

FINAL PROGRAMME

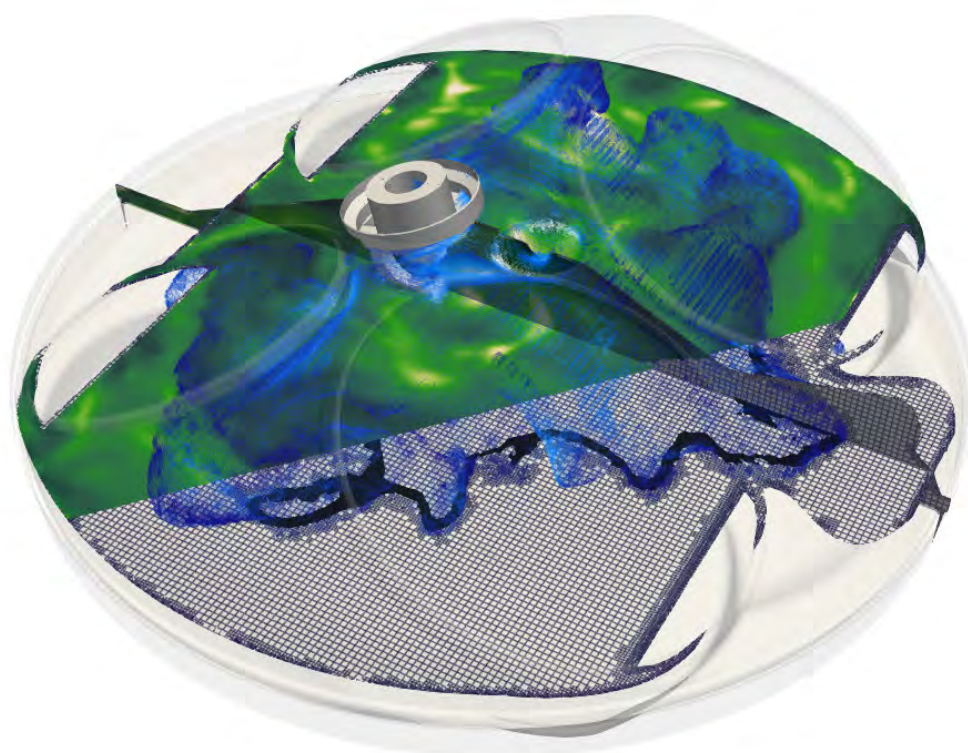


THIESEL 2024

CONFERENCE ON THERMO-AND
FLUID DYNAMICS OF

Clean Propulsion Powerplants

10th – 13th September 2024
Valencia (Spain)



UNIVERSITAT
POLITÀCNICA
DE VALÈNCIA



GENERALITAT
VALENCIANA

Conselleria de Educació, Cultura,
Universitats i Empleo



WELCOME TO THIESEL 2024

It is a great honour to welcome you to the **13th edition of the THIESEL Conference on Thermo-and Fluid Dynamics of Clean Propulsion Powerplants**. The second post-pandemic edition consolidates Thiesel 2024 as a multidisciplinary conference in sustainable transport sciences.

The risks and threats that geo-political events pose mark the pace of a steady change towards cleaner propulsion systems. The standard agreement is that reducing our dependence on fossil fuels will make our societies more sustainable and resilient, bringing, in the long term, a higher level of well-being and freedom.

Results from this conference, which has shifted its topics towards sustainable fuels, like ammonia and hydrogen, clean combustion, data-driven control and battery thermal issues, will show the roadmap to follow. In this way, the ingrained ecosystem of universities, research institutions and companies will make the change we all crave to achieve a sustainable future.

CMT - Clean Mobility & Thermofluids is a reference in its field and one of our university's most proactive research institutes that closely collaborates with industry. The Universitat Politècnica de València (UPV) has been ranked this year as the best university in Spain and is steadily positioned among the best 500 in the world based on all international rankings. Therefore, CMT and the THIESEL 2024 organisers are proud to present a new edition of this event and contributing to UPV's global success.

We hope you will enjoy this conference and that you will make the most of your visit to our city and our university, where technology, engineering, arts and business meet, and where research and industry collaboration standards are in place. Your participation is greatly appreciated, and we look forward to your valuable contributions.

Raúl Payri and José-Ramón Serrano
THIESEL 2024 Steering Committee

OVERVIEW AND OBJECTIVES

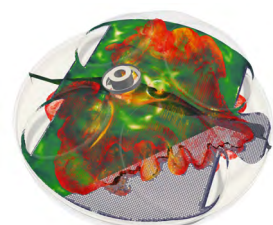
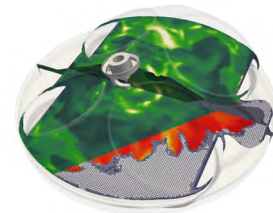
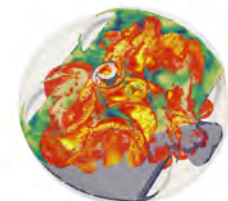
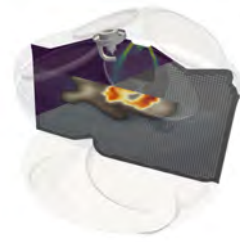
The twelfth edition of the THIESEL Conference on Thermo-and Fluid Dynamics of Clean Propulsion Powerplants in 2022 marked a turning point in its history by integrating fully in its topics the electrification of automobiles. Its success indicates that the renewed Steering and Organising Committees made the right choices. THIESEL 2024 is now the **thirteenth edition**, and since we are non-superstitious scientists and engineers, we are sure no one will see any bad omen in this, quite the opposite!

