Coast of Spain, within easy access to some splendid holiday resorts such as those on the Costa Blanca and Costa de Azahar, and not far from the Balearic Islands. Valencia itself is a fascinating place, with a characteristic blend of historical tradition –with interesting examples of Middle Age and Renaissance architecture and modern architecture– the City of Arts and Science. It has a varied cultural offer (Oceanographic museum, museum of Modern Arts...) and an exciting nightlife, excellent weather and world-renowned festivals and regional cuisine. Taste some of the typical 'tapas' in one of the numerous restaurants outside tables and the traditional 'Paella Valenciana' or one of the dozen rice dishes that Valencian people have invented.

Valencia's beach is an ideal place to spend time sunbathing and swimming. You may also enjoy a nice walk in the shadow of the palm trees of the 'Paseo Marítimo' that lines the sea, or along the new harbour, built for the 32nd America's Cup. We hope that you will enjoy your stay in this sunny Mediterranean city.



CMT-Clean Mobility & Thermofluids

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For updated information about the conference,
please visit the website:

www.cmt.upv.es/Thiesel2026



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