

CO2 Reduction for Transportation Systems Conference - Final Program

Tuesday - June 21, 2022 (Morning)

Opening Welcome Address & Plenary Keynotes

Chairperson: Millo, F., *Politecnico di Torino*

9:00-9:15	<ul style="list-style-type: none"> • Srinath, S., <i>SAE International President</i> • Giorda, G., <i>ANFIA</i>
09:15-09:45	<ul style="list-style-type: none"> • Decarbonizing the transportation sector: A holistic review of the technology pathways, Joshi, A., <i>Corning Inc.</i>
09:45-10:15	<ul style="list-style-type: none"> • A European regulatory perspective towards a Euro 7 proposal, Samaras, Z., <i>Aristotle University of Thessaloniki</i>
10:15-10:45	<ul style="list-style-type: none"> • A global comparison of the life-cycle greenhouse gas emissions of combustion engine and electric passenger cars, Bieker, G., <i>ICCT</i>
10:45-11:15	<ul style="list-style-type: none"> • The Role of Combustion in our Race Toward Zero, Senecal, K., <i>Convergent Science</i>

Break and Sponsored Contents

Parallel Sessions

	AULA MAGNA	AULA 7	AULA 13S
	Infrastructure development for transport decarbonization Chairperson: Mazza, A., <i>Politecnico di Torino</i>	Alternative Fuels, E-Fuels & Hydrogen Chairpersons: Vaglieco, B. M., <i>STEMS CNR</i> ; Gerini, A., <i>FPT Industrial</i>	Lightweighting Chairperson: Leali, F., <i>Università di Modena e Reggio Emilia</i>
11:45-12:05	<ul style="list-style-type: none"> • Hydrogen based mobility, transport and as an energy vector Warnecke, W., <i>Shell</i> 	<ul style="list-style-type: none"> • Mixture Formation Analysis for Diesel, n-Dodecane, RME, and HVO in Large-Scale Injector Nozzles Fajri, H., Mallada, R., Riess, S., Strauß, L., Wensing, M., <i>Friedrich-Alexander Universität</i> Paper # 2022-37-0020 	<ul style="list-style-type: none"> • Synergic Product and Process Design for Additive Fabrication of Lightweight Vehicles Dalpadulo, E., Petruccioli, A., Pini, F., Leali, F., <i>Università di Modena e Reggio Emilia</i> Paper # 2022-37-0028
12:05-12.25	<ul style="list-style-type: none"> • EnBW HyperNet(z) – high-performance charging Silober, T., <i>EnBW</i> 	<ul style="list-style-type: none"> • Analysis of the Applicability of Water Injection in Combination with an eFuel for Knock Mitigation and Improved Engine Efficiency Rossi, E., Bargende, M., Kulzer, A., <i>University of Stuttgart</i>; Chiodi, M., <i>FKFS</i>; Massoud, E., <i>Technische Universität Berlin</i>; Shrestha, K., Mauss, F., <i>Brandenburg University of Technology</i> Paper # 2022-37-0019 	<ul style="list-style-type: none"> • Ducati lightweight design - new Monster rear frame Di Piazza, S., <i>Ducati Motor Holding SpA</i>
12:25-12:45	<ul style="list-style-type: none"> • Unlocking Renewable EV Fast Charging Intini, M., <i>Nhoa Atlante</i> 	<ul style="list-style-type: none"> • Virtual development of a single-cylinder engine for high efficiency by the adoption of efuels, methanol, pre-chamber and millerization Vacca, A., Rossi, E., Cupo, F., Chiodi, M., <i>FKFS</i>; Kulzer, A., Bargende, M., <i>Universität Stuttgart</i>; Villforth, J., Unger, T., Deeg, H., <i>Porsche AG</i> Paper # 2022-37-0018 	<ul style="list-style-type: none"> • Lightweight Design and Additive Manufacturing of a Fatigue-Critical Automotive Component Nicoletto, G., Riva, E., Uriati, F., <i>University of Parma</i> Paper # 2022-37-0026