As its name states, the THIESEL 2024 Conference focus is on the thermo-and fluid dynamic processes occurring in propulsion powerplants, which include thermal and noise challenges in electric components, energy optimization in the global electrified propulsion system, new injection/combustion concepts based on hydrogen, ammonia, renewable-fuels and not excluding any other clean propulsion approach.

Since research in all these areas is in full swing, the aim of the THIESEL 2024 Conference 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.

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COMMITTEES

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Prof. Angelo Onorati. Politecnico di Milano – Italy

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Dr. Alberto Vassallo. Punch Torino – Italy

Dr. Timothy Watling. Johnson Matthey – UK

Prof. Margaret Wooldridge. University of Michigan – USA

Dr. Yahui Zhang. Yanshan University – China

Dr. Peng Zhao. University of Tennessee – USA

SESSION MATRIX

TUESDAY, 10 th SEPT.	WEDNESDAY, 11 th SEPT.	THURSDAY, 12 th SEPT.	FRIDAY, 13 th SEPT.
	FROM 7:30 h CONFERENCE REGISTRATION	FROM 8:00 h CONFERENCE REGISTRATION	
	8:30 h - 10:15 h SESSION 1.1 ANALYSIS TECHNIQUES OF H₂ ENGINES	8:30 h - 10:15 h SESSION 2.1 THERMAL MANAGEMENT	8:30 h - 10:15 h SESSION 3.1 SUSTAINABLE POWERTRAINS
	10:15 h-10:45 h COFFEE BREAK		
	10:45 h - 12:50 h SESSION 1.2 H₂ COMBUSTION CHAMBER DESIGN	10:45 h - 12:50 h SESSION 2.2 AFTERTREATMENT	10:45 h - 12:50 h SESSION 3.2 COMBUSTION EMISSIONS
	12:50 h - 14:30 h LUNCH		
	14:30 h - 15:30 h POSTER SESSION 1 VISIT TO CMT's LABS 1	14:30 h - 15:30 h POSTER SESSION 2 VISIT TO CMT's LABS 2	14:30 h - 15:00 h VISIT POSTERS & EXHIBITION
	15:30 h - 17:15 h SESSION 1.3 AMMONIA FUEL FOR MARINE TRANSPORT	15:30 h - 17:15 h SESSION 2.3 THERMAL RUNAWAY	15:00 h - 16:45 h SESSION 3.3 SPRAYS & COMBUSTION
			16:45 h-17:00 h CONFERENCE CLOSURE
17:30 h - 20:00 h CONFERENCE REGISTRATION	17:15 h - 17:45 h COFFEE BREAK	17:15 h - 17:45 h COFFEE BREAK	
	17:45 h - 19:00 h SESSION 1.4 AMMONIA COMBUSTION TECHNIQUES	17:45 h - 19:25 h SESSION 2.4 DATA-DRIVEN CONTROL AND OPTIMIZATION	
19:30 h - 21:30 h WELCOME ADDRESS AND COCKTAIL			20:30 h - 00:00 h GALA DINNER

PROGRAMME

TUESDAY 10th SEPTEMBER 2024

19:30-21:30 Welcome address and cocktail

José E. Capilla, UPV Rector
José Ramón Serrano, CMT – UPV, THIESEL 2024 Steering Committee
Steve Whelan, HORIBA-MIRA, UK: [Keynote 'The Most Exciting Time in Powered Mobility History'](#)

WEDNESDAY 11th SEPTEMBER 2024

S1.1 ANALYSIS TECHNIQUES OF H₂ ENGINES

Chair: Angelo Onorati. Politécnico di Milano, Italy

8:30-9:00 KEYNOTE LECTURE: Why Just One Solution?

Guillaume Tuffier. Horse, Spain

9:00-9:25 Ultra-Lean Mixture Formation and Combustion of a Hydrogen-Fuelled High-Performance DI-SI Engine: An Experimental and Numerical Study

F. Mortellaro, R. Tonelli, M. Medda
Ferrari, Italy

9:25-9:50 Towards H₂ ICE: Experimental and Computational Characterization of Hydrogen Injection, Mixing, and Combustion

H.G. Im¹, X. Liu¹, M. Ben Houidi¹, H. Wu¹, A. Zaihi¹, K. Moreno-Cabezas¹, B. Wu¹, N. Panthi¹, H. Aljabri¹, R. Menaca¹, M.S. Panithasan¹, E. Cenker², A.S. AlRamadan², B. Mohan², G. Magnotti¹, W. Roberts¹, J. W.G. Turner¹
¹King Abdullah University of Science and Technology (KAUST), Saudi Arabia
²Saudi Aramco Research and Development Center, Saudi Arabia

9:50-10:15 Characterization of Double Injection Hydrogen Jet using Acetone- PLIF in a Constant Volume Chamber

J.J. Kim¹, S.Y. Lee², Y. Ki¹, J. Hwang³, C. Bae¹
¹KAIST, Republic of Korea
²Michigan Technological University, USA
³Mississippi State University, USA

