

CO2 Reduction for Transportation Systems Conference Digital Final Program

Tuesday - July 7, 2020

Opening Welcome Address

14.00 – 14.10	Federico Millo, SAE International Torino Section Marco Stella, ANFIA
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Plenary Opening Keynotes – Chairperson: Zissis Samaras, LAT - Aristotle University of Thessaloniki

14.10 – 14.30	<ul style="list-style-type: none"> Negative Emission Vehicles – Regulatory and Technical Drivers for Near-Zero Tailpipe Emissions, Joshi, A. – Corning Inc.
14.30 – 14.50	<ul style="list-style-type: none"> The EU Green Deal: opportunities and challenges, Dolejsi, P. – ACEA
14.50 – 15.10	<ul style="list-style-type: none"> Renewable Energy Vectors in Transportation, Schernus, C. – FEV
15.10 – 15.30	<ul style="list-style-type: none"> Q&A – Round Table

Break and Sponsored Virtual Corner

Parallel Sessions

	New Powertrain Developments Chairperson: Antonio Garcia, CMT - Universitat Politècnica de València	Hybridization & Electrification Chairperson: Vittorio Ravello, Centro Ricerche Fiat SCpA	Aero & Thermal Management Chairpersons: Matteo Biglia, DENSO; Mauro Casella, Centro Ricerche Fiat SCpA
15.50 – 16.10	<ul style="list-style-type: none"> Heavy Duty Alternative Fuels Engines: Challenges & Technologies Trends, Giordana, S. - FPT Industrial SpA 	<ul style="list-style-type: none"> A Reverse Engineering Method for Powertrain Parameters Characterization Applied to a P2 Plug-In Hybrid Electric Vehicle with Automatic Transmission, (2020-37-0021)* DiPierro, G. ; Galvagno, E. ; Mari, G. ; Millo, F. and Velardocchia, M. - Politecnico di Torino Perazzo, A. - FEV Group GmbH 	<ul style="list-style-type: none"> Heat Pumps for BEVs: Architectures and Performance Analysis, (2020-37-0030)* Ferraris, W. ; Bettoja, F. ; Casella, M. ; Rostagno, M. and Tancredi, A. - Centro Ricerche Fiat SCpA
16.10 – 16.30	<ul style="list-style-type: none"> A Passive Pre-Chamber for Increased Efficiency for Hybrid and Conventional Powertrains, Bassett, M. ; Cooper, A. ; Harrington, A. ; Hibberd, B. and Reader, S. - Mahle Powertrain Ltd 	<ul style="list-style-type: none"> Investigation on the Dynamic Behaviour of a Torque Transmission Chain for an Innovative Hybrid Power Unit Architecture, (2020-37-0013)* Mangeruga, V. ; Giacobini, M. ; Barbieri, S. and Russo, M. - Università degli Studi di Modena 	<ul style="list-style-type: none"> Thermal Management Systems Comparison for Optimization of Battery Electric Vehicle Driving Range Related to Use Case and Region, Massano, C. ; Fucà, A. ; Sorrentino, L. and Vitali, D. - DENSO Thermal Systems SpA
16.30 – 16.50	<ul style="list-style-type: none"> Analysis of the Combustion Process of SI Engines Equipped with Non-Conventional Ignition System Architecture, (2020-37-0035)* Sementa, P. ; Catapano, F. ; Di Iorio, S. ; Todino, M. and Vaglieco, B.M. - Istituto Motori CNR 	<ul style="list-style-type: none"> A Power Split Hybrid Propulsion System for Vehicles with Gearbox, (2020-37-0014)* De Simio, L. ; Gambino, M. and Lannaccone, S. - Istituto Motori CNR 	<ul style="list-style-type: none"> Next-Generation Refrigerant and Air Conditioner System Choice for Internal Combustion, Hybrid and Electric Vehicles, Taddonio, K. ; Andersen, S. O. and Sherman, N. - IGSD Kapoor, S. and Nagarhalli, P. V. - Tata Motors Ltd Chen, J. - Jiaotong University Chowdhury, S. and Craig, T. - Mahle Behr Troy Inc Malvicino, C. - FCA ITALY S.p.A. Ferraris, W. - Centro Ricerche Fiat SCpA Hu, J. - Peking University

