

CO₂ Reduction for Transportation Systems Conference *Digital* Preliminary Programme

| Tuesday - July 7, 2020 | | | |
|------------------------------------|---|--|--|
| Opening Welcome Address | | | |
| 14.00 – 14.10 | <p>Federico Millo, Sae International Torino Section Marco Stella, ANFIA</p> | | |
| Plenary Opening Keynotes | | | |
| 14.10 – 14.30 | <ul style="list-style-type: none"> Negative Emission Vehicles – Regulatory and Technical Drivers for Near-Zero Tailpipe Emissions, A. Joshi – Corning Inc. | | |
| 14.30 – 14.50 | <ul style="list-style-type: none"> The EU Green Deal: opportunities and challenges, P. Dolejsi – ACEA | | |
| 14.50 – 15.10 | <ul style="list-style-type: none"> RenewableEnergy Vectors in Transportation, C. Schernus – FEV EARPA | | |
| 15.10 – 15.25 | <ul style="list-style-type: none"> Q&A – Round Table | | |
| Break and Sponsored Virtual Corner | | | |
| Parallel Sessions | | | |
| | New Powertrain Developments | Hybridization & Electrification | Aero & Thermal Management |
| 15.40 – 16.00 | <ul style="list-style-type: none"> Heavy Duty Alternative Fuels Engines: Challenges & Technologies Trends, S. Giordana - FTP 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)* G. DiPierro, E. Galvagno , G. Mari , F. Millo and M. Velardocchia - Politecnico di Torino Alessandro Perazzo - FEV Group GmbH | <ul style="list-style-type: none"> Heat Pumps for BEVs: Architectures and Performance Analysis, (2020-37-0030)* W. Ferraris, F. Bettoja, M. Casella, M. Rostagno and A. Tancredi - Centro Ricerche Fiat SCpA |
| 16.00 – 16.20 | <ul style="list-style-type: none"> Application of a Passive Pre-Chamber Ignition System as an Enabler for Increased Efficiency Across a Range of Hybrid and Conventional Powertrains, M. Bassett, A. Cooper , A. Harrington , B. Hibberd and S. Reader - 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)* V. Mangeruga , M. Giacopini, S. Barbieri and M. Russo - 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, C. Massano, A. Fucà, L. Sorrentino and D. Vitali - DENSO Thermal Systems Spa |
| 16.20 – 16.40 | <ul style="list-style-type: none"> Effect of Prechamber on Exhaust Emission and Efficiency of a SI Small Engine Fuelled with Gaseous and Liquid Fuels, (2020-37-0035)* P. Sementa, F. Catapano, S. Di Iorio, M. Todino and B.M. Vaglieco - Istituto Motori CNR | <ul style="list-style-type: none"> A Power Split Hybrid Propulsion System for Vehicles with Gearbox, (2020-37-0014)* L. De Simio , M. Gambino and S. Iannaccone - Istituto Motori CNR | <ul style="list-style-type: none"> Next-Generation Refrigerant and Air Conditioner System Choice for Internal Combustion, Hybrid and Electric Vehicles, (2020-37-0029)* K. Taddonio, S. O. Andersen and N. Sherman - IGSD S. Kapoor and P. V. Nagarhalli - Tata Motors Ltd J. Chen - Jiaotong University S. Chowdhury and T. Craig - Mahle Behr Troy Inc C. Malvicino - FCA ITALY S.p.A. W. Ferraris - Centro Ricerche Fiat SCpA J. Hu - Peking University |
| Break and Sponsored Virtual Corner | | | |
| Parallel Sessions | | | |
| | New Powertrain Developments | Hybridization & Electrification | Aero & Thermal Management |
| 16.50 – 17.10 | <ul style="list-style-type: none"> Numerical and Experimental Assessment of Knock Mitigation Potential of Port Water Injection In a Turbocharged Spark Ignition Engine, F. Gullino, F. Millo and L. Rolando - Politecnico di Torino | <ul style="list-style-type: none"> Turbocharger Electrification: a Technology Enabler for CO2 Emission Reductionn G. Iosifidis - 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)* A. A. Piovano, G. Scantamburlo, M. Quaglino and M. Gautero - FCA ITALY S.p.A. |
| 17.10 – 17.30 | <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) * A. Vacca, F. Cupo, Marco Chiodi and Michael Bargende - FKFS M. Khosravi and O. Berkemeier - Ford Werke GmbH | <ul style="list-style-type: none"> Experimental Evaluation of Steady State Performance of an Automotive Electric Supercharger, (2020-37-0008)* S. Marelli and V. Usai - Università Degli Studi di Genova | <ul style="list-style-type: none"> Robust Design Adjoint Optimization of Automotive Components, G. Karpouzias, P. Geremia, E. De Villiers and T. Schumacher - ENGYS |
| 17.230 – 17.50 | <ul style="list-style-type: none"> A CFD Model of Supercritical Water Injection for ICEs as Energy Recovery System, (2020-37-0001)* A. Cantiani, A. Viggiano and Vinicio Magi - University of Basilicata | <ul style="list-style-type: none"> Comprehensive Virtual Assessment of a 48 V Mild-Hybrid Diesel Passenger Car, A. Zanelli, F. Millo and L. Rolando - Politecnico di Torino | <ul style="list-style-type: none"> Energy Management for Electric Vehicle Application: Energy Demand for Cabin Comfort, (2020-37-0031)* Antonio Tarzia - FCA Italy S.p.A. |
| Sponsored Virtual Corner | | | |