10:15-10:45 Coffee break

S1.2 H₂ COMBUSTION CHAMBER DESIGN

Chair: Reyes García Contreras. UCLM Toledo, Spain

10:45-11:10 A 1D-3D Numerical Study of a Pent-Roof Spark-Ignition Engine Fueled with Hydrogen Lean Mixtures

L. Sforza¹, F. Ramognino¹, T. Cerri², G.G. Gianetti¹, G. D'Errico¹, A. Onorati¹, J. Gomez-Soriano³, R. Novella³
¹Politecnico di Milano, Italy
²Sursum-Mi, Italy
³Universitat Politècnica de València, Spain

11:10-11:35 Investigating Combustion Chamber Design Parameters for Hydrogen Adaptation of Diesel Engines: 3D CFD Study

B. Suatean¹, R. Bayet², S. Guilain³, G. de Paz⁴
¹Horse Romania, Romania
²AVL-LMM, France
³Ampere, France
⁴Horse Spain, Spain

11:35-12:00 Preliminary Development of a Dome Combustion Chamber Dedicated to Hydrogen Direct Injection Engines

P. Gastaldi¹, D. Kumar¹, G. Milan², M. Chandelier³, R. Drevet⁴, G. Dober⁵
¹Aramco Fuel Research Centre, France
²Federal-Mogul Powertrain (Tenneco Group), Italy
³Federal-Mogul Ignition Products (Tenneco Group), France
⁴Phinia, France
⁵Phinia, Luxemburg

WEDNESDAY 11th SEPTEMBER 2024

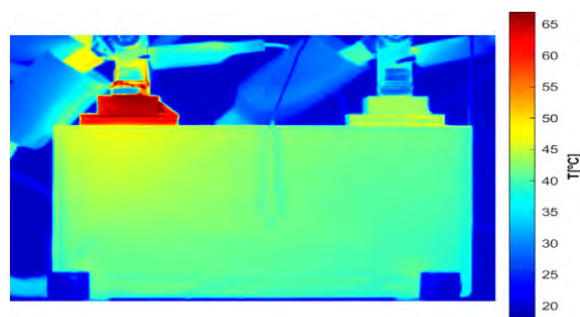
12:00-12:25	Development of a Direct-Injection Hydrogen Combustion System Based on a Flat-Deck Swirling Concept D. Gessaroli ¹ , F.C. Pesce ¹ , A. Vassallo ¹ , R. Golisano ² , N. P. Sacco ² , S. Scalabrini ² , S. Molina ³ , M. Olcina-Girona ³ ¹ DUMAREY Automotive Italia, Italy ² DUMAREY Propulsion Solutions, Italy ³ Universitat Politècnica de València, Spain
12:25-12:50	Development of a Dedicated Hydrogen Combustion System for Heavy Duty Application. D. Serrano, V. Giuffrida, T. Valin, F. Duffour, X. Gautrot IFP Energies Nouvelles, France
12:50-14:30	Lunch
14:30-15:30	Poster session 1 / Commercial exhibition / Visit 1 to CMT's laboratories
S1.3	AMMONIA FUEL FOR MARINE TRANSPORT Chair: Gilles Hardy. Turbo Systems, Switzerland
15:30-16:00	KEYNOTE LECTURE: Decarbonising the Maritime Industry Sangram Nanda. Wärtsilä, Switzerland
16:00-16:25	Experimental Investigation of High-Pressure Ammonia Spray and Combustion under Marine Engine-Like Conditions Using Optical Diagnostics P. Sementa ¹ , M. Lazzaro ¹ , C. Tornatore ¹ , F. Catapano ¹ , A. Calvo ² , L. Thorsen ² , L. Viglione ² ¹ CNR-STEMS, Italy ² Wärtsilä, Switzerland
16:25-16:50	Investigation of Four-Stroke Heavy-Duty Marine Engine Fueled by Ammonia and Hydrogen with Active Pre-chamber Ignition, Passive Pre-chamber Ignition and Spark Ignition Y. Wu ^{1,2} , B. Somers ¹ , L. Liu ² , Y. Peng ³ ¹ Eindhoven University of Technology, Netherlands ² Harbin Engineering University, China ³ Shanghai Marine Diesel Engine Research Institute, China
16:50-17:15	Theoretical Analysis of Combustion and Emission Characteristics of Ammonia/Dimethyl Ether Marine Low Speed Engine in High Pressure Dual Fuel Direct Injection Long Liu, Shiyutian Li, Haoyu Liu, Yang Wang Harbin Engineering University, China
17:15-17:45	Coffee break
S1.4	AMMONIA COMBUSTION TECHNIQUES Chair: Stéphane Guilain. Ampère, France
17:45-18:10	The Role of Ammonia (NH₃) Cracking and Heat Recovery in Spark-Ignition Engines M. Wu ¹ , A. Cova-Bonillo ¹ , N.D. Khedkar ¹ , G. Brinklow ¹ , J.M. Herreros ¹ , S. Zeraati ¹ , A. Tsolakis ¹ , P. Millington ² , S. Alcove ² , A.P.E. York ² ¹ The University of Birmingham, UK ² Johnson Matthey Technology Centre, UK
18:10-18:35	Investigating HCCI Engine Operating Parameters under the Simultaneous Dual Fueling of Ammonia and Hydrogen Based on Detailed Chemical Kinetics Modelling F. Balogun, A. Vasudev, A. Kakoei, K. Sirviö, M. Mikulski University of Vaasa, Finland
18:35-19:00	Numerical Study of Activity Stratification-Controlled Ammonia-Hydrogen Combined Combustion under Stoichiometric Condition Z. Hu ¹ , Y. An ¹ , Y. Pei ¹ , D. Zhao ¹ , Z. Su ² , H. Zhao ³ ¹ Tianjin University, China ² Guangxi Yuchai Machinery Co., China ³ Brunel University London, UK

IJER SPECIAL ISSUE

A selection of papers from THIESEL2024 will be published by the International Journal of Engine Research (IJER) in a special issue.