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17.10 – 17.30	<ul style="list-style-type: none"> Numerical and Experimental Assessment of Knock Mitigation Potential of Port Water Injection in a Turbocharged Spark Ignition Engine, Gullino, F. ; Millo, F. and Rolando, L. - Politecnico di Torino 	<ul style="list-style-type: none"> Turbocharger Electrification: a Technology Enabler for CO2 Emission Reduction Iosifidis, G. - IHI Charging Systems International GmbH 	<ul style="list-style-type: none"> Identification of Automotive Cabin Design Parameters to Increase Electric Vehicles Range, Coupling CFD-Thermal Analyses with Design for Six Sigma Approach, (2020-37-0032)* Piovano, A. ; Scantamburlo, G. ; Quaglino, M. and Gautero, M. - FCA ITALY S.p.A.
17.30 – 17.50	<ul style="list-style-type: none"> The Virtual Engine Development for Enhancing the Compression Ratio of DISI-Engines Combining Water Injection, Turbulence Increase and Miller Strategy, (2020-37-0010)* Vacca, A. ; Cupo, F. ; Chiodi, M. and Bargende, M. - FKFS Khosravi, M. and Berkemeier, O. - Ford Werke GmbH 	<ul style="list-style-type: none"> Experimental Evaluation of the Performance of an Automotive Electric Supercharger, (2020-37-0008)* Marelli, S. and Usai, V. - Università Degli Studi di Genova 	<ul style="list-style-type: none"> Robust Design Adjoint Optimization of Automotive Components, Karpouzias, G. ; Geremia, P. ; De Villiers, E. and Schumacher, T. - ENGYS
17.50 – 18.10	<ul style="list-style-type: none"> A CFD Model of Supercritical Water Injection for ICes as Energy Recovery System, (2020-37-0001)* Cantiani, A. ; Viggiano, A. and Magi, V. - University of Basilicata 	<ul style="list-style-type: none"> Comprehensive Virtual Assessment of a 48 V Mild-Hybrid Diesel Passenger Car, Zanelli, A. ; Millo, F. and Rolando, L. - Politecnico di Torino 	<ul style="list-style-type: none"> Energy Management for Electric Vehicle Application: Energy Demand for Cabin Comfort, (2020-37-0031)* Tarzia, A. - FCA Italy S.p.A.

Sponsored Virtual Corner

Wednesday - July 8, 2020

Plenary Opening Keynotes – Chairperson: Antonio Garcia, CMT - Universitat Politècnica de València

14.00 – 14.20	<ul style="list-style-type: none"> The Role of CFD in the Development of Future Propulsion Systems, Senecal, K. – <i>Convergent Science</i>
14.20 – 14.40	<ul style="list-style-type: none"> Future propulsion systems suitable for the mass market, Bargende, M.- <i>FKFS</i>
14.40 – 15.00	<ul style="list-style-type: none"> Improving fuel economy through connectivity and automation - the NEXTCAR project, Rizzoni, G. – <i>OHIO STATE UNIVERSITY</i>
15.00 – 15.20	<ul style="list-style-type: none"> Q&A – Round Table