Wednesday - July 8, 2020

Plenary Opening Keynotes

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| 14.00 – 14.20 | <ul style="list-style-type: none"> The Role of CFD in the Development of Future Propulsion Systems, K. Senecal – Convergent Science |
| 14.20 – 14.40 | <ul style="list-style-type: none"> Future propulsion systems suitable for the mass market, M. Bargende - FKFS |
| 14.40 – 15.00 | <ul style="list-style-type: none"> Improving fuel economy through connectivity and automation - the NEXTCAR project, G.Rizzoni – OHIO STATE UNIVERSITY |
| 15.00 – 15.15 | <ul style="list-style-type: none"> Q&A – Round Table |

Break and Sponsored Virtual Corner

Parallel Sessions

| | Alternative & E-Fuels | New Powertrain Developments | Aero & Rolling Resistance |
|---------------|---|---|--|
| 15.30 – 15.50 | <ul style="list-style-type: none"> Hydrogen: The Ultimate Choice for a Real Green Environment, N.Cavedagna – Landi Renzo S.p.A. | <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)* A. Broatch, P. Olmeda J. Martin and A. Dreif - Universitat Politècnica de València | <ul style="list-style-type: none"> Development of an Innovative Method for CFD-based WLPT Tire Modelling, P. Alexias, P. Geremia, E. De Villiers, T. Schumacher – ENGYS |
| 15.50 – 16.10 | <ul style="list-style-type: none"> The Value Chain of LNG Applied on Commercial Vehicles, M. Ferrera – Landi Renzo S.p.A. | <ul style="list-style-type: none"> A Novel Option for direct waste heat recovery from exhaust gases of Internal Combustion Engines, (2020-37-0004)* D. Di Battista, R. Cipollone and R. Carapellucci - Università degli Studi dell'Aquila | <ul style="list-style-type: none"> Aerodynamic Optimization of Rim Design Ensuring Brake Cooling Performance: a CFD Approach, A. Cucca, G. Scantamburlo and L. Lorefice - FCA Italy S.p.A. Luca Miretti – CRF |
| 16.10 – 16.30 | <ul style="list-style-type: none"> Autogas: A Low-Emission Mobility Solution for the Future, F. Rio - Liquid Gas Europe | <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)* F. Fornarelli - DMMM - Politecnico di Bari, GNFM INDAM S. Camporeale - DMMM - Politecnico di Bari V. Magi - Univ. Basilicata, San Diego State Univ. | <ul style="list-style-type: none"> Multidisciplinary Investigation of Truck Platooning, 2020-37-0028)* B. Schnepf, C. Kehrner and C. Maeurer - Altair |