Lunch and Sponsored Contents

Tuesday - June 21, 2022 (Afternoon)

Parallel Sessions

	AULA MAGNA	AULA 7	AULA 13S
	Hybridization & Electrification Chairpersons: Ravello, V., <i>CRF SCpA</i> ; Rolando, L., <i>Politecnico di Torino</i>	Aero & Thermal Management Chairpersons: Casella, M., <i>CRF SCpA</i> ; Biglia, M., <i>DENSO</i>	Lightweighting Chairperson: Leali, F., <i>Università di Modena e Reggio Emilia</i>
14:00-14:20	<ul style="list-style-type: none"> Future Hybrid System Solutions for HD-Diesel Engines Towards Low CO2 and Emission Regulations Weber, J., Balaji, A., Maufroy, S., Frekers, Y., Herrmann, O., Rahner, N., <i>DENSO AUTOMOTIVE</i> 	<ul style="list-style-type: none"> Development of a High-Voltage Battery Pack Thermal Model at Vehicle Level for Plug-in Hybrid Applications Piovano, A., Gautero, M., Scantamburlo, G., Paola, N., <i>Stellantis</i>; D'Addosio, A., <i>Politecnico di Torino</i> Paper # 2022-37-0023 	<ul style="list-style-type: none"> Polymers Application for Electric Vehicles Ciaccio, G., Pipino, A., <i>CRF SCpA</i>
14:20-14:40	<ul style="list-style-type: none"> Calibrating a Real-time Energy Management for a Heavy-Duty Fuel Cell Electrified Truck towards Improved Hydrogen Economy Anselma, P., Spano, M., Capello, M., Misul, D., Belingardi, G., <i>Politecnico di Torino</i> Paper # 2022-37-0014 	<ul style="list-style-type: none"> The end of range anxiety thanks to fast charging and immersion cooling in BEVs Watts, S., Daccord, R., <i>EXOES</i> 	<ul style="list-style-type: none"> Lightweight metals material in automotive industry and new methods for the metals testing De Caro, D., Tedesco M., <i>Stellantis</i>
14:40-15:00	<ul style="list-style-type: none"> e.Caravan – a way to a greener tourism Freimann, R., Sannia, A., <i>Erwin Hymer Group SE</i> 	<ul style="list-style-type: none"> ClimateSense Microclimate System: Improving Energy Efficiency and Comfort Westerman, C., Varandani, V., <i>Gentherm Incorporated</i> 	<ul style="list-style-type: none"> Composite materials to enhance vehicles lightweighting: toward a standard method to evaluate the Specific Energy Absorption Colonna, E., <i>Politecnico di Torino</i>
15:00-15:20	<ul style="list-style-type: none"> Battery Electric Vehicles Energy Consumption Breakdown From On-road Trips Tansini, A., Di Piero, G., Fontaras, G., <i>European Commission JRC</i>; Gil-Sayas, S., <i>Universitat Politècnica de València</i>; Komnos, D., <i>FINCONS SPA Group</i>; Currò, D., <i>Piksel s.r.l.</i> Paper # 2022-37-0009 	<ul style="list-style-type: none"> Advanced thermal controls and connectivity for increasing efficiency and range of e-vehicle with no comfort compromises Rostagno, M., Allocco, A., <i>CRF SCpA</i>; Manns, P., Wahl, A., <i>RWTH-TME</i> 	<ul style="list-style-type: none"> Lightweight components manufactured with in-production composite scraps: mechanical properties and application perspectives (*) Fiumarella, D., Belingardi, G., Scattina, A., <i>Politecnico di Torino</i>; Boria, S., <i>Università di Camerino</i>; Castorani, V., Nardinocchi, A., <i>HP Composites SpA</i> Paper # 2022-37-0027
Break and Sponsored Contents			