Break and Sponsored Virtual Corner

Parallel Sessions

	Alternative & E-Fuels Chairpersons: Bianca Maria Vaglieco, Istituto Motori CNR; Ezio Mancaruso, Istituto Motori CNR	New Powertrain Developments Chairperson: Michael Bargende, FKFS	Aero & Rolling Resistance Chairperson: Laura Maria Lorefice, FCA
15.40 – 16.00	<ul style="list-style-type: none"> Hydrogen: The Ultimate Choice for a Real Green Environment, Cavedagna, N. – <i>Landi Renzo S.p.A.</i> 	<ul style="list-style-type: none"> Numerical Study of the Maximum Impact on Engine Efficiency When Insulating the Engine Exhaust Manifold and Ports During Steady and Transient Conditions, (2020-37-0002)* Broatch, A.; Olmeda, P.; Martin, J. and Dreif, A. - <i>Universitat Politècnica de València</i> 	<ul style="list-style-type: none"> Development of an Innovative Method for CFD-based WLPT Tire Modelling, Alexias, P.; Geremia, P.; De Villiers, E. and Schumacher, T. - <i>ENGYS</i>
16.00 – 16.20	<ul style="list-style-type: none"> The Value Chain of LNG Applied on Commercial Vehicles, Ferrera, M. – <i>Landi Renzo S.p.A.</i> 	<ul style="list-style-type: none"> A Novel Option for direct waste heat recovery from exhaust gases of Internal Combustion Engines, (2020-37-0004)* Di Battista, D.; Cipollone, R. and Carapellucci, R. - <i>Università degli Studi dell'Aquila</i> 	<ul style="list-style-type: none"> Aerodynamic Optimization of Rim Design Ensuring Brake Cooling Performance: a CFD Approach, Cucca, A.; Scantamburlo, G. and Lorefice, L. - <i>FCA Italy S.p.A.</i> Miretti, L. - <i>CRF</i>
16.20 – 16.40	<ul style="list-style-type: none"> Autogas: A Low-Emission Mobility Solution for the Future, Rio, F. - <i>Liquid Gas Europe</i> 	<ul style="list-style-type: none"> A Numerical Investigation on VVA Influence on the Combustion Phase for Premixed Combustion Engine Under Partial Load Conditions, (2020-37-0005)* Fornarelli, F. - <i>DMMM - Politecnico di Bari, GNFM INDAM</i> Camporeale, S. - <i>DMMM - Politecnico di Bari</i> Magi, V. - <i>Univ. Basilicata, San Diego State Univ.</i> 	<ul style="list-style-type: none"> Multidisciplinary Investigation of Truck Platooning, 2020-37-0028)* Schnepf, B.; Kehrer, C. and Maeurer, C. - <i>Altair</i>

Break and Sponsored Virtual Corner

Parallel Sessions

	Alternative & E-Fuels Chairpersons: Bianca Maria Vaglieco, Istituto Motori CNR; Ezio Mancaruso, Istituto Motori CNR	Legislation Framework & Future Scenarios Chairpersons: Carloandrea Malvicino, FCA; Federico Millo, Politecnico di Torino	From Well to Wheels to Life Cycle Assessment Chairpersons: Marco Lattore, FCA; Marco Pierini, Università degli Studi di Firenze
17.00 – 17.20	<ul style="list-style-type: none"> The Influence of Fuel Composition and Renewable Fuel Components on the Emissions of a GDI Engine, (2020-37-0025)* Albrecht, M.; Eilts, P. - <i>Technical University of Braunschweig</i> Deeg, H.P.; Schwarzenhal, D. - <i>Porsche AG</i> 	<ul style="list-style-type: none"> Pathway to Global 2025 CO2 Compliance and Cost Benefit Outlook, Subramanian, V. - <i>IHS Automotive</i> 	<ul style="list-style-type: none"> G-Mobility, A Quick Win to Carbon Neutrality, Gerini, A. - <i>NGVA Europe</i>
17.20 – 17.40	<ul style="list-style-type: none"> Natural Gas: Meeting CO2 Emission Targets Here and Now, Mumford, D. - <i>Westport Fuel Systems</i> 	<ul style="list-style-type: none"> A Methodology for Monitoring Real-World CO2 Emissions Compliance in Passenger Vehicles, (2020-37-0034)* Zacharof, N.; Doulgeris, S.; Myrsinias, I.; Toumasatos, Z.; Dimaratos, A. and Samaras, Z. - <i>Aristotle University of Thessaloniki</i> Dornoff, J. and Mock, P. - <i>International Council On Clean Transport</i> Fontaras, G. - <i>European Commission Joint Research</i> Kolokotronis, D. - <i>University of Western Macedonia</i> 	<ul style="list-style-type: none"> Assessment of the Potential of Alternative Powertrain Technologies for Replacement of Fossil Fuels in Switzerland, Eggenschwiler, P. D. - <i>EMPA</i>
17.40 – 18.00	<ul style="list-style-type: none"> Fuel Molecular Structure Detection Using Smart On Board MicroIR Sensor For Combustion Control and CO2 Reduction, Lunati, A. - <i>SP3H</i> 	<p style="text-align: center;">Lightweighting Chairperson: Giovanni Belingardi, Politecnico di Torino</p> <ul style="list-style-type: none"> Design and Sustainability Assessment of Lightweight Concept for an Automotive Car Module, (2020-37-0033)* Del Pero, F.; Delogu, M. and Pierini, M. - <i>University of Florence</i> Kerschbaum, M. - <i>Toyota Motor Europe</i> Toelle, J. - <i>Benteler Automotive</i> 	<ul style="list-style-type: none"> Potential Contribution of Reuse of Key Components to the Environmental Life-Cycle Performances of Vehicles, Bobba, S.; Maury, T.; Mathieux, F.; Ardente, F.; Marque dos Santos, F. and Pekar, F. - <i>EC - Joint Research Centre (JRC)</i>
18.00 – 18.20	<ul style="list-style-type: none"> CFD Investigation of HVO Sprays and Assessment of its Surrogate Compositions, Goel, P.; Baratta, M.; Chiriches, S. and Misul, D. - <i>Politecnico di Torino</i> 	<ul style="list-style-type: none"> Suspension arm with a polymer-metal hybrid structure, Bernasconi, A.; Mastinu, G. and Prevati, G. - <i>Politecnico di Milano</i> 	<ul style="list-style-type: none"> Future Trends for Sustainability Practice Into Formula E: A Methodological Approach for the LCA of an Electric Motor, Del Pero, F.; Delogu, M. and Pierini, M. - <i>University of Florence</i> De Filippi, R. - <i>Marelli S.p.A.</i>

