

CO₂ Reduction for Transportation Systems Conference

Wednesday - June 12, 2024 (morning)			
8.30 Registration			
Opening Welcome Address @Aula Magna			
09.00-09.20	<ul style="list-style-type: none"> • SAE International Torino Section • ANFIA 		
Plenary Opening Keynotes @Aula Magna			
09.20-09.45	• Electro Mobility is the Future, but...! Marc Sens - IAV GmbH		
09.45-10.10	• Sustainable Powertrains for People's Mobility André Casal Kulzer - IFS, University of Stuttgart		
10.10-10.20	• Q&A Session		
Break @Exhibition Area			
Parallel Sessions			
	AULA MAGNA	AULA 7	AULA 13S
	Hydrogen for Sustainable Mobility: H2ICE&H2FC	Hybridization & Electrification	Aero & Thermal Management
11:00-11:20	Advanced H2 ICE development aiming for full compatibility with classical engines while ensuring zero-impact tailpipe emissions Thomas Koerfer, Thomas Durand, Hartwig Busch - FEV Group GmbH Paper # 2024-37-0006	How far can you drive on a full charge? A practical exploration of Battery Electric Vehicles range and environmental impact based on real-world data Alessandro Tansini, Georgios Fontaras - JRC	Optimization of a Sliding Rotary Vane Pump for Heavy Duty Internal Combustion Engine cooling Fabio Fatigati, Marco Di Bartolomeo, Roberto Cipollone - Università degli Studi dell'Aquila; Francesco Pallante, Giuseppe Lo Biundo - O.M.P. Officine Mazzocco Pagnoni Paper # 2024-37-0030
11:20-11.40	Performance, Efficiency and NOx Emissions in A Sport Car H2 ICE Fabrizio Gullino, Massimo Medda - Ferrari Spa	Development of composite battery housing components: cost reduction and performance improvements for large volume BEVs Luca Mazzarella, Tommaso Delpero, Davide Caprioli, Michael Hauenstein, Flavio Pezzani, Urban Cotic,, Autoneum Management AG	Evaluation of a Combined Cooling/HVAC System for Electric Heavy Quadricycles under Different Conditions Daniele Chiappini, Simone Lombardi, Laura Tribioli - Università degli Studi Niccolò Cusano
11.40-12.00	The Potential of Hydrogen High Pressure Direct Injection Toward Future Emissions Compliance: Optimizing Engine-Out NOx and Thermal Efficiency Robbert Willems, Xander Seykens, Cemil Bekdemir, Erik Doosje, Peter Van Gompel - TNO Paper # 2024-37-0005	A methodology to develop and validate a 75-kWh battery pack model with its cooling system under a real driving cycle Ratnak Sok, Kentaro Kishida, Tomohiro Otake, Kamaleshwar Nandagopal, Jin Kusaka - Waseda University; Norifumi Mizushima - Advanced Industrial Science and Technology (AIST); Takahiro Noyori - AVL Japan Paper # 2024-37-0012	Validation of Boiling Model via correlation with Coolant Deposits Mirko Bovo, Aurobay
12.00-12.20	Development of a Direct Injection Hydrogen Engine for off-road applications through numerical and experimental investigations Fabio Mallamo - FEV Italia; Bartosch Jagodzinski - FEV Europe; Nicola Scinicariello, Wladimir Lodi, Kohler Engines; Federico Millo, Andrea Piano, Andrea Scalambro - Politecnico di Torino	Comparison of Lithium-Ion Battery Chemistries in the Hybridization of Ultralight Aircraft Teresa Donateo, Ludovica Spada Chiodo - Università del Salento Paper # 2024-37-0017	A New Design Rule of Engine Coolant Pump in ICes Focused to Energy Consumption Reduction Marco Di Bartolomeo, Davide Di Battista, Roberto Cipollone - Università degli Studi dell'Aquila; Fabrizio Fremondi, Umberto Camagni - Metelli Paper # 2024-37-0015
12.20-12.40	Direct Injection Hydrogen Combustion System for Mid-Duty Diesel Engines Retrofit Davide Gessaroli, Alberto Vassallo, Francesco Concetto Pesce, Francesco Accurso - Dumarey Automotive Italia; Roberto Golisano, Nicola Sacco - Dumarey Hydrocells	Hyva's Decarbonization Drive: Innovations in Component Electrification for Sustainable Heavy Machinery Solutions Gian Marco Fulgeri, - Hyva Group	Development and Validation of a Thermal Model for Passenger Car Cabin Temperature and Mobile Air-Conditioning Cooling Loads Georgios Fontaras, - JRC
Lunch @Exhibition Area			