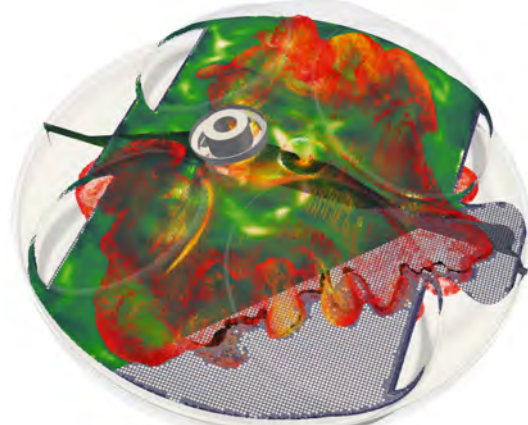
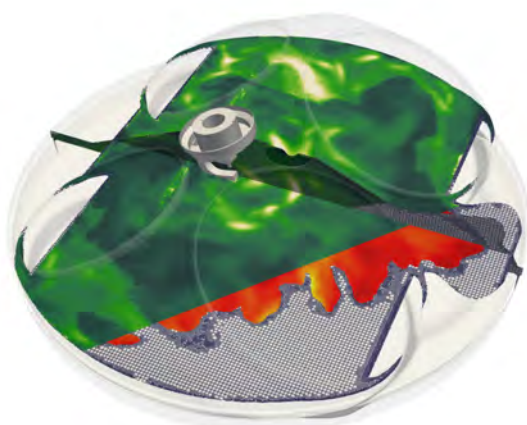
THURSDAY 12th SEPTEMBER 2024

S2.1 THERMAL MANAGEMENT		Chair: Leila Sharifian. Toyota Motor Europe Technical Center, Belgium
8:30-9:00	KEYNOTE LECTURE: The Evolution of Industrial Computer Aided Engineering in the Automotive Industry Steven Pierson. Jaguar Land-Rover, UK	
9:00- 9:25	The Hotspot Ignition Nature of Thermal Runaway in Lithium Iron Phosphate Battery Cycled under Low Temperatures L. Zhang, L. Liu, A. Terekhov, D. Warnberg, P. Zhao University of Tennessee, USA	
9:25-9:50	In-Cylinder Heat Loss Reduction in a Diesel Engine: Common Principle of a Novel Heat Insulation Structure and a Novel Nozzle Orifice Design N. Uchida ¹ , F. Kawaharazuka ¹ , K. Watanabe ² ¹ New ACE Institute, Japan ² Denso Corporation, Japan	
9:50-10:15	Model-Based HVAC Control Unit using a MIL-Concept within BEV Thermal Management Co-Simulation C. Frühwirth, E. Schutting, H. Eichlseder Graz University of Technology, Austria	
10:15-10:45	Coffee break	
S2.2 AFTERTREATMENT		Chair: Gladys Moréac. Ampère, France
10:45-11:10	Double Gasoline Particulate Filters - A Concept for Reducing Tailpipe PN10 Emissions C. Larrieu ¹ , E. Laigle ¹ , C. Norsic ¹ , J. Hinault ² , D. Preterre ² , C. Chaillou ¹ ¹ Aramco Fuel Research Centre, France ² CERTAM Rouen, France	
11:10-11:35	Development of a CFD Predictive Methodology for Urea Deposit Risk Assessment in Heavy Duty Aftertreatment Systems S. Andreoli ¹ , A. Gallo ¹ , S. Langridge ² , R. Schlegel ² ¹ FPT Industrial, Italy ² FPT Motorenforschung, Switzerland	
11:35-12:00	Validation of Different Methods for Exhaust Gas Monitoring in H₂ Fueled Internal Combustion Engines S.C. Eichmann, D. Klenk, M. Schroeder HORIBA Europe, Germany	
12:00-12:25	Effects Of Potential Biofuel Composition on Emission Reduction by a Three-Way Catalyst during Combustion in Direct-Injection Spark Ignition Engine V. Kärcher, P. Hellier, N. Ladommatos University College London, UK	
12:25-12:50	CFD Based Development Aiding First-Time-Right Design of a Tier-5 Emission Aftertreatment System N. Sridharan ¹ , R. Pandey ² , A.K. Maddineni ² ¹ Donaldson Filtration Solutions - Leuven, Belgium ² Donaldson Filtration Solutions - Gurgaon, India	
12:50-14:30	Lunch	
14:30-15:30	Poster session 2 / Commercial exhibition / Visit 2 to CMT laboratories	



