SAE NAPLES
An SAE International Section

ICE2019

14th International Conference on Engines & Vehicles

Final Program

September 15 - 19, 2019 @ Capri, Napoli

Monday 16 September

9:00	***Registration*** ***Opening Ceremony*** ***Cesare Pianese*** *SAENA President &* ***Gerardo Valentino*** *Istituto Motori Director* ***Zoran Filipi*** *&* ***Bianca M. Vaglieco*** *Conference Chairs*	
9:20	**Opening speech- David Schutt** *CEO of SAE Enterprise (USA)* **/ Chairperson: Cesare Pianese**	
10:00	**Propulsion system for future mobility FCA view- Maria Grazia Lisbona,** FCA group (Italy) **/ Chairperson: David Schutt**	
10:40	**Coffee break**	
	Room Teatro	***Room Donna Lucia***
	ICENA101 - 0-D and 1-D Modeling and Numerics **Chairpersons: Angelo Onorati, Federico Millo**	**ICENA403 - Emissions Measurement and Testing** **Chairpersons: Antonino La Rocca, Danilo Engelmann**
11:10	Towards An Integral Combustion Model for Model-based Control of PCCI Engines **(2019-24-0001)** **Abhishek Y. Deshmukh, Metin Korkmaz, Marco Davidovic, Dominik Goeb, Carsten Giefer, Mathis Bode, Liming Cai and Heinz Pitsch,** RWTH Aachen University	Emission Factors Evaluation in the RDE Context by a Multivariate Statistical Approach **(2019-24-0152)** **Livia Della Ragione and Giovanni Meccariello,** Istituto Motori CNR**; Marianeve Costabile,** MCA Engineering
11:30	Development and Validation of a Control-Oriented Analytic Engine Simulator **(2019-24-0002)** **Alessandro Brusa, Nicolò Cavina and Nahuel Rojo,** University of Bologna**; Matteo Cucchi and Nicola Silvestri,** FERRARI S.p.A.	Sub-23 nm Particulate Emissions from a Highly Boosted GDI Engine **(2019-24-0153)** **Felix Leach,** University of Oxford**; Andrew Lewis, Sam Akehurst and James Turner,** University of Bath**; David Richardson,** Jaguar Land Rover Limited
11:50	Valve Flow Coefficients under Engine Operation Conditions: Piston Influence and Flow Pulsation **(2019-24-0003)** **Sven Fasse**, University of Stuttgart**; Michael Grill,** FKFS**; Michael Bargende,** University of Stuttgart	A sampling and conditioning particle system for solid particle measurements down to 10 nm **(2019-24-0154)** **Leonidas Chasapidis, Anastasios D. Melas, Apostolos Tsakis, Dimitrios Zarvalis and Athanasios Konstandopoulos,** CERTH/CPERI
12:10	Intake Manifold Primary Trumpet Tuning Options for Fuel Flow Limited High Performance ICE **(2019-24-0005)** **Angelo Rosetti and Corrado Iotti,** Ferrari Gestione Sportiva**; Giuseppe Cantore,** University of Modena e Reggio Emilia	Analysis of the Effect of the Sampling Conditions on the Sub-23nm Particles Emitted by a Small Displacement PFI and DI SI Engines Fuelled with Gasoline and Ethanol **(2019-24-0155)** **Silvana Di Iorio, Francesco Catapano and Bianca Maria Vaglieco**, Istituto Motori CNR; **Gaetano Continillo and Gianmarco Petito,** Università degli Studi del Sannio
12:30	Development of a Physically/Chemically Based Approach for 2-Stage Ignition Delay Calculation in Medium Speed Dual-Fuel Engines **(2019-24-0068)** **Jelto Frerichs and Peter Eilts,** Technische Universität Braunschweig	Analysis of the Emission Conversion Performance of Gasoline Particulate Filters Over Lifetime **(2019-24-0156)** **Stefan Sterlepper, Johannes Claßen and Stefan Pischinger,** RWTH Aachen University**; Christof Schernus, Michael Görgen, Jim Cox, Martin Nijs and Johannes Scharf**, FEV Europe GmbH**; Dominik Rose and Thorsten Boger,** Corning GmbH
12:50	Exploring and Modeling the Chemical Effect of a Cetane Booster Additive in a Low- Octane Gasoline Fuel **(2019-24-0069)** **Minh Duy LE, Mickaël Matrat and Arij Ben Amara,** IFP Energies Nouvelles**; Fabrice Foucher, Bruno Moreau and Yi Yu,** PRISME**,** Universite d'Orleans**; Pierre-Alexandre Glaude,** LRGP, CNRS-Université de Lorraine	Comparison of Different Particulate Measurement Techniques at a Heavy Duty Diesel Engine Test Bed **(2019-24-0158)** **Tobias Michler, Johannes Dörnhöfer, Daniel Erforth, Alexander Heinz, Kai Scheiber, Philipp Weber, Niclas Nowak, Heiko Kubach, Jörg Meyer PhD, Thomas Koch and Achim Dittler**, KIT - Karlsruhe Institute of Technology
13:10	**Lunch break**	