Parallel Sessions			
	AULA MAGNA	AULA 7	AULA 13S
	Hybridization & Electrification Chairpersons: Ravello, V., CRF SCpA; Rolando, L., Politecnico di Torino	New Powertrain Development Chairperson: Bargende, M., FKFS	From Well to Wheels to Life Cycle Assessment Chairperson: Mastinu, G., Politecnico di Milano
15:50-16:10	<ul style="list-style-type: none"> An Operating Strategy Approach for Serial/Parallel Hybrid Electric Vehicles Stoll, T., Bargende, M., <i>Universitat Stuttgart</i>; Bernier, H., <i>FKFS</i> Paper # 2022-37-0016 	<ul style="list-style-type: none"> PHEV towards zero Emissions & ultimate ICE efficiency: the PHOENICE project Tahtouh, T., <i>IFP Energies nouvelles</i>; Brignone, M., <i>Marelli Europe</i>; Cleeton, J., <i>Johnson Matthey ECT</i>; Demeilliers, N., <i>In Extenso Innovation Croissance</i>; Lucignano, G., <i>Stellantis</i>; Millo, F., <i>Politecnico di Torino</i>; Perazzo, A., <i>FEV Group GmbH</i>; Sierra Castellanos, J., <i>Garrett Motion</i> 	<ul style="list-style-type: none"> A methodology for calculating scope 3 downstream CO2 emissions from the use of Valeo's products worldwide Mellios, G., <i>EMISIA SA</i>
16:10-16:30	<ul style="list-style-type: none"> Assessment of Components Sizing and Energy Management Algorithms Performance for a Parallel PHEV Aletras N., Doulgeris, S., Samaras, Z., Ntziachristos, L., <i>Aristotle University of Thessaloniki</i> Paper # 2022-37-0015 	<ul style="list-style-type: none"> Aftertreatment layouts evaluation in the context of Euro 7 scenarios proposed by CLOVE Previtero, G., Ciaravino, C., Ferreri, P., Pozzi, C., Cantore, S., <i>Punch Torino SpA</i>; Romagnolo, J., <i>Powertech Engineering SRL</i>; Mital, R., <i>General Motors LLC</i> Paper # 2022-37-0008 	<ul style="list-style-type: none"> Reinforced polyamides with low environmental impact: post-consumer materials Galeazzi, R., Roncato, D., Spini, E., <i>RadiciGroup High Performance Polymers</i>
16:30-16:50	<ul style="list-style-type: none"> Development of a Neural Network based Energy Management System (EMS) for a plug-in Hybrid Electric Vehicle Millo, F., Rolando, L., Pulvirenti, L., Tresca, L., <i>Politecnico di Torino</i> 	<ul style="list-style-type: none"> Burner Development for Light-Off Speed-Up of Aftertreatment Systems in Gasoline SI engines Battistoni, M., Zempi, J., Casadei, D., Ricci, F., Martinelli, R., Grimaldi, C., <i>Università degli Studi di Perugia</i>; La Sana, M., Brignone, M., Mantovanelli, A., Milani, E., <i>Marelli Europe SpA</i> Paper # 2022-37-0033 	<ul style="list-style-type: none"> Tailored framework to analyze and interpret LCA's results in automotive lightweighting (*) Del Pero, F., Antonacci, A., Delogu, M., <i>University of Florence</i> Paper # 2022-37-0029
Plenary Keynotes			
Chairperson: Filipi, Z., <i>Clemson University</i>			
16:50-17:15	<ul style="list-style-type: none"> Battery Thermal Runaway: A Current Safety Challenge for Electrical Vehicles, Garcia, A., <i>CMT – Universitat Politècnica de València</i> 		
17:15-17:40	<ul style="list-style-type: none"> Leading sustainable powertrain systems innovation - Coupling energy and powertrain systems for a sustainable mobility, Kulzer, A., <i>University of Stuttgart</i> 		
17:40-18:05	<ul style="list-style-type: none"> The impact of vehicular emissions and GHG legislation on the development of ICE/hybrids/electrified powertrain technologies and testing methodologies for road vehicles, Bielaczyc, P., <i>Bosmal Automotive R & D Institute</i> 		
Closing Remarks			

Wednesday - June 22, 2022 (Morning)