THURSDAY 12th SEPTEMBER 2024

S2.3 THERMAL RUNAWAY		Chair: Jordi Martorell. Nissan Europe, France
15:30-16:00	KEYNOTE LECTURE: Road Transport Environmental Impacts - What Are the Main Challenges? Gladys Moréac. Ampère, France	
16:00-16:25	Risk and Challenges in Thermal Runaway and Propagation in Automotive Li-Ion battery packs J. San Primitivo Jaguar Land Rover, UK	
16:25-16:50	Performance Comparison and Kinetic Mechanisms Evaluation of Thermal Runaway Prediction Accuracy of Different Li-ion Battery Chemistry S. Mehranfar ¹ , A.M. Andwari ¹ , J. Könnö ¹ , A. García-Martínez ² , C. Micó ² ¹ University of Oulu, Finland ² Universitat Politècnica de València, Spain	
16:50-17:15	Experiments and Simulations on Internal Temperature Monitoring for Batteries Subjected to Significant AC Current Ripples through Impedance Analysis J. Salvador TAE Power Solutions, USA	
17:15-17:45	Coffee break	
S2.4 DATA-DRIVEN CONTROL AND OPTIMIZATION		Chair: Timothy Shipp. Cummins, USA
17:45-18:10	Optimization of the Combustion System and Control Strategy for the New Hybrid-Dedicated 2.5L TGD I Engine Jongguk Park, Heechang Oh, Hyunjun Im, Jinnam Kim, Hyuk Im Hyundai Motor Company, Republic of Korea	
18:10-18:35	Application of Data-Driven Approaches to Efficient Knock Prediction in Engine Development C. Laubichler ¹ , S. Posch ¹ , C. Gößnitzer ¹ , T. Oppl ¹ , G. Pirker ¹ , A. Wimmer ^{1,2} ¹ LEC, Austria ² Graz University of Technology, Austria	
18:35-19:00	Multi-Stage ECMS Considering Engine Dynamics and Start/Stop Strategy for Real-Time Application in Hybrid Electric Vehicles A. Reig, G. Mancini, F. Mazza RSEngineering, Italy	
19:00-19:25	A Reinforcement Learning Energy Management System for Off-Road Powertrain Applications F. Millo ¹ , L. Rolando ¹ , A. Vinogradov ¹ , N. Scinicariello ² , P. Fregni ² , D. Fantuzzi ² , S. Gaioli ² ¹ Politecnico di Torino, Italy ² Kohler Engines, Italy	



FRIDAY 13th SEPTEMBER 2024

S3.1 SUSTAINABLE POWERTRAINS		Chair: Guillaume Tuffier. Horse, France
8:30-9:00	KEYNOTE LECTURE: Hydrogen, Hybrids, and Renewable Fuels for Commercial Powertrains Timothy Shipp. Cummins, USA	
9:00- 9:25	Exploring the Efficacy of Ether-based Ignition Improvers for Implementation of (M)Ethanol Mixing-Controlled Combustion S. Lee, D. López-Pintor Sandia National Laboratories, USA	
9:25-9:50	Fuel Cell Humidity Control Via Water Injection and its Influence on Root Compressor Performance A. Plazas ¹ , P. Naghshtabrizi ¹ , R. Payri ² , P. Martí-Aldaraví ² , A. Gomez-Vilanova ² ¹ Eaton Corp., USA ² Universitat Politècnica de València, Spain	
9:50-10:15	A Novel Method for Predicting Compressor Performance in the Vicinity of Surge D. Schwarz ^{1,2} , V. Harsha ¹ , S.R. Dantla ¹ , T.R. Yeruva ¹ , G. Nakov ¹ , R. Martinez-Botas ² ¹ Daimler Truck, Germany ² Imperial College London, UK	
10:15-10:45	Coffee break	
S3.2 COMBUSTION EMISSIONS		Chair: Steve Whelan. HORIBA-MIRA, UK
10:45-11:10	Soot Formation in OMEn Combustion in an Optically Accessible CI Engine T. Fuyuto, Y. Mandokoro, T. Kondo, K. Nishikawa, R. Ueda, Y. Takatori, Y. Wakisaka, H. Kosaka Toyota Central R&D Laboratories, Japan	
11:10-11:35	Fuel Property Impact on Soot Emissions in SI-Engines: A Comprehensive Analysis of Gasoline Blends in RDE-Testing L. Heinz, U. Wagner, T. Koch Karlsruhe Institute of Technology, Germany	
11:35-12:00	Experimental Investigation and Cyclic Emissions Characterization of Renewable Dipropyl Oxymethylene Ether - Natural Gas Dual Fuel Combustion at Low Load A. Narayanan ¹ , G. Silvagni ² , K.K. Srinivasan ¹ , S.R. Krishnan ¹ , V. Ravaglioli ² , F. Ponti ² ¹ The University of Alabama, USA ² University of Bologna, Italy	
12:00-12:25	Performance and Regulated Emissions from Agricultural Engines Using 100% Renewable Fuel Hydrotreated Vegetable Oil (HVO). F. Oliva ¹ , D. Donoso ¹ , J.A. Soriano ² , R. García-Contreras ² , O. Armas ² ¹ Repsol Technology Lab., Spain ² Universidad de Castilla-La Mancha, Spain	
12:25-12:50	Using Staged Combustion to Mitigate NOx Emissions from Ammonia N. Nasim, J. Landis, S.K. Das, B. Nawaz, J.H. Mack University of Massachusetts Lowell, USA	
12:50-14:30	Lunch	
14:30-15:00	Last chance to visit posters and commercial exhibition	
S3.3 SPRAYS & COMBUSTION		Chair: Steven Pierson. Jaguar Land-Rover, UK
15:00-15:30	KEYNOTE LECTURE: Soot Measurements in Spray Flames Julien Manin. Sandia National Laboratories, USA	
15:30-15:55	Infrared High-Speed Thermography of Wall Surface Impinged by Diesel Spray Flame: Effects of Inversed-Delta Injection Rate Shaping using Heavy-Duty TAIZAC on Wall Heat Transfer F. Shimizu ¹ , R. Yoshiuda ¹ , H. Kinoshita ¹ , T. Aizawa ¹ , T. Shimada ¹ , K. Miyashita ² , A. Matsumoto ² , R. Kitabatake ² ¹ Meiji University, Japan ² Isuzu Advanced Engineering Center, Japan	
15:55-16:20	Cycle Variations in Soot Formation and Oxidation for a Direct-Injection Compression Ignition Engine R. Fitzgerald, P. Seiler, B. Hanks, G. Martin Caterpillar, USA	
16:20-16:45	Insights into Cycle-to-Cycle Variations: A Multi-Cycle LES Investigation of Knocking Combustion Initiation M. Kircher ¹ , J. Schneider ² , A. Pati ³ , M. Günther ⁴ , C. Hasse ¹ ¹ Technical University of Darmstadt, Germany ³ KTM Racing, Austria ² FEV Europe, Germany ⁴ RWTH Aachen University, Germany	
16:45-17:00	CLOSURE Raúl Payri. Universitat Politècnica de València, Spain	
20:30-00:00	GALA DINNER	