Sponsored Virtual Corner

Thursday – July 9, 2020

Plenary Opening Keynotes - Chairperson: Thomas Koerfer, FEV

14.00 – 14.20	<ul style="list-style-type: none"> Transport and the European Green Deal, Paquot, A. - <i>DG CLIMA - European Commission</i>
14.20 – 14.40	<ul style="list-style-type: none"> Powertrain Concepts on the path to CO2 neutral Mobility, Sens, M. - <i>IAV</i>
14.40 – 15.00	<ul style="list-style-type: none"> Why Diesel? The contribution of Compression Ignition Engines for CO2 reduction, Boretto, G. - <i>PUNCH Torino</i>
15.00 – 15.20	<ul style="list-style-type: none"> Q&A – Round Table

Break and Sponsored Virtual Corner

Parallel Sessions

	New Powertrain Developments Chairperson: Thomas Koerfer, FEV	Hybridization & Electrification Chairperson: Maurizio Cisternino, PUNCH Torino	Miscellaneous Chairperson: Federico Millo, Politecnico di Torino
15.40 – 16.00	<ul style="list-style-type: none"> Commercial Vehicle System Approach Towards Future Exhaust Emissions and CO2 Regulation Demands, Herrmann, O. - <i>DENSO Automotive Deutschland GmbH</i> 	<ul style="list-style-type: none"> Fuel Consumption and Emission Reduction for Hybrid Electric Vehicles with electrically heated Catalysts, (2020-37-0017)* Hofstetter, J. and Boucharel, P. - <i>Vitesco Technologies</i> Atzler, F. - <i>TU Dresden</i> Wachtmeister, G. - <i>TU Muenchen</i> 	<ul style="list-style-type: none"> Prediction of Driving Cycles by Means of a Co-Simulation Framework for the Evaluation of IC Engine Tailpipe Emissions, (2020-37-0011)* Montenegro, G.; Onorati, A.; D'Errico G.; Cerri, T. and Marinoni, A. - <i>Politecnico di Milano</i> Tziolas, T. and Zingopis, N. - <i>Exothermia SA</i>
16.00 – 16.20	<ul style="list-style-type: none"> Experimental Study of Additive-Manufacturing-Enabled Innovative Diesel Combustion Bowl Features for Achieving Ultra-low Emissions and High Efficiency, (2020-37-0003)* Belgiorno, G.; Boscolo, A.; Dileo, G.; Numidi, F.; Pesce, F. C. and Vassallo, A. - <i>PUNCH Torino</i> Ianniello, R.; Beatrice, C. and Di Blasio, G. - <i>Istituto Motori CNR</i> 	<ul style="list-style-type: none"> Model-Based Comparison of Passive SCR Aftertreatment Systems for Electrified Diesel Applications, (2020-37-0023)* Karamitro, D.; Avgerinos, C.; Skarlis, S. and Koltsakis, G. - <i>Exothermia S.A.</i> Previtero, G. and Bechis, F. - <i>GM Global Propulsion Systems Torino</i> 	<ul style="list-style-type: none"> Cost-effective Zeolite for CO2 Capture from Flue Gases, Davarpanah, E.; Bensaid, S.; Fino, D. and Armandi, M. - <i>Politecnico di Torino</i>
16.20 – 16.40	<ul style="list-style-type: none"> Study of Friction Reduction Potential in Light-Duty Diesel Engines by Lightweight Crankshaft Design Coupled with Low Viscosity Oil, (2020-37-0006)* Mafrici, S. - <i>PUNCH Torino</i> 	<ul style="list-style-type: none"> Impact of Thermal Management of the Three-Way Catalyst on the Energy Efficiency of a P2 Gasoline FHEV, (2020-37-0019)* Benegiamo, M.; Valletta, A. and Carlucci, A. - <i>Università del Salento</i> Mulone, V. - <i>Università di Roma Tor Vergata</i> 	<ul style="list-style-type: none"> The contribution of superfinishing treatments in the automobile world Samadello, G. - <i>Best Finishing</i>