Plenary Keynotes

Chairperson: Schernus, C., *EARPA*

8:30-9:00	<ul style="list-style-type: none"> Climate Sustainability in Mobility - Demand for ICE with Carbon-Neutral Energy, Alt, N., <i>FEV</i>
9:00-9:30	<ul style="list-style-type: none"> On the road to zero emissions mobility: the crucial role of technology neutrality, Leitner F., <i>AVL Italia SRL</i>
9:30-10:00	<ul style="list-style-type: none"> Series Hybrids - A Sustainable Solution for the Transport Sector, Sens, M., <i>IAV</i>
10:00-10:30	<ul style="list-style-type: none"> The future of powertrain solutions, Monteamaro, F., <i>Robert Bosch GmbH Branch Italy</i>

Break and Sponsored Contents

Parallel Sessions

	AULA MAGNA	AULA 7	AULA 13S
	Hybridization & Electrification Chairpersons: Ravello, V., <i>CRF SCpA</i> ; Rolando, L., <i>Politecnico di Torino</i>	New Powertrain Development Chairpersons: Garcia, A., <i>CMT – Universitat Politècnica de València</i> ; Bargende, M., <i>FKFS</i>	Legislation Framework & Future Scenarios Chairperson: Malvicino, C., <i>Stellantis</i>
11:00-11:20	<ul style="list-style-type: none"> MAHLE Modular Hybrid Powertrain for Large Passenger Cars and Light Commercial Vehicles Harrington, A., Bassett, M., Cooper, A., <i>Mahle Powertrain, Ltd.</i>; Blaxill, H., <i>Mahle Powertrain, LLC</i> Paper # 2022-37-0012 	<ul style="list-style-type: none"> 3D-CFD methodologies for a fast and reliable design of next generation SI engines Sforza, L., Lucchini, T., D'Errico, G., <i>Politecnico di Milano</i> Paper # 2022-37-0006 	<ul style="list-style-type: none"> Eco-innovation CO2-reducing Technologies: Status and Future Challenges Gil-Sayas, S., <i>Universitat Politècnica de València</i>; Di Pierro, G., Serra, S., Fontaras, G., <i>European Commission JRC</i>; Lodi, C., Currò, D., <i>Piksel s.r.l.</i> Paper # 2022-37-0031
11:20-11:40	<ul style="list-style-type: none"> From 48 V to High Voltage Dedicated Hybrid Powertrains: Numerical Assessment of Electrified Gasoline Architectures for a Low Emission C-SUV Zanelli, A., Cambriglia, L., Servetto, E., <i>POWERTECH Engineering S.r.l.</i>; De Araujo, P., Vankayala, S., Vondrak, A., <i>Garrett Motion</i> 	<ul style="list-style-type: none"> Experimental and 1D model analysis on the time to boost of a two stage hybrid boosting system for spark ignition engines Usai, V., Marelli, S., <i>Università Degli Studi di Genova</i> 	From Well to Wheels to Life Cycle Assessment Chairperson: Lattore, M., <i>Stellantis</i> <ul style="list-style-type: none"> The key role of the Product Environmental Footprint (PEF) in the New Batteries Regulation Aimo Boot, M., <i>Iveco Group Company</i> Accardo, A., Spessa, E., <i>Politecnico di Torino</i> Dotelli, G., <i>Politecnico di Milano</i>
11:40-12:00	<ul style="list-style-type: none"> 1D Modeling of a Plug-In HEV During RDE Cycles: Prediction of Tailpipe Emissions and Evaluation of Different Engine Control Strategies Marinoni, A., Montenegro, G., Onorati, A., <i>Politecnico di Milano</i> 	<ul style="list-style-type: none"> Enhancing the Fuel Economy of a Turbocharged Direct Injection Spark Ignition Engine through the Synergic Combination of Port Water Injection, High Compression Ratio, and Miller Strategy Gullino, F., Millo, F., Rolando, L., <i>Politecnico di Torino</i> 	<ul style="list-style-type: none"> Development of a Total Cost of Ownership Model to Compare BEVs, FCEVs and Diesel Powertrains on BUS Applications Di Vece, G., Di Nunno, D., <i>PUNCH Torino</i>; Bilancia, M., Verdino, V., <i>PUNCH Hydrocells</i> Paper # 2022-37-0030
12:00-12:20	<ul style="list-style-type: none"> Experimental Assessment of Powertrain Components and Energy Flow Analysis of a Fuel Cell Electric Vehicle (FCEV) Di Pierro, G., Tansini, A., Fontaras, G., Bonato, C., <i>European Commission JRC</i> Paper # 2022-37-0011 	<ul style="list-style-type: none"> On the direct injection of H2O under supercritical and superheated conditions into ICES: the role of the injector geometry (*) Cantiani, A., Viggiano, A., Magi, V., <i>Università degli studi della Basilicata</i> Paper # 2022-37-0002 	<ul style="list-style-type: none"> Comparing options for using electricity in HD sector: the impact of country grid mix (*) Prussi, M., <i>Politecnico di Torino</i>
12:20-12:40	<ul style="list-style-type: none"> Measurements and Modeling of the Temperature of a Li-polymer Battery Provided with Different Coatings for Heat Dissipation Sequino, L., Sebastianelli, G., Vaglieco, B. M., <i>STEMS – CNR</i> Paper # 2022-37-0013 	<ul style="list-style-type: none"> Direct Water Injection Strategies for Performance Improvement of a Turbocharged Spark-Ignition Engine (*) Lanni, D., Galloni, E., <i>Università di Cassino</i> Paper # 2022-37-0027 	