POSTER SESSIONS

Two poster sessions will take place to enable the presentation of interesting work that could not be included in the Conference regular sessions. Each poster presenter will have a strict 4-minute slot to present his/her work. Extended abstracts of these works are included in the Conference Proceedings.

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

WEDNESDAY 11th SEPTEMBER 2024

Time slot (4 min. pitch)	POSTER SESSION 1	Chairs: Javier Salvador, Marcos Carreres, Benjamín Plá. UPV, Spain
	Development of a Tool to Optimize Demand Response in Thermal Power Plants. Simplex Method and GRG: Application to Island Power Systems	
14:30h 1	J.C. Lozano-Medina, V. Henríquez-Concepción, A. Ramos-Martín, C.J. Sánchez-Morales, F. León-Zerpa, C.A. Mendietta-Pino Universidad de Las Palmas de Gran Canaria, Spain	
14:34h 2	Drive Cycle Decomposition: Establishing the Trade-off Between “Characteristic” and “Difficult” Sub-Samples of Real Driving Data for Multi-Objective Emissions Optimisation J. Prior ¹ , J.A.C. Knowles ¹ , B. Mason ¹ , L. Bates ² , S. Whelan ² ¹ Loughborough University, UK ² HORIBA MIRA, UK	
14:38h 3	Variable Valve Actuation Enabled Reactivity-Controlled Compression Ignition in a Natural-Gas/Diesel Marine Engine J. Kim ¹ , A. Kakoei ¹ , J. Hyvonen ² , M. Mikulski ¹ ¹ University of Vaasa, Finland ² Wärtsilä Finland Oy, Finland	
14:42h 4	Energy-Free Compression and Storage System of Natural Gas for Small Vehicles Propulsion M. Rudkowski ¹ , P. Iljaszewicz ² ¹ NGV Autogas Sp. z o.o., Polonia ² Universitat Politècnica de València, Spain	
14:46h 5	Thermal Loading in RCCI Marine Engine - A Study Using a Predictive Chemistry-Based Multizone Combustion Model and Wall-Thermal Solver A. Kakoei ¹ , M. Mikulski ¹ , A. Cafari ² , A. Vasudev ¹ , J. Hyvönen ² , A.M. Andwari ³ , S. Mehranfar ³ , B. Smulter ² , M. Salahi ³ ¹ University of Vaasa, Finland ² Engine Research and Technology Development at Wärtsilä Marine solutions, Finland ³ University of Oulu, Finland	
14:50h 6	Powertrain Design and Analysis of Electric Agricultural Vehicles O. Fitter ¹ , T. Cavadino ¹ , A. Curness ¹ , D. Gilber ¹ , F. Salek ² , A.M. Andwari ³ , J. Könnö ³ , M. Babaie ¹ ¹ University of Leeds, UK ² Oxford Brookes University, UK ³ University of Oulu, Finland	
14:54h 7	Recycling Food and Plastic Residues in Ternary Blends to Environmentally Friendly Power Diesel Engines. J. Tejada-Hernández ¹ , M. Carmona-Cabello ¹ , J.M. Herreros ² , M.P. Dorado ¹ , S. Pinzi ¹ ¹ Universidad de Córdoba, Spain ² University of Birmingham, UK	
14:58h 8	Combustion and Emissions of Unblended Fast Pyrolysis Oils and Blends with HVO and EN590-B0 Diesel in a Heavy-Duty Diesel Engine S. Sisodiya ¹ , A. Kittoe ² , C. Webb ² , N. Ladommatos ¹ , P. Hellier ¹ ¹ University College London, UK ² BP plc, UK	
15:02h 9	Design of Experiments Optimized Combustion and Emissions for OMEx-Diesel Blends on a Heavy-Duty Engine. Z. Sun, H. Beers, M. Cuijpers, B. Somers, N. Maes Eindhoven University of Technology, Netherlands	
15:06h 10	Impact of a Neat 100% Renewable Diesel Fuel on Performance and Regulated Pollutant Emissions of a Catamaran for Passenger Transportation toward the Atlantic Islands National Park (Spain) R. García-Contreras ¹ , J.A. Soriano ¹ , L. Sánchez ¹ , O. Armas ¹ , F. Oliva ² , M.D. Cárdenas ² ¹ Universidad de Castilla-La Mancha, Spain ² Repsol Technology Lab, Spain	
15:10h 11	Crank-Angle-Resolved HR-TEM Analysis of Aggregation Process and Nanostructure of GDI In-Cylinder Soot Particles T. Aizawa, S. Noguchi, Y. Hojo, T. Akayama, S. Yamamoto, H. Shaohang, T. Shimada Meiji University, Japan	
15:14h 12	NOx Measurement for Periodic Technical Inspection of SCR-Equipped Diesel Vehicles. J. Franzetti ^{1,2} , T. Selli ^{1,3} , N.E. Fonseca ² , A. Melas ¹ , R. Gioria ¹ , C. Ferrarese ^{1,2} , B. Giechaskiel ¹ , R. Suarez-Bertoa ¹ ¹ European Commission, JRC, Italy ² Universidad Politécnica de Madrid, Spain ³ European Environment Agency (EEA), Denmark	