Break and Sponsored Virtual Corner

Parallel Sessions

	New Powertrain Developments Chairperson: Thomas Koerfer, FEV	Hybridization & Electrification Chairperson: Maurizio Cisternino, PUNCH Torino	Miscellaneous Chairperson: Federico Millo, Politecnico di Torino
17.00 – 17.20	<ul style="list-style-type: none"> Physical Modeling of the ICE for Virtual Calibration and Validation on Real Time Platforms forHiL and SiL Environments, Valesano, F. and Schimmel, D. - <i>Gamma Technologies LLC</i> 	<ul style="list-style-type: none"> Multitarget Evaluation of Hybrid Electric Vehicle Powertrain Architectures considering Fuel Economy and Battery Lifetime, (2020-37-0015)* Anselma, P. G. and Belingardi G. - <i>Politecnico di Torino</i> Kollmeyer, P. and Emadi, A. - <i>McMaster University</i> 	<ul style="list-style-type: none"> Balancing conflicting features of electric vehicles according to market requirements and brand characteristics Hofmann, T. - <i>ESI Group</i>
17.20 – 17.40	<ul style="list-style-type: none"> An Innovative Approach to Engine Virtual Calibration Using Real Time Models Integrating Physical and Machine Learning Solutions, Boccardo, G. and Servetto, E. - <i>POWERTECH Engineering S.r.l.</i> Gerlero, I. and Bonansone, M. - <i>Modelway S.r.l.</i> 	<ul style="list-style-type: none"> Plug-in Electric Vehicles fueled with Green Fuels in LTC mode, (2020-37-0026)* Benajes, J.; Garcia, A.; Monsalve-Serrano, J. and Martinez, S. - <i>Universitat Politècnica de Valencia</i> 	<ul style="list-style-type: none"> Pixelated-LEDs Car Headlight Design for Smart Driving and CO2 Reduced Emissions, (2020-37-0018)* Beddar, S.; Millet, J. B. and Alayli, Y. - <i>University of Versailles</i>
17.40 – 18.00	<ul style="list-style-type: none"> A hybrid vehicle Hardware-in-the-Loop system with integrated connectivity and cloud computing Cavina, N.; Brunelli, L. and Capancioni, A. - <i>University of Bologna</i> Caggiano, M.; Casadio, R. and Gonnella, P. - <i>FEV Italia S.r.l.</i> 	<ul style="list-style-type: none"> A Theoretical and Experimental Analysis of the Coulomb Counting Method and Estimation of the Electrified-Vehicles Electricity Balance Over the WLTP, (2020-37-0020)* Tansini, A. and Fontaras, G. - <i>European Commission's Joint Research Centre</i> Millo, F. - <i>Politecnico di Torino</i> 	

18.00 – 18.20	Conference Closing Remarks - Chairpersons: Carloandrea Malvicino, FCA; Federico Millo, Politecnico di Torino		
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