Monday 16 September

	Room Capri	*Room Rotonda*
	ICENA601 - Advanced Hybrid and Electric Vehicle Powertrains **Chairpersons: Ivan Arsie, Laura Tribioli**	**ICENA501 - CI & SI Engines Technology** **Chairpersons: Paolo Sementa, Christian Hennes**
11:10	Modelling and control of a novel clutchless multiple-speed transmission for electric vehicles **(2019-24-0063)** **Ludovica Malafronte,** University of Salerno**; Mauro Grandone, Alberto Lega and Michele Pennese,** Mecaprom SRL**; Cesare Pianese**, University of Salerno	Validity of a Steady-State Friction Model for Determining CO2 Emissions in Transient Driving Cycles **(2019-24-0054)** **Tobias Funk, Holger Ehnis and Reiner Kuenzel,** MAHLE International GmbH**; Michael Bargende,** IVK, University of Stuttgart
11:30	A comprehensive hybrid vehicle model for energetic analyses on different powertrain architectures **(2019-24-0064)** **Davide Cervone, Bernardo Sessa, Ivan Arsie, Cesare Pianese and Pierpaolo Polverino,** Università degli Studi di Salerno	Smart cylinder deactivation strategies to improve fuel economy and pollutant emissions for Diesel-powered applications **(2019-24-0055)** **Mauro Scassa,** FEV Italia SRL**; Thomas Körfer,** FEV Group GmbH**; S Kevin Chen, John Fuerst and Matthew Younkins,** Tula Technology Inc**; Marco Nencioni and Shino George,** FEV Italia SRL
11:50	A Mild Hybrid SIDI Turbo Passenger Car Engine with Rankine Waste Heat Recovery **(2019-24-0194)** **Fredrik B. Ekström, Ola Rolandson, Soren Eriksson, Christer Odenmarck, Mattias Svensson, Andreas Eriksson and Hans Olsen,** Volvo Car Corporation	Experimental Investigations on Engine-Out Emissions Sensitivity to Fuel Injection Pressure of a High-Performance DISI Single Cylinder Engine **(2019-24-0169)** **Vincenzo Rossi, Nicola Silvestri and Massimo Medda,** Ferrari S.p.A.
12:10	Synergistic effect of millerization, electric supercharging and 48V mild hybrid system **(2019-24-0195)** **Heechang Oh, Jonghyeok Lee, Seungwoo Hong and Donghee Han,** Hyundai Motor Company**; Hanyong Park, Jongsuk Lim and Dowan Kim,** Continental Automotive Systems	A Simplified Methodology for the Analysis of the Cylinder Liner Bore Distortion: Finite Element Analyses and Experimental Validations **(2019-24-0164)** **Saverio Giulio Barbieri, Matteo Giacopini, Valerio Mangeruga and Luigi Bianco,** University of Modena and Reggio Emilia**; Luca Nicolò Mastrandrea,** Ferrari SpA
12:30	Hybrid Powertrain Calibration Techniques **(2019-24-0196)** **Ernst Winklhofer, Alois Hirsch, Harald Philipp, Michael Trifterer and Manuel Berglez,** AVL LIST GmbH	Improvement in Thermal Efficiency of a Diesel Engine by Homogenized Flame Distribution **(2019-24-0166)** **Kenji Enya and Noboru Uchida,** New Ace Inst. Co., Ltd
12:50	Hybrid Powertrain Technology Assessment Through an Integrated Simulation Approach **(2019-24-0198)** **Joshua Dalby and Fabien Fiquet and Andrew Ward,** Ricardo UK Ltd; **Harald Stoffels,** Ford Werke GmbH**; Richard Burke,** University of Bath**; Naroa Zaldua-Moreno, Lorenzo Pace** Continental**; Matthias Neveling, Schaeffler; Yang Liu,** University Of Bath	Piston Bowl Geometry Effects on Combustion Development in a high-speed light-duty Diesel Engine **(2019-24-0167)** **Federico Perini, Rolf Reitz,** University of Wisconsin-Madison; **Stephen Busch and Kan Zha,** Sandia National Laboratories; **Eric Kurtz,** Ford Motor Company
13:10		The Szorenyi Three-Chamber Rotary Engine concept **(2019-24-0168)** **Peter King**, Partner Rotary Engine Development Agency
13:30	**Lunch break**	