POSTER SESSIONS

THURSDAY 12th SEPTEMBER 2024

Time slot (4 min. pitch)	POSTER SESSION 2	Chairs: Javier Salvador, Marcos Carreres, Benjamín Plá. UPV, Spain
14:30h	Computational Analysis of Different Hydrogen Injector Characteristics in Wankel Rotary Engines. 13 K. Moreno-Cabezas, R. Menaca, G. Vorraro, X. Liu, J.W.G. Turner, H.G. Im King Abdullah University of Science and Technology, Saudi Arabia	
14:34h	Ultra-High Efficiency Hydrogen Fuelled Combustion Engine. 14 T. Janhunen Aumet Oy, Finland	
14:38h	Effect of Compression Ratio Reduction and Water Injection on a Compression Ignition Engine Fueled with Straight Hydrogen. 15 J.M. Rueda-Vázquez ¹ , J. Serrano ² , F.J. Jiménez-Espadafor ² , M.P. Dorado ¹ ¹ Universidad de Córdoba, Spain ² Universidad de Sevilla of Seville, Spain	
14:42h	Experimental Analysis of the Water Direct Injection Effects in a Hydrogen Direct Injection Spark Ignition Engine and its Application toward Load Extension. 16 Seungil Lee ¹ , Seunghyun Lee ¹ , Seungjae Kim ¹ , Kiyeon Kim ² , Jeongwoo Lee ² , Kyoungdoug Min ¹ ¹ Seoul National University, Republic of Korea ² Chungnam National University, Republic of Korea	
14:46h	LES-TFM Modeling of Hydrogen Combustion in Internal Combustion Engines. 17 B. Mahmoodi, P. Tamadonfar, A. Bhattacharya, O. Kaario Aalto University, Finland	
14:50h	Visualization of Thermodiffusive Instabilities of the Early Flame in a Hydrogen-Fueled Spark Ignition Engine. 18 P. Ye, J. Erhard, C. Welch, H. Shi, A. Dreizler, B. Böhm Technische Universität Darmstadt, Germany	
14:54h	Optical Multi-Spark Ammonia Combustion Engine: Numerical Analysis and Validation. 19 R. Menaca ¹ , M. Silva ² , K. Uddeen ¹ , F. Almatrafi ¹ , Q. Tang ³ , J.W.G. Turner ¹ , H.G. Im ¹ ¹ King Abdullah University of Science and Technology, Saudi Arabia ² Aramco Americas, USA ³ Tianjin University, China	
14:58h	Impact of Pilot Fuel Spray Orientation in a Dual-Fuel Ammonia-Diesel Engine. 20 K.A. Pedersen, M.T. Lewandowski, K.O.P. Bjørgen, T. Løvås Norwegian University of Science and Technology (NTNU), Norway	
15:02h	Influence of Ignition Improving Additives on Aqueous Ammonia and Diesel Dual-Fuel Combustion in a Single Cylinder Compression Ignition Engine. 21 Y. Han ¹ , P. Hellier ¹ , N. Ladommatos ¹ , A. Schönborn ² ¹ University College London, UK ² World Maritime University, Sweden	
15:06h	Characteristics of Ammonia Diffusion Combustion based on Visualization Study Jointing LES Simulation. 22 P. Dong, W. Chen, Z. Zhang, J. Tian, W. Long Dalian University of Technology, China	
15:10h	Towards Understanding the Optimal Conditions for Stable Ammonia Spray Flames. 23 S. Cardona, T. Guiberti King Abdullah University of Science and Technology, Saudi Arabia	
15:14h	Investigating the Effect of Intrinsic Instabilities on Engine Performance for NH₃ – H₂ Blends. 24 J.H. Mack ¹ , B. Nawaz ¹ , N. Nasim ¹ , S. Das ¹ , C. Dumitrescu ² ¹ University of Massachusetts Lowell, USA ² West Virginia University, USA	

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. The following companies will make a 20-minute presentation, to which participants are invited to attend.