Lunch and Sponsored Contents

Wednesday - June 22, 2022 (Afternoon)

Parallel Sessions

	AULA MAGNA	AULA 7	AULA 13S
	New Powertrain Development Chairperson: Garcia, A., <i>CMT – Universitat Politècnica de València</i>	Alternative Fuels, E-Fuels & Hydrogen Chairpersons: Vaglieco, B. M., <i>STEMS CNR</i> ; Gerini, A., <i>FPT Industrial</i>	Aero & Thermal Management Chairpersons: Casella, M., <i>CRF SCoA</i>
14:00-14:20	<ul style="list-style-type: none"> Analysis of the Influence of Inlet Temperature on Oxy-Fuel Combustion in an HSDI Diesel Engine Mobasher, R., Aitouche, A., <i>JUNIA School of Engineering</i>; Li, X., <i>University of Bedfordshire</i>; Peng, Z., <i>University of Lincoln</i> Paper # 2022-37-0003 	<ul style="list-style-type: none"> Fuel Cell – a crucial pillar in future automotive powertrains Cavallini, L., <i>Robert Bosch GmbH Branch Italy</i> 	<ul style="list-style-type: none"> Model based design, prototyping and testing of a very small size electrically driven centrifugal pump Mariani, L., Di Giovine, G., Di Battista, D., Cipollone, R., Fatigati, F., Di Bartolomeo, M., <i>Università degli Studi dell'Aquila</i>; Camagni, U., Fremondi, F., Carminati, A., <i>Metelli S.p.A.</i> Paper # 2022-37-0025
14:20-14:40	<ul style="list-style-type: none"> Efficient Post-Processing Method for Identification of Local Hotspots in 3D-CFD Simulations Fajt, N., Bargende, M., Kulzer, A., <i>University of Stuttgart</i>; Grill, M., <i>FKFS</i> Paper # 2022-37-0005 	<ul style="list-style-type: none"> High Performance HPDI Engine Applications for CO2 Mitigation Munshi, S., Ceratto, D., <i>Westport Fuel Systems Inc.</i> 	<ul style="list-style-type: none"> Advanced glazing solutions for improved energy consumption and thermal comfort in transportation vehicles: numerical and experimental evidences Costantini, D., Tardif, X., Pandraud, G., <i>Saint-Gobain Research</i> Paper # 2022-37-0024
14:40-15:00	<ul style="list-style-type: none"> Greenhouse Gas Reduction from Envirokool Piston in Lean Burn Natural Gas and Diesel Dual Fuel Heavy Duty Engines Bitsis, D., <i>Southwest Research Institute</i> Paper # 2022-37-0004 	<ul style="list-style-type: none"> Sensing Solutions to allow the Fuel Cell System to hit the target in terms of efficiency, durability, safety and price level Zorzetto, M., Russo, M., <i>Eltek Spa</i> 	<ul style="list-style-type: none"> Introducing Passive Pulsating Heat Pipe (PHP) Cooling Technology into the Cooling of Electronics and Batteries of EVs (*) Thome, J., <i>JJ Cooling Innovation Sàrl</i>