Monday 16 September

14:30	**The path to CO_2-neutral mobility in 2050-Marc Sens,** IAV (Germany) **/ Chairperson: Federico Millo**	
15:10	**Coffee break**	
	Room Teatro	***Room Donna Lucia***
	ICENA101 - 0-D and 1-D Modeling and Numerics **Chairpersons: Marc Sens, Christof Schernus**	**ICENA403 - Emissions Measurement and Testing** **Chairpersons: Antonino La Rocca, Danilo Engelmann**
15:40	Driving Cycle and Elasticity Manoeuvre Simulation of a Small SUV Featuring an Electrically Boosted 1.0 L Gasoline Engine **(2019-24-0070)** **Alessandro Zanelli and Federico Millo,** Politecnico di Torino**;** **Marco Barbolini,** Röchling Automotive	Assessing Exhaust Toxicity with Biological Detector: Configuration of Portable Air-Liquid Interface Human Lung Cell Model Exposure System, Sampling Train And Test Conditions. **(2019-24-0050)** **Michal Vojtisek-Lom, Rajesh Rameswaran and Kalpita Kumar Praharaj** Czech Technical University in Prague**; Martin Pechout and David Macoun,** Czech University of Life Sciences**; Tereza Cervena, Jan Topinka and Pavel Rossner,** Institute of Experimental Medicine
16:00	Ignition Delay Model of Multiple Injections in CI Engines **(2019-24-0071)** **Youngbok Lee, Seungha Lee and Kyoungdoug Min,** Seoul National University	Semi-Volatile Organic Compounds from a Combined Dual Port Injection/Direct-Injection Technology Light-Duty Gasoline Vehicle **(2019-24-0051)** **Robert Fanick and Svitlana Kroll,** Southwest Research Institute
16:20	An Integrated Experimental and Numerical Methodology for Plug-in Hybrid Electric Vehicles 0D Modelling **(2019-24-0072)** **Giuseppe Di Pierro and Federico Millo,** Politecnico di Torino**;** **Alessandro Tansini and Georgios Fontaras,** European Commission Joint Research**; Mauro Scassa,** FEV Italia	Update on SUREAL-23 Project: Understanding and Measuring Sub-23 nm Particle Emissions from Direct Injection Engines **(oral only)** **Eleni Papaioannou, Dimitrios Zarvalis, Penelope Baltzopoulou, Leonidas Chasapidis, Anastasios D. Melas, Danis Deloglou, Emmanouil Daskalos, Athanasios Konstandopoulos,** CERTH/CPERI**;** **Stephane Zinola,** IFP Energies nouvelles, Institut Carnot IFPEN TE**; Mickael Leblanc,** IFP **Energies Nouvelles; Giovanna Nicol,** C.R.F. S.C.p.A**; Bianca Maria Vaglieco, Silvana Di Iorio**, Istituto Motori CNR**;** **Martin Fierz, Heinz Burtscher,** FHNW
16:40	Experimental Investigation and Modeling of Ignition and Early Flame Propagation Stages in Operating Conditions Representative of Modern High Efficiency Spark Ignition Engines **(2019-24-0073)** **Alessio Dulbecco and Gregory Font,** IFP Energies Nouvelles**,** Institut Carnot IFPEN TE**; Fabrice Foucher and Pierre Brequigny,** Université D'Orléans	Periodic Inspection of Particle Emissions from Vehicles **(oral only)** **Heinz Burtscher,** FHNW; **Andreas Mayer,** TTM**;** **Thomas Lutz,** ETHZ
17:00	Development of a dedicated CNG three-way catalyst model in 1-D simulation platforms **(2019-24-0074)** **Dario Di Maio,** Istituto Motori CNR - Univ. "Parthenope"**; Carlo Beatrice and Valentina Fraioli,** Istituto Motori CNR**; Stefano Golini and Francesco Giovanni Rutigliano,** FPT Industrial SpA	Engine exhaust particle measurement: sampling and size distribution **(oral only)** **Stefano Somaschi** Luchsinger
17:20	Performance and Emissions of an Advanced Multi-Cylinder SI Engine Operating in Ultra-Lean Conditions **(2019-24-0075)** **Fabio Bozza, Daniela Tufano, Enrica Malfi and Luigi Teodosio,** University of Naples "Federico II"**; Cédric LIBERT,** Renault SAS**;** **Vincenzo De Bellis**, University of Naples "Federico II"	
17:40	Virtual Chassis Dyno for Diesel Engine Tuning and Calibration **(2019-24-0076) Damien Maroteaux,** RENAULT SAS	
18:00	A Study for The Review and Consolidation of The Strategic Lines of Research and Innovation in Automotive Sector in Campania Region **(oral only)** **Gianfranco Rizzo,** Università degli Studi di Salerno	
18:20	**SAE-NA Naples Section meeting**	
20:30	**Informal dinner**	