Thursday 12th September 2024, 14:40 h - 15:00 h

Kistler: Development of techniques for monitoring and diagnosing batteries using fiber segment Interferometry

Dr. Blanca Ruiz. Head of Business Development Optical Fiber Sensors

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 10th – 13th, 2024



CONTACT DETAILS

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CONFERENCE HOTELS BOOKING

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E-mail: thiesel@tureventsandgo.com

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REGISTRATION TO CONFERENCE

CFP

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46022 Valencia. Spain

Tel: +34 96 387 77 51 (9:00 am – 2:00 pm)

E-mail: congresos@cfp.upv.es

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, particularly the A-3 dual motorway to Madrid.

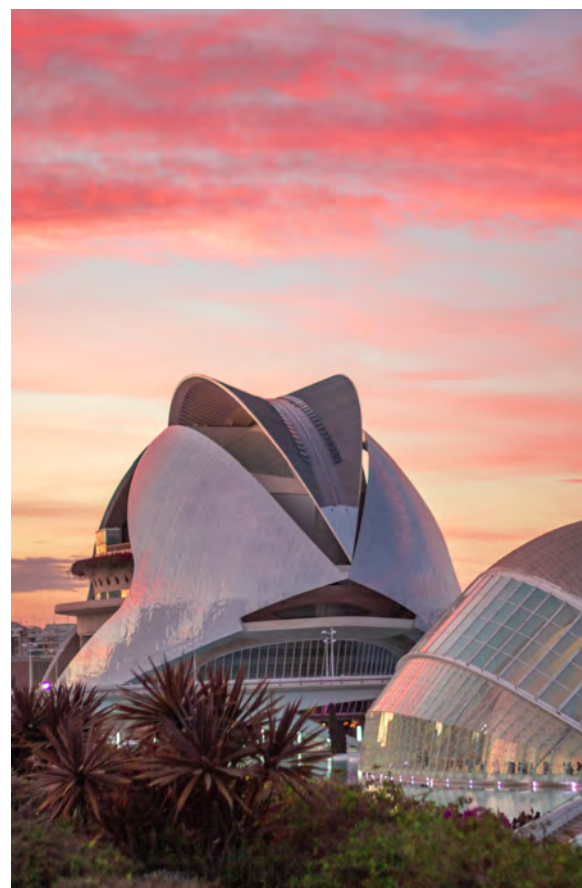
By rail

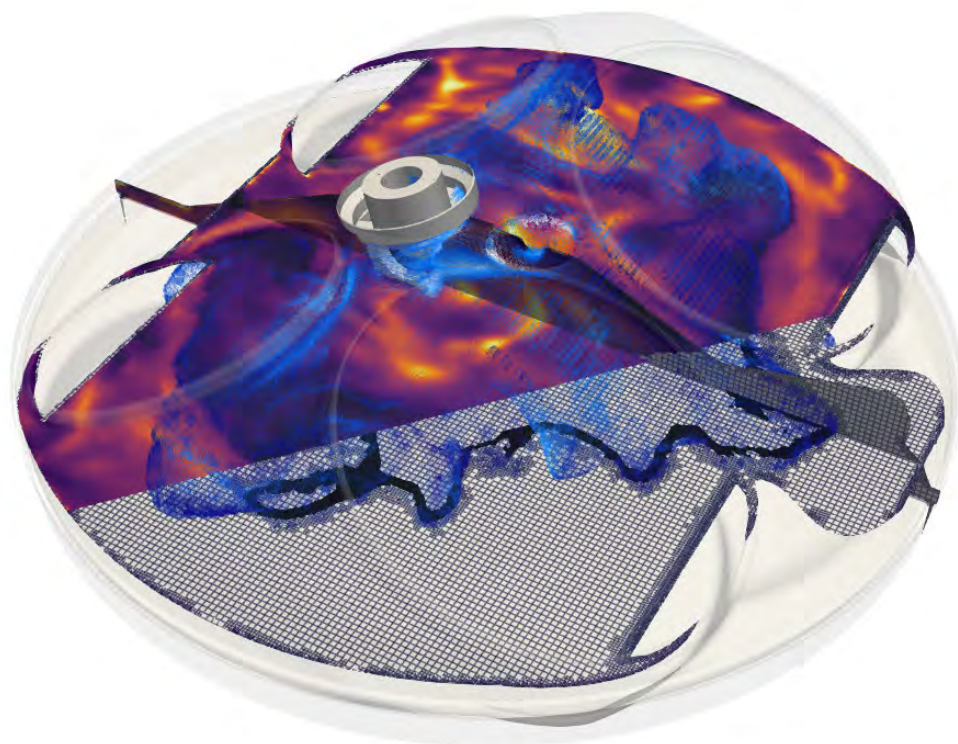
Valencia has also very good train connections. The high-speed train Euromed links several times a day Barcelona to Valencia in approximately 3 hours. The journey between Madrid and Valencia by the regular high speed link AVE takes about 2 hours.

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.





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

<https://www.cmt.upv.es/#/thiesel2024>



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