Break and Sponsored Virtual Corner

Parallel Sessions

| | Alternative & E-Fuels | Legislation Framework & Future Scenarios | From Well to Wheels to Life Cycle Assessment |
|---------------|--|--|--|
| 16.40 – 17.00 | <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)* M. Albrecht, P. Eilts - Technical University of Braunschweig H. P. Deeg, D. Schwarzenthal - Porsche AG | <ul style="list-style-type: none"> Pathway to Global 2025 CO2 Compliance and Cost Benefit Outlook, V. Subramanian - IHS Automotive | <ul style="list-style-type: none"> G-Mobility, A Quick Win to Carbon Neutrality, A. Gerini - NGVA Europe |
| 17.00 – 17.20 | <ul style="list-style-type: none"> Natural Gas: Meeting CO2 Emission Targets Here and Now, (2020-37-0024)* David Mumford - Westport Fuel Systems | <ul style="list-style-type: none"> A Methodology for Monitoring Real-World CO2 Emissions Compliance in Passenger Vehicles, (2020-37-0034)* N. Zacharof, S. Doulgeris, I. Myrsinias, Z. Toumasatos, A. Dimaratos, Z. Samaras Aristotle - University of Thessaloniki J. Dornoff and P. Mock - International Council On Clean Transport G. Fontaras - European Commission Joint Research D.Kolokotronis - University of Western Macedonia | <ul style="list-style-type: none"> Potential Contribution of Reuse of Key Components to the Environmental Life-Cycle Performances of Vehicles, S. Bobba, T. Maury, F. Mathieux, F. Ardente, F. Marque dos Santos and F. Pekar - EC - Joint Research Centre (JRC) |
| 17.20 – 17.40 | <ul style="list-style-type: none"> Fuel Molecular Structure Detection Using Smart On Board MicroIR Sensor For Combustion Control and CO2 Reduction, Alain Lunati - SP3H | <h4>Lightweighting</h4> <ul style="list-style-type: none"> Design and Sustainability Assessment of Lightweight Concept for an Automotive Car Module, (2020-37-0033)* F. Del Pero, M. Delogu and M. Pierini - University of Florence M. Kerschbaum - Toyota Motor Europe J. Toelle - Benteler Automotive | <ul style="list-style-type: none"> Future Trends for Sustainability Practice Into Formula E: A Methodological Approach for the LCA of an Electric Motor, M. Pierini - University of Florence |
| 17.40 – 18.00 | <ul style="list-style-type: none"> CFD Investigation of HVO Sprays and Assessment of its Surrogate Compositions, P. Goel, M. Baratta, S. Chiriches and D. Misul - Politecnico di Torino | <ul style="list-style-type: none"> Suspension arm with a polymer-metal hybrid structure, G. Belingardi, A. Scattina - Politecnico di Torino A. Bernasconi, G. Mastinu and G. Prevati - Politecnico di Milano | |

Sponsored Virtual Corner

Thursday – July 9, 2020

Plenary Opening Keynotes

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| 14.00 – 14.20 | <ul style="list-style-type: none"> Powertrain Concepts on the path to CO2 neutral Mobility, M. Sens - IAV |
| 14.20 – 14.40 | <ul style="list-style-type: none"> <i>OEM presentation - TBC</i> |
| 14.40 – 15.00 | <ul style="list-style-type: none"> Why Diesel? The contribution of Compression Ignition Engines for CO2 reduction, G. Boretto - PUNCH Torino |
| 15.00 – 15.15 | <ul style="list-style-type: none"> Q&A – Round Table |