Monday 16 September

	Room Capri	*Room Rotonda*
	ICENA604 - Range Extending Engines **Chairperson: Ivan Arsie**	**ICENA502 - Engine NVH** **Chairpersons: Antonio Torregrosa, Daniela Siano**
15:40	One-Dimensional Modeling of a Thermochemical Recuperation Scheme for Improving Spark-Ignition Range Extender Engine Efficiency **(2019-24-0066)** **William F. Northrop, Darrick Zarling,** Univ. of Minnesota-Twin Cities	Imaging and Vibro-Acoustic Diagnostic Techniques Comparison for a GDI Fuel Injector **(2019-24-0058)** **Luigi Allocca, Daniela Siano, Alessandro Montanaro and Maria Antonietta Panza,** Istituto Motori CNR
	ICENA601 - Advanced Hybrid and Electric Vehicle Powertrains **Chairpersons: Ivan Arsie, Laura Tribioli**	FEM Reduced Modelling for the Vibrational Characterization of a Petrol Engine **(2019-24-0059)** **Roberto Guglielmo Citarella, Venanzio Giannella** University of Salerno**; Enrico Armentani**, University of Naples**; Antonio Parente and Mauro Pirelli,** FCA Italy S.p.A.
16:00	Simultaneous Optimization of Real-Time Control Strategies and Powertrain Design for Fuel Cell Hybrid Vehicles **(2019-24-0199)** **Marco Sorrentino and Dario Capaldo,** University of Salerno	
16:20	Development of A Hybrid Power Unit for Formula SAE Application: ICE CFD-1D Optimization and Vehicle Lap Simulation **(2019-24-0200)** **Enrico Mattarelli, Carlo Alberto Rinaldini, Francesco Scrignoli and Valerio Mangeruga,** UNIMORE	A simple approach for the estimation of the exhaust noise source at the valves **(2019-24-0174)** **Antonio J. Torregrosa and Pablo Olmeda,** CMT-Universitàt Politècnica de València**; Jean-luc Adam, Florent Morin and Maxime Dubarry,** Renault SAS
16:40	The Methane Fuel Based Turbocharged Direct Injection Engine in a Hybrid Powertrain – An Efficient Synergy **(2019-24-0201)** **Harald Stoffels and Carsten Weber, Ford-Werke GmbH; Friedrich Graf, Stefan Lauer and Jan Ehrhard,** Continental Powertrain**; Manuel Moretti**, LuK GmbH & Co**.** KG**; Matthias Neveling,** Schaeffler Technologies AG & Co. KG	Acoustic Optimization of an IC Engine Cylinder Head Cover For Automotive Application With Numerical-Experimental Correlation **(oral only)** **Enrico Armentani,** Universita' degli Studi di Napoli Federico II **Pellegrino Curcio, Antonio Ferrara,** DACA-I
17:00	Potential of Electrification Applied to Non-Road Diesel Engines **(2019-24-0202)** **Enrico Mattarelli, Carlo Alberto Rinaldini and Francesco Scrignoli,** UNIMORE**; Paolo Fregni and Simone Gaioli,** Kohler Engines**; Giovanni Franceschini and Davide Barater,** UNIMORE	**ICENA505 - Alternative Engine Architectures** **Chairpersons: Carlo Beatrice, Fabien Redon**
		The Ultra Low Emissions Potential of the Recuperated Split Cycle Combustion System **(2019-24-0189)** **Robert E. Morgan, Christopher Lenartowicz, Konstantina Vogiatzaki, Simon Harvey and David Kennaird,** University of Brighton**; Nicholas Owen,** Dolphin N2 Ltd**; Rhys Pickett and Andrew Atkins,** Ricardo UK Ltd
17:20	Experimental Activities on a PEFC Based Powertrain For A Hybrid Electric Minibus **(oral only)** **Laura Andaloro, Giuseppe Napoli, Salvatore Micari,** CNR ITAE**; Petronilla Fragiacomo,** DIMEG, University of Calabria**; Vincenzo Antonucci,** CNR ITAE	A practical Recuperated Split Cycle engine for low emissions and high efficiency **(2019-24-0190)** **Nicholas Owen and Fabrizio Treccarichi**, Dolphin N2 Ltd; **Andrew Atkins and Anoop Selvaraj,** Ricardo UK Ltd; **David Barnes and Tanzi Besant, Hiflux Limited; Robert Morgan,** University of Brighton
17:40	An Integrated Approach For E-Powertrains Early Validation **(oral only)** **Marmorato Giulio,** AVL Italy	
18:00	Engine Concepts for Future Electrified Powertrains **(oral only)** **Kapus** AVL LIST GmbH	
18:20	**SAE-NA Naples Section meeting**	
20:30	**Informal dinner**	