Wednesday - June 12, 2024 (afternoon)

Parallel Sessions

	AULA MAGNA	AULA 7	AULA 135
	Alternative Fuels and E-Fuels	Hybridization & Electrification	Aero & Rolling Resistance Reduction and Lightweighting Designs
14.00-14.20	Exploring methanol and naphtha as alternative fuels for a hybrid-ICE battery-driven light-duty vehicle Erasmo Iñiguez, Javier Marco-Gimeno, Javier Monsalve-Serrano, Antonio Garcia - Universitat Politècnica de Valencia Paper # 2024-37-0021	Optimization of the Power Split Ratio for a Fuel Cells-Battery Hybrid Electric Supercar Martino Diana, Alessandro D'Adamo, Lorenzo Martocchia - Università di Modena e Reggio Emilia	The new Porsche Taycan: Advanced Aero Wheel Strategy Francesca Cogotti, - Porsche AG
14.20-14.40	Environmental Sustainability of low/free - carbon fuels for SI engines: methanol, methane and hydrogen Francesco Catapano , Silvana Di Iorio, Agnese Magno, Paolo Sementa, Bianca Maria Vaglieco - CNR - STEMS	Definition of a rule-based energy management controller for the simulation of a plug-in hybrid vehicle using power and on-board measured data Stylianos Doulgeris , Georgios Tsakonas, Athanasios Dimaratos, Dimitrios Kontses, Zisis Samaras - Aristotle University of Thessaloniki Paper # 2024-37-0016	Towards the Design-driven Carbon Footprint reduction of Composite Aerospace and Automotive components: An overview Enrico Dalpadulo , Mario Russo, Francesco Gherardini, Francesco Leali - Università di Modena e Reggio Emilia Paper # 2024-37-0032
14.40-15.00	Experimental Study of Lignin Fuels for CI Engines Motoki Terauchi - University of Copenhagen ; Tor Simonsen, Simon Mortensen, Jesper Schramm, Anders Ivarsson - Technical University of Denmark Paper # 2024-37-0022	Development of a Soft-Actor Critic Reinforcement Learning Algorithm for the Energy Management of a Hybrid Electric Vehicle Luciano Rolando, Nicola Campanelli , Luigi Tresca, Luca Pulvirenti, Federico Millo - Politecnico di Torino Paper # 2024-37-0011	Lightweight construction enabled by measurement of forces and moments at the wheels Giampiero Mastinu , Massimiliano Gobbi, Federico Ballo - Politecnico di Milano
15.00-15.20	Influence of Intake Charge Temperature and EGR Rate on the Combustion and Emission Characteristics of Ammonia/Diesel Dual-Fuel Engine Marziyeh Hoseinpour - Ferdowsi University of Mashhad ; Rahim Karami - Central Queensland University ; Mohammad Mahdi Salahi, Amin Mahmoudzadeh Andwari - University of Oulu ; Ayat Gharehghani - Iran University of Science & Technology ; Antonio Garcia - Universitat Politècnica de Valencia Paper # 2024-37-0025	Potentials of non linear MPC strategy for the optimal control of a parallel P4 hybrid electric vehicle: towards improved fuel consumption and emissions over different driving missions Luigi Teodosio , Vincenzo De Bellis - Università di Napoli Federico II	Aerodynamics' Influence on Performance in Human-Powered Vehicles for Sustainable Transportation Alessandro Di Gesù , Chiara Gastaldi, Cristiana Delprete - Politecnico di Torino Paper # 2024-37-0028
15.20-15.40	A Numerical Study of the Laminar Flame Speed of Hydrogen/Ammonia Mixtures under Engine-like Conditions Flavio Bochicchio , Marco D'Amato, Vinicio Magi, Annarita Viggiano - Università degli Studi della Basilicata Paper # 2024-37-0020	Decentralized Control for CACC Systems Accounting for Uncertainties Arash Seifoddini , Arefeh Azad, Alessia Musa, Daniela Misul, - Politecnico di Torino Paper # 2024-37-0010	Improving aerodynamic efficiency of EV trailers using advanced CFD optimization methods Paolo Geremia - ENGYS