Break and Sponsored Virtual Corner

Parallel Sessions

| | New Powertrain Developments | Hybridization & Electrification | Miscellaneous |
|---------------|--|--|--|
| 15.30 – 15.50 | <ul style="list-style-type: none"> Commercial Vehicle System Approach Towards Future Exhaust Emissions and CO2 Regulation Demands, O. Herrmann - DENSO Automotive Deutschland GmbH | <ul style="list-style-type: none"> Fuel Consumption and Emission Reduction for Hybrid Electric Vehicles with electrically heated Catalysts, (2020-37-0017)* J. Hofstetter and P. Boucharel - Vitesco Technologies F. Atzler - TU Dresden G. Wachtmeister - TU Muenchen | <ul style="list-style-type: none"> Simulation of Driving Cycles by Means of a Co-Simulation Framework for the Prediction of IC Engine Tailpipe Emissions, (2020-37-0011) * G. Montenegro, A. Onorati, G. D'Errico, T. Cerri and Andrea Marinoni - Politecnico di Milano V. Tziolas and N. Zingopis - Exothermia SA |
| 15.50 – 16.10 | <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)* G. Belgiorno, A. Boscolo, G. Dileo, F. Numidi, F. C. Pesce and A. Vassallo - GM Global Propulsion Systems R. Ianniello, C. Beatrice and G. Di Blasio - Istituto Motori CNR | <ul style="list-style-type: none"> Simplified Cost-effective Aftertreatment System for Electrified Diesel Applications, (2020-37-0023)* D. Karamitro, C. Avgerinos, S. Skarlis and G. Koltsakis - Exothermia S.A. G. Previtero and F. Bechis - GM Global Propulsion Systems Torino | <ul style="list-style-type: none"> Cost-effective Zeolite for CO2 Capture from Flue Gases, E. Davarpanah, S. Bensaïd, D. Fino and M. Armandi - Politecnico di Torino |
| 16.10 – 16.30 | <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)* S. Mafrici - GM Global Propulsion Systems Torino | <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)* M. Benegiamo, A.Valletta and A. Carlucci - Università del Salento V. Mulone - Università di Roma Tor Vergata | <ul style="list-style-type: none"> Pixelated-LEDs Car Headlight Design for Smart Driving and CO2 Reduced Emissions, (2020-37-0018)* S. Beddar, J.-B. Millet and Y. Alayli - University of Versailles |

Break and Sponsored Virtual Corner

Parallel Sessions

| | New Powertrain Developments | Hybridization & Electrification | |
|---------------|---|---|--|
| 16.40 – 17.00 | <ul style="list-style-type: none"> Physical Modeling of the ICE for Virtual Calibration and Validation on Real Time Platforms forHIL and SIL Environments, (20CO-0070)* F. Valesano and D. Schimmel - Gamma Technologies LLC | <ul style="list-style-type: none"> Multitarget Evaluation of Hybrid Electric Vehicle Powertrain Architectures considering Fuel Economy and Battery Lifetime, (2020-37-0015)* P. G. Anselma, G. Belingardi - Politecnico di Torino P. Kollmeyer, A. Emadi - McMaster University | |
| 17.00 – 17.20 | <ul style="list-style-type: none"> An Innovative Approach to Engine Virtual Calibration Using Real Time Models Integrating Physical and Machine Learning Solutions, (20CO-0043)* G. Boccardo and E. Servetto - POWERTECH Engineering S.r.l. I. Gerlero and M. Bonansone - Modelway S.r.l. | <ul style="list-style-type: none"> Plug-in Electric Vehicles fueled with Green Fuels in LTC mode, (2020-37-0026)* J. Benajes, A. Garcia, J. Monsalve-Serrano and S. Martinez - Universitat Politècnica de Valencia | |
| 17.20 – 17.40 | <ul style="list-style-type: none"> A hybrid vehicle Hardware-in-the-Loop system with integrated connectivity and cloud computing N. Cavina, L. Brunelli and A. Capancioni - University of Bologna M. Caggiano, R. Casadio and P. Gonnella - FEV Italia S.r.l. | <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)* A. Tansini and G. Fontaras - European Commission's Joint Research Centre F. Millo - Politecnico di Torino | |

Conference Closing Remarks

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| 17.40 – 18.00 | |
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