Tuesday 17 September

9:00	**New Mobility, New Powertrains and the Role of the IC Engine - Michael Berube,** DoE Vehicle Technologies Office (USA) **/ Chairperson: Zoran Filipi**	
9:40	**Coffee break**	
	Room Teatro	***Room Donna Lucia***
	ICENA102 - Multi-Dimensional Engine Modeling **Chairpersons: Xandra Margot, Michela Costa**	**ICENA303 - Alternative and Advanced Fuels** **Chairpersons: Vincenzo Mulone, P. Carlucci**
10:10	CFD Analysis and Knock Prediction within the Crevices of Piston to Liner Fireland of a High Performance ICE **(2019-24-0006)** **Angelo Rosetti, Corrado Iotti and Andrea Bedogni,** Ferrari Gestione Sportiva**; Giuseppe Cantore, Stefano Fontanesi and Fabio Berni,** University of Modena e Reggio Emilia	Combustion and Emission Characteristics of a Compression Ignition Engine Fueled with Diesel-LPG Blends **(2019-24-0038)** **Renato Marialto, Luigi Sequino, Gabriele Di Blasio, Carlo Beatrice and Roberto Ianniello,** Istituto Motori CNR**; Massimo Cardone,** Università di Napoli**; Gustavo Fontana,** Università di Cassino
10:30	Numerical Investigation of Methanol Ignition Sequence in an Optical PPC Engine with Multiple Injection Strategies **(2019-24-0007)** **Mateusz Pucilowski and Hesameddin Fatehi,** Lund University**; Mehdi Jangi,** Birmingham University**; Sara Lonn, Alexios Matamis, Oivind Andersson, Mattias Richter and Xue-Song Bai,** Lund University	Emissions Optimization Potential of a Diesel Engine Running on HVO: A Combined Experimental and Simulation Investigation **(2019-24-0039)** **Dimitriadis Athanasios, Bezergianni Stella,** Centre for Research & Technology Hellas (CERTH); **Dimaratos Athanasios, Doulgeris Stylianos and Zissis Samaras,** Aristotle University of Thessaloniki
10:50	Effect of Methane Number in a Diesel Engine Converted to Natural Gas Spark Ignition **(2019-24-0008)** **Luca Ambrogi,** Università degli Studi di Perugia**; Jinlong Liu, West Virginia Univ; Michele Battistoni,** Università degli Studi di Perugia**; Cosmin Dumitrescu,** West Virginia Univ.**; Lorenzo Gasbarro,** Università degli Studi di Perugia	Biogenous Ethanol: CO_2 Savings and Operation in a Dual-Fuel Designed Diesel Engine **(2019-24-0040)** **Aleksandar Damyanov and Peter Hofmann,** Vienna University of Technology
11:10	Effects of In-Cylinder Flow Structures on Soot Formation and Oxidation in a Swirl-Supported Light-Duty Diesel Engine **(2019-24-0009)** **Hesameddin Fatehi,** Lund University**; Håkan Persson,** Volvo Cars Corporation**; Tommaso Lucchini,** Politecnico di Milano**; Mattias Ljungqvist,** Volvo Cars Corporation**; Oivind Andersson,** Lund Uni	Performance and Emissions of an Ammonia-Fueled SI Engine with Hydrogen Enrichment **(2019-24-0137)** **Charles Lhuillier, Pierre Brequigny,** Université D'Orleans**; Francesco Contino,** Vrije Universiteit Brussel**; Christine Rousselle,** Université D'Orleans
11:30	Large Eddy Simulation of an Ignition Front in a Heavy Duty Partially Premixed Combustion Engine **(2019-24-0010)** **Christian Ibron, Hesameddin Fatehi, Mehdi Jangi and Xue-Song Bai,** Lund University	Experimental investigation of combustion timing of HVO, RME and diesel fuel in a Euro6 car engine during transient driving cycles **(2019-24-0138)** **Martin Pechout and David Macoun,** Czech University of Live Sciences
11:50	A Computationally Efficient Progress Variable Approach for In-Cylinder Combustion and Emissions Simulations **(2019-24-0011)** **Andrea Matrisciano,** Chalmers Univ. of Technology**,** LOGE AB**; Corinna Netzer and Adina Werner,** Brandenburg Univ. of Technology**; Anders Borg,** LOGE AB**; Lars Seidel,** LOGE GmbH**; Fabian Mauss,** Brandenburg Univ. of Technology	Characterization of Deposits Collected From a Plugged Fuel Filter **(2019-24-0140)** **Botond Csontos, Hanna Bernemyr and Anders Christiansen Erlandsson**, KTH Royal Institute of Technology**; Oscar Forsberg, Mayte Pach and Henrik Hittig,** Scania CV AB
12:10	Multi-Level Modeling of Real Syngas Combustion in a Spark Ignition Engine and Experimental Validation **(2019-24-0012)** **Carmine Caputo,** University of Rome "Tor Vergata"**; Domenico Cirillo**, C.M.D. S.p.A.**; Daniele Piazzullo, Michela Costa and Gabriele Di Blasio,** Istituto Motori CNR**; Maria Di Palma,** University "Parthenope"**; Milan Vujanović,** University of Zagreb	
12:30	Large Eddy Simulation of Ignition and Combustion Stability in a Lean SI Optical Access Engine **(2019-24-0087)** **Jacopo Zembi, Francesco Mariani and Michele Battistoni,** Università degli Studi di Perugia	
12:50	Overview of SAE International's Activities in Hybrid/Electric Propulsion Technology **(oral only)** **David Kurywchak,** Director Global Sales SAE INTERNATIONAL	
13:10	**Lunch break**	