Break @Exhibition Area

Wednesday - June 12, 2024 (afternoon)

Parallel Sessions

	New Powertrain Developments	Hybridization & Electrification	Alternative Fuels and E-Fuels
16.10-16.30	The PHOENICE Project: an Innovative Lean-Burn High Efficiency Spark Ignition Engine Concept Federico Millo, Luciano Rolando, Giuseppe Castellano, Andrea Bottega - Politecnico di Torino ; Francesco Bocchieri, Rosario Loiodice, Vincenzo Di Napoli, Giovanni Cappelli - FEV Italia ; Toni Tahtouh - IFPEN Energies Nouvelles	Numerical Assessment of Fuel Consumption and Tailpipe Emissions for Electrified Long Haul Heavy-Duty Commercial Vehicles Alessandro Zanelli, Luca Cambriglia, Paolo Corrado, Emanuele Servetto - GammaTech Engineering S.r.l.	Sustainable Fuels for Long-Haul Truck Engines: a 1D-CFD Analysis Antonello Volza, Alfredo Pisapia, Stefano Caprioli, Carlo Rinaldini, Enrico Mattarelli - Università di Modena e Reggio Emilia Paper # 2024-37-0027
16.30-16.50	Lubricating Oil Effects on the Performance of an Automotive Turbocharger Turbine in Pulsating Flow: An Experimental Investigation Silvia Marelli, Vittorio Usai, Carla Cordalunga - Università degli Studi di Genova	Potential of Serial Hybrid Powertrain Concepts towards decarbonizing the Off-Highway Machinery Jost Weber, Jesper Schatorje, Yona Frekers, Olaf Herrmann, Rafael Gries - DENSO AUTOMOTIVE Deutschland GmbH Paper # 2024-37-0018	Effects of Renewable Fuels on The Performance and Emissions of a Small Displacement Diesel Engine for Urban Mobility Ornella Chiavola, Fulvio Palmieri, Erasmo Recco - Università di Roma TRE ; Jonas Matijošius, Vilnius Gediminas Technical University Paper # 2024-37-0019
16.50-17.10	CFD modeling of advanced combustion modes for free-piston linear generators Tommaso Lucchini, Nicola Morandi - Politecnico di Milano ; Carlo Beatrice - STEMS - CNR	Fuel Cell Fault Simulation and Detection for On Board Diagnostics using Real-Time Digital Twins. Harshad Rajendra Pandit, Pantelis Dimitrakopoulos, Manish Shenoy, Christian Altenhofen - Gamma Technologies LLC Paper # 2024-37-0014	Evaluation of an optimal engine configuration for a SI Engine Fueled with Ethanol for Stationary Applications Diego Perrone, Luigi Falbo, Biagio Falbo, Teresa Castiglione - Università della Calabria Paper # 2024-37-0024
Plenary Keynote @Aula Magna			
17.15-17.45	<ul style="list-style-type: none"> Stellantis Dare Forward Plan, Daniele Chiari - Stellantis 		
17.45	Final Remarks		

Social Program
Congress networking Cocktail & Guided Tour of the Heritage Hub

(transfer included – meeting point at 7.30 pm at Politecnico di Torino)

Thursday - June 13, 2024 (morning)

08.00 Registration

Plenary Keynote @Aula Magna

- 08.35-09.00 • Life Cycle Analysis: A Level Playing Field for Road Transport Environmental Regulations, **Zisis Samaras - Aristotle University of Thessaloniki**
- 09.00-09.25 • Resources Challenges to Green Mobility and Related R&I, **Christof Schernus - FEV Europe GmbH**
- 09.25-9.50 • Future Powertrain Solutions, **Maurizia Bagnato - Robert Bosch GmbH Branch Italy**
- 9.50-10.00 • Q&A Session