15:00-15:20	<ul style="list-style-type: none"> Design of an additive manufactured Natural Gas Engine with thermally conditioned Active Prechamber Bucherer, S., Rothe, P., Kraljevic, I., Kollmeier, H., <i>Fraunhofer ICT</i>; Vacca, A., Chiodi, M., Kulzer, A., <i>FKFS</i>; Ruhland, H., Breuer, A., <i>Ford Motor Company</i> Paper # 2022-37-0001 	<ul style="list-style-type: none"> NOx emissions and engine efficiency study under lean combustion and water injection in a H2 fueled heavy duty Diesel engine Oung, R., Foucher, F., <i>Universite D'Orleans</i>; Neveu, J., Vucher, A., Rieser, E., <i>Volvo Group Trucks Technology</i> 	<p style="text-align: center;">Aero & Rolling Resistance Chairpersons: Wittmeier, F., <i>FKFS</i>; Miretti, L., <i>CRF SCoA</i></p> <ul style="list-style-type: none"> Fast Adjoint Optimization Methods for Automotive External Aerodynamics Geremia, P., <i>ENGYS Srl</i>
15:20-15:40	<ul style="list-style-type: none"> Experimental Assessment of Advanced Diesel Piston Bowls for Achieving Future Ultra-Low Emission Standards Belgiorno, G., Pesce, F., Vassallo, A., <i>Punch Torino SpA</i>; Di Blasio, G., Ianniello, R., Picicelli, M., Beatrice, C., <i>STEMS - CNR</i> 	<ul style="list-style-type: none"> Experimental studies on a small-bore port fuel injected SI engine operated on neat methanol and comparison with gasoline (*) Prajwal, R., Jose, J., Ramesh, A., Mittal, M., <i>IIT Madras</i> Paper # 2022-37-0017 	<ul style="list-style-type: none"> Numerical and Experimental Characterization of Morphable Composite Plate for Automotive Applications Perrone, D., Rodinò, S., Curcio, E., Castiglione, T., Bova, S., Maletta, C., <i>University of Calabria</i>; Brandizzi, M., <i>Stellantis</i> Paper # 2022-37-0022
Break and Sponsored Contents			
Plenary Keynotes Chairperson: Malvicino, C., <i>Stellantis</i>			
16:10-16:30	<ul style="list-style-type: none"> Vehicle to Home: next gen of eMobility services, Anzioso, F., <i>Free2Move</i> 		
16:30-16:50	<ul style="list-style-type: none"> Stellantis e-Mobility Strategy, Richard, A., <i>Stellantis</i> 		
16:50-17:10	<ul style="list-style-type: none"> Renault Scenic Vision It's More Than A Concept: It's An Action Plan For Sustainable Development", Martinet, C., Renault 		
17:10-17:30	<ul style="list-style-type: none"> Fit-for-55 and where we stand, Dolejsi, P., <i>ACEA</i> 		
17:30	Final remarks Malvicino, C., <i>Stellantis</i> – Millo, F., <i>Politecnico di Torino</i>		

Social program (*in-person attendees only*)

Tuesday, June 21 08.00 pm

Congress Dinner & Guided Tour of the MAUTO (National Car Museum) exhibition itinerary
Corso Unità d'Italia, 40, Turin

Thursday, June 23

Morning - Technical tours
(PUNCH, POLITO CARS Lab, Italdesign)