Tuesday 17 September

	Room Capri	*Room Rotonda*
	ICENA201 - Combustion In Spark Ignition Engines **Chairpersons: Jamie Turner, Simona Silvia Merola**	**ICENA401 - Exhaust Emission Control Systems** **Chairpersons: Cary Henry, Vinay Premnath**
10:10	Experimental and Numerical Analysis Of a Pre-Chamber Turbulent Jet Ignition Combustion System **(2019-24-0018)** **Elia Distaso, Riccardo Amirante and Egidio Cassone,** Politecnico di Bari**; Francesco Catapano,** Istituto Motori CNR**; Pietro De Palma,** Politecnico di Bari**; Paolo Sementa,** Istituto Motori CNR**; Paolo Tamburrano**	Experimental Tests on the Feasibility of Passive Regeneration in a Catalytic DPF at the Exhaust of a Light-Duty Diesel Engine **(2019-24-0045)** **Bruno Rossomando, Ivan Arsie, Eugenio Meloni, Vincenzo Palma and Cesare Pianese,** Università di Salerno
10:30	Analysis of Water Injection Strategies to Exploit the Thermodynamic Effects of Water in Gasoline Engines by Means of a 3D-CFD Virtual Test Bench **(2019-24-0102)** **Antonino Vacca and Michael Bargende,** IVK - University of Stuttgart**; Marco Chiodi,** FKFS Stuttgart**; Tim Franken and Corinna Netzer,** Brandenburg Univ of Technology**; Maike Sophie Gern and Malte Kauf,** Technische Università t Berlin**; André Casal Kulzer,** Porsche AG	Back-Pressure and Fuel Type Effects on Exhaust Gas Oxygen Sensor Readings for a Single Cylinder Spark Ignition Engine Running on Gasoline and Ethanol **(2019-24-0046)** **Adrian Irimescu,** Istituto Motori CNR
10:50	Fuel-Lubricant Interactions on the Propensity for Stochastic Pre-Ignition **(2019-24-0103)** **Derek Splitter, Brian Kaul and James Szybist,** Oak Ridge National Laboratory**; Lake Speed,** Driven Racing Oil**; Bradley Zigler and Jon Luecke,** National Renewable Energy Laboratory	Experimental and Numerical Analysis of Latest Generation Diesel Aftertreatment Systems **(2019-24-0142)** **Francesco Sapio, Federico Millo, Debora Fino, Alessandro Monteverde and Enrico Sartoretti,** Politecnico di Torino**; Andrea Bianco,** Powertech Engineering SRL**; Lucio Postrioti,** Università degli Studi di Perugia**; Alessio Tarabocchia,** Cornaglia SpA**; Giacomo Buitoni and Gabriele Brizi,** STSE s r l
11:10	Ultra-Lean Pre-Chamber Gasoline Engine for Future Hybrid Powertrains **(2019-24-0104)** **David Serrano and Jean-Marc Zaccardi**, IFP Energies nouvelles, Institut Carnot IFPEN TE; **Christoph Müller**, RWTH Aachen University; **Cedric Libert,** Renault S.A.; **Knut Habermann,** FEV Europe GmbH	Optimization of the Exhaust Aftertreatment System of a Heavy Duty Engine by means of Variable Valve Timing **(2019-24-0143)** **Marius Betz and Peter Eilts,** Technische Universität Braunschweig