Break @Exhibition Area

Parallel Sessions

	AULA MAGNA	AULA 7	AULA 13S
	Alternative Fuels and E-Fuels	New Powertrain Developments	Hydrogen for Sustainable Mobility: H2ICE&H2FC
10.30-10.50	Development of a Hybrid-Electric Medium-HD Demonstrator Vehicle with a Pent-Roof SI Natural Gas Engine Julian Wallace , Robert Mitchell, Sandesh Rao, Kevin Jones, Dustin Kramer, Yanyu Wang, Paul Chambon, Scott Sjoval, D. Ryan Williams - Southwest Research Institute Paper # 2024-37-0026	The Key Factors of Innovative Diesel Combustion Systems for Achieving Future Emissions and High Efficiency Giacomo Belgiorno , Francesco Pesce, Alberto Vassallo - Dumarey Automotive Italia ; Gabriele Di Blasio, Roberto Ianniello, Michele Picicelli, Carlo Beatrice - STEMS - CNR	ANN-Based Modelling of Hydrogen Internal Combustion Engine for Model-in-the-Loop Applications and Development of a Dedicated Torque-Based Control Strategy Pier Paolo Brancaleoni , Enrico Corti, Davide Moro, Vittorio Ravaglioli - Università di Bologna
10.50-11.10	NG Engines Technologies to Enable Road Transport Decarbonization Stefano Golini , Sergio Giordana - FTP Industrial , Xavier Gautrot - IFP Energies Nouvelles	Numerical assessment of a hydrogen HPDI combustion system Gianpaolo Quattrone , Andrea Piano, Federico Millo - Politecnico di Torino	1D Modeling of a High-Performance Engine Fueled with H2 And Equipped with A Low NOx Aftertreatment Device Gianluca Montenegro, Andrea Marinoni , Augusto Della Torre, Gianluca D'Errico, Angelo Onorati - Politecnico di Milano ; Tarcisio Cerri - Sursum-Mi Paper # 2024-37-0009
11.10-11.30	Effects of chemical and physical properties of drop-in fuels on combustion and emissions of heavy duty diesel engines Yoshitsugu Hatano, Hsiang-An Cheng , Ratnak Sok, Jin Kusaka - Waseda University	Experimental Assessment of Additive-Manufactured Ducted Fuel Injection Combustion System for Medium-Duty Diesel Engine Achieving Ultra-Low Emissions Giacomo Belgiorno , Vincenzo Ottria, Massimiliano Alletto, Francesco Pesce, Luca Buzzi, Alberto Vassallo - Dumarey Automotive Italia	Exhaust After-Treatment Modeling Challenges for H2 Combustion Engines Menelaos Zafeiridis , Panagiota Alexiadou, Valery Martyuk - Gamma Technologies LLC ; Grigorios Koltsakis - Aristotle University of Thessaloniki
11.30-11.50	Potentials to Reduce Emissions in Heavy-duty Diesel Engines by Using Alternative Fuels and Advanced Combustion Modes Khanh Cung , Gina Buffaloe, Yehya Aussi, Daniel Christopher Bitsis, Imad Khalek - Southwest Research Institute	Towards carbon-free ICEs: premixed ammonia ignited with an active pre-chamber and the recuperated split-cycle concept Lorenzo Sforza , Giovanni Gianetti, Tommaso Lucchini, Gianluca D'Errico - Politecnico di Milano	Model-Based Algorithm for Water Management Diagnosis and Control for PEMFC Systems for Motive Applications Massimo Sicilia , Davide Cervone, Pierpaolo Polverino, Cesare Pianese - Università degli Studi di Salerno Paper # 2024-37-0004
11.50-12.10	Experimental Assessment of Drop-In Hydrotreated Vegetable Oil (HVO) in a Medium-Duty B7 diesel Engine for Low-Emissions Marine Applications Cinzia Cosseddu , Tonio Spedicato, Davide Pennazio, Alberto Vassallo - Dumarey Automotive Italia ; Corrado Fittavolini - Eni Paper # 2024-37-0023	Numerical investigation of the mixing and combustion process on passive prechamber systems for high-speed large bore gas engines Massimiliano Zanatta , Andrea Piano, Andrea Scalambro, Federico Millo - Politecnico di Torino ; Francesco Accurso, Francesco Pesce, Matteo Luci - Dumarey Automotive Italia	Fuel Cell Hybrid Electric Vehicles: the role of detailed modeling in optimal design during prototype development Lorenzo Bartolucci, Edoardo Cennamo , Stefano Cordiner, Vincenzo Mulone - Università degli Studi di Roma Tor Vergata