Tuesday 17 September

	Room Capri	*Room Rotonda*
	ICENA501 - CI & SI Engines Technology **Chairpersons: Paolo Sementa, Christian Hennes**	**ICENA401 - Exhaust Emission Control Systems** **Chairpersons: Cary Henry, Vinay Premnath**
11:30	Study of Friction Optimization Potential for Lubrication Circuits of Light-duty Diesel Engines **(2019-24-0056)** **Salvatore Mafrici, Francesco Barba and Mauro Mattis,** General Motors	Reduction of NOx in a Single Cylinder Diesel Engine Emissions Using Selective Non-Catalytic Reduction (SNCR) with In-Cylinder Injection of Aqueous Urea" **(2019-24-0144)** **Anthony Timpanaro and John Nuszkowski,** University of North Florida
11:50	Experimental Investigation of a Fuelled Prechamber combustion in an Optical Small Displacement SI Methane Engine **(2019-24-0170)** **Paolo Sementa, Francesco Catapano, Silvana Di Iorio and Bianca Maria Vaglieco,** Istituto Motori CNR	Diesel Vehicle with Ultra-low NOx Emissions on the Road **(2019-24-0145)** **Joachim Demuynck, Cecile Favre and Dirk Bosteels,** AECC**; Frank Bunar, Joachim Spitta and Andreas Kuhrt**, IAV
12:10	Possibilities of Wall Heat Transfer Measurements at a Supercharged Euro IV Heavy-Duty Diesel Engine with High EGR-Rates, an In-cylinder Peak Pressure of 250 bar and an Injection Pressure up to 2500 bar **(2019-24-0171)** **Christian Hennes and Jürgen Lehmann,** Daimler AG**; Thomas Koch,** KIT Karlsruhe Institute Of Technology	Strive for Zero Emission Impact from Hybrid Vehicles **(2019-24-0146)** **Mats Laurell,** Volvo Car Corporation**; Lorenzo Pace,** Continental**; Fredrik Ekström,** Volvo Car Corporation**; Katrin Konieczny,** Continental
12:30	Thermal Efficiency Comparison of Different Injector Constellations in a CI Engine **(2019-24-0172)** **Gustav Nyrenstedt, King Abdullah,** Univ. of Science & Tech**.; Kazumasa Watanabe and Kenji Enya,** New Ace Inst Co Ltd; **Hao Shi,** King Abdullah Univ. of Science & Tech**.; Noboru Uchida,** New Ace Inst Co Ltd**; Bengt Johansson,** King Abdullah Univ of Science & Tech	**ICENA405 - Low Temperature Catalysis** **Chairperson: Panayotis Dimopoulos Eggenschwiler** Analysis of TWC Operation Characteristics in a Euro6 Gasoline Light Duty Vehicle **(2019-24-0162)** **Viola Papetti and Panayotis Dimopoulos Eggenschwiler, Empa; Vasiliki Emmanouil,** Exothermia SA**; Grigorios Koltsakis,** Aristotle University Thessaloniki
12:50	Water Injection Contribution to Enabling Stoichiometric Air-to-Fuel Ratio Operation at Rated Power Conditions of a High-Performance DISI Single Cylinder Engine **(2019-24-0173)** **Stefano Paltrinieri, Fabio Mortellaro and Nicola Silvestri,** Ferrari SpA**; Luciano Rolando,** Politecnico di Torino**; Massimo Medda and Daire Corrigan,** Ferrari SpA	Heat Transfer Characterization of Catalytic Converter Substrates During Warm-Up **(2019-24-0163)** **Viola Papetti and Panayotis Dimopoulos Eggenschwiler,** Empa**; Augusto Della Torre, Gianluca Montenegro and Angelo Onorati,** Politecnico di Milano**; Grigorios Koltsakis,** Aristotle University Thessaloniki
13:10	**Lunch break**	