Plenary Keynote @Aula Magna

12.15-12.45 Could Ducted Fuel Injection with Low-Lifecycle-CO2 Fuels Be An Easier Path to Sustainability? **Charles Mueller, Sandia National Laboratories**

Lunch @Exhibition Area

Thursday - June 13, 2024 (afternoon)
Parallel Sessions

	AULA MAGNA	AULA 7	AULA 13S
	Hydrogen for Sustainable Mobility: H2ICE&H2FC	Aero & Thermal Management	From Well to Wheels to Life Cycle Assessment
14.00-14.20	Assessing Heavy Duty Vehicle CO ₂ Emissions for Qualification as a Zero Emissions Vehicle David K. Mumford , Graham Williams, Nadege Leclercq - <i>Westport Fuel Systems</i> Paper # 2024-37-0007	PFAS-free Thermal Management System with R290 Cristiano Massano - DENSO Thermal Systems	A Methodological Approach to Circular Design Strategies Based on Life Cycle Assessment for a Velomobile Production Eugenio Brusa, Alessandro Di Gesù , Cristiana Delprete, Chiara Gastaldi - Politecnico di Torino ; Caterina Antonia Dattilo, Massimo Delogu - <i>Universita degli Studi di Firenze</i>
14.20-14.40	Development of a multi-zone 1D-CFD predictive combustion model for a diesel-H ₂ dual-fuel medium-speed engine Gerardo Stanzione, Andrea Piano, Federico Millo, Politecnico di Torino ; Giovanni Vichi, Niccolò Fiorini - Yanmar R&D Europe ; Navin Fogla, Kevin Roggendorf - <i>Gamma Technologies LLC</i>	R290 HP-Module for Electric Vehicles Alexej Pogorelov , Thorsten Reimers - <i>Rheinmetall - Division Power Systems</i> Paper # 2024-37-0031	Life cycle assessment of different powertrain alternatives for a clean urban bus in adverse weather conditions Benedetta Peiretti Paradisi , Federico Millo, Luciano Rolando, Andrea Piano, Luca Pulvirenti, Afanasie Vinogradov - <i>Politecnico di Torino</i>
14.40-15.00	Advanced pressure management platform for hydrogen propulsion systems for next generation transportation Damiano Micelli - Landi Renzo	Comparison of Performance and Efficiency of different Refrigerants at high load Conditions and their Impact on CO ₂ eq Emissions Christian Macri , Álvaro De León, Felix Flohr - <i>Daikin Chemical Europe GmbH</i> Paper # 2024-37-0029	Life cycle greenhouse gas emissions of a novel Hydrogen-powered Engine Antonella Accardo, Ezio Spessa, Trentalessandro Costantino - <i>Politecnico di Torino</i> ; Michele Pensato, Gianfranco Malagrino - Dumarey Automotive Italia
15.00-15.20	A New Generation of Hydrogen-Fueled Hybrid Propulsion Systems for The Decarbonization of Urban Public Transport Federico Millo , Benedetta Peiretti Paradisi - <i>Politecnico di Torino</i> , Roberto Cipollone - <i>Universita degli Studi dell'Aquila</i> ; Enrico Corti - <i>University of Bologna</i> ; Michele Battistoni - <i>Universita degli Studi di Perugia</i> ; Ivan Arsie - <i>Università di Napoli "Parthenope"</i>	Numerical Assessment of the Potential of CO ₂ as a Refrigerant for Electrified Powertrain Thermal Management System Federico Millo , Luciano Rolando - Politecnico di Torino ; Matteo Rostagno, Mauro Casella - <i>Centro Ricerche Fiat</i>	Rotation for a better tomorrow - SKF's journey towards decarbonization Laura Sguotti , Arturo Leprotti, Alessandro Ferrero, Michele D'Aleo, Mats Berglund - <i>SKF Industrie</i> Paper # 2024-37-0033
Break @Exhibition Area			

Thursday - June 13, 2024 (afternoon)

Parallel Sessions

	AULA MAGNA	AULA 7	AULA 13S
	Legislation Framework, Future Scenarios, and Infrastructure Development for Transport Decarbonization	Hydrogen for Sustainable Mobility: H2ICE&H2FC	Aftertreatment Systems
15.50-16.10	The evolution of conventional vehicles' efficiency for meeting carbon neutrality ambition Dimitrios Komnos , Jamil Nur, Alessandro Tansini - <i>European Commission Joint Research</i> ; Markos Alexandros Ktistakis - <i>Aristotle University of Thessaloniki</i> ; Jaime Suarez, Jette Krause, Georgios Fontaras - <i>European Commission Joint Research Paper # 2024-37-0034</i>	Spectroscopy of Flame Kernel Inception During Ultra-Lean Operation of An Optically Accessible Spark Ignition Engine Fueled with Hydrogen Simona Silvia Merola , Adrian Irimescu, Bianca Maria Vaglieco - <i>CNR - STEMS</i>	Development of Innovative Burners for Advanced Management of Engine Aftertreatment Systems Andrea Bianco , <i>GammaTech Engineering</i> ; Salvatore Pizza, Mauro Brignone, Francesco Napoli, G. Galati, <i>Marelli Green Technology Systems</i>
16.10-16.30	The role of Renewable and Alternative fuels in decarbonization of transport to 2030-2050 David Chiamonti - <i>Politecnico di Torino</i>	Analysis and Visualization of Hydrogen Combustion in a Spark Ignition Optical Access Engine Federico Ricci , Jacopo Zembi, Carlo N. Grimaldi, Michele Battistoni - <i>Universita degli Studi di Perugia</i> ; Stefano Papi - <i>FEDERAL-MOGUL ITALY</i>	Effect of Dithering on post-catalyst exhaust gas composition and on short time regeneration of deactivated PdO/Al2O3 catalysts under real engine conditions Sebastian Tomin , Uwe Wagner, Thomas Koch - <i>KIT Karlsruhe Institute Of Technology Paper # 2024-37-0002</i>
16.30-16.50	Modelling charging infrastructure in V2G scenario Eleonora Innocenti , Lorenzo Berzi, Aljon Kociu, Massimo Delogu, <i>Università degli Studi di Firenze</i>	Guided Port Injection of Hydrogen as An Approach for Reducing Cylinder-To-Cylinder Deviations in Spark-Ignited H2 Engines – A Numerical Investigation Philipp Emanuel Jung , Michael Guenther, Nicolas Walter - <i>RPTU University of Kaiserslautern-Landau Paper # 2024-37-0008</i>	Acceleration of Fast-SCR Reactions by Eliminating “The Ammonia Blocking Effect Daiki Morita, Yuya Kotani, Qiuyue Zu, Fuka Yoshida , Ratnak Sok, Jin Kusaka - <i>Waseda University Paper # 2024-37-0001</i>
16.50-17.10	Vehicle-to-grid can help accelerate European energy system decarbonization at a lower cost Yuchen Hu - <i>Guidehouse</i>	Experimental and Numerical Investigation of Abnormal Combustion Phenomena in a High-Performance Hydrogen Fueled DISI Engine operated in stoichiometric Conditions Luciano Rolando, Salvatore Roggio , Andrea Piano, Federico Millo - <i>Politecnico di Torino</i> ; Fabrizio Gullino, Fabio Mortellaro, Roberto Tonelli, Massimo Medda - <i>Ferrari</i>	Experimental and Simulation Study of Zero Flow Impact on Hybrid Vehicle Emissions Valesia Emmanouil , Costas Kotoulas - <i>Gamma Technologies LLC</i> ; Grigorios Koltsakis - <i>Aristotle University Thessaloniki Paper # 2024-37-0036</i>
Plenary Keynote @Aula Magna			
17.10-17.30	• title TBC, Maria Linkova-Nijs - <i>ACEA</i>		
17.30-18.00	• What now? Kelly Senecal - <i>Convergent Science</i>		
18.00	Closing Remarks @Aula Magna		

After the conference Technical visits (Politecnico Lab & Dumarey)

Friday, June 14

Morning - Technical visits (Dana Graziano or Denso Thermal Systems)