Tuesday 17 September

14:00	**Automotive Emissions Control: Challenges from real world performance regulatory requirements - Zissis Samaras,** Aristotle University (Greece) **/ Chairperson: Angelo Onorati**	
14:40	**Coffee break**	
	Room Teatro	***Room Donna Lucia***
	ICENA101 - 0-D and 1-D Modeling and Numerics **Chairpersons: Federico Millo, Luciano Rolando**	**ICENA202 - Mixing Controlled Combustion in CI Engines** **Chairpersons: Benjamin Lawler, Peter Eilts**
15:10	Modelling of a Spark Ignition Engine with Turbo-Generator for Energy Recovery **(2019-24-0084)** **Fabio Arminio,** NETCOM group -Napoli**; Maria Cristina Cameretti,** Università di Napoli Federico II**; Luigi De Simio and Sabato Iannaccone,** Istituto Motori CNR**; Teodoro Terzo,** Università di Napoli Federico II	Numerical and Experimental Investigation into Brake Thermal Efficiency Optimum Heat Release Rate for a Diesel Engine **(2019-24-0109)** **Noboru Uchida, Kazumasa Watanabe and Kenji Enya** New Ace Inst. Co., Ltd.**; Jeremy GALPIN, Jean-Marc Zaccardi and Florence Duffour,** IFP Energies Nouvelles
15:30	Experimental measurement of roughness data and evaluation of Greenwood/Tripp parameters for the elastohydrodynamic analysis of a conrod small-end/piston pin coupling. **(2019-24-0081)** **Andrea Ferretti and Matteo Giacopini,** University of Modena and Reggio Emilia**; Daniele Dini,** Imperial College London**; Stefano Fantoni,** Ducati Motor Holding S.P.A.	Compression Ratio and Intake Air Temperature Effect on the Fuel Flexibility of Compression Ignition Engine **(2019-24-0110)** **Abdullah S. AlRamadan, Moez Ben Houidi, Bassam S. E. Aljohani, Hassan Eid and Bengt Johansson,** King Abdullah Univ of Science & Tech.
15:50	Zero-Dimensional Heat Release Modeling Framework for Gasoline Compression-Ignition Engines with Multiple Injection Events **(2019-24-0083)** **Michael Pamminger and Carrie Hall,** Illinois Institute of Technology**; Buyu Wang and Thomas Wallner,** Argonne National Laboratory**; M Rajkumar,** Navistar Inc	Balancing Hydraulic Flow and Fuel Injection Parameters for Low Emission and High-Efficiency Automotive Diesel Engines **(2019-24-0111)** **Gabriele Di Blasio, Carlo Beatrice and Roberto Ianniello,** Istituto Motori CNR; **Francesco Concetto Pesce, Alberto Vassallo and Giacomo Belgiorno,** General Motors**; Giovanni Avolio,** Continental
16:10	Fuel Consumption and Pollutant Emission Optimization at Part and Full Load of a High-Performance V12 SI Engine by a 1D Model **(2019-24-0080)** **Vincenzo De Bellis and Enrica Malfi and Antonio Aliperti** University of Naples Federico II**; Diego Cacciatore, Luca Rizzi,** Lamborghini Automobili Spa	Experimental Investigation of the Combustion Characteristics and Performance of a Heavy-Duty Ethanol-Diesel Direct Injection Engine **(oral only)** **Nicola Giramondi, Anders Christiansen Erlandsson,** KTH Royal Institute of Technology**; Anders Jäger,** Scania CV AB

Tuesday 17 September

	Room Teatro	*Room Donna Lucia*
	ICENA101 - 0-D and 1-D Modeling and Numerics **Chairpersons: Federico Millo, Luciano Rolando**	**ICENA104 - Engine Management and Control** **Chairpersons: Robert Prucka, Christof Schernus**
16:30	A Process for a Fast Heat Release Prediction at Multiple Engine Speeds and Valve Timings in the Early Stage of Gasoline Engine Development **(2019-24-0085)** **Christian Rota,** Ricardo UK, Ltd University of Brighton**; Robert Morgan,** University of Brighton**; Richard Osborne,** Ricardo UK Ltd**; David Mason and Morgan Heikal,** University of Brighton**; Andrea Matrisciano,** LOGE AB**; Kenan Mustafa,** Ricardo UK Ltd	Potential of 1D Thermo-Fluid Dynamic Modeling in Reducing the Experimental Effort through the comparison of the achievable calibration performance **(2019-24-0013)** **Francesco de Nola,** Teoresi Spa**; Giovanni Giardiello and Alfredo Gimelli,** Università di Napoli Federico II**; Andrea Molteni,** Teoresi Spa**; Massimiliano Muccillo,** Università di Napoli Federico II**; Roberto Tortora,** Teoresi Spa
16:50	Numerical Investigation of 48 V Electrification Potential in terms of Fuel Economy and Vehicle Performance for a Gasoline Passenger Car **(oral only)** **Francesco Accurso, Alessandro Zanelli, Federico Millo, Luciano Rolando,** Politecnico di Torino	Quantification of Linear Approximation Error for Model Predictive Control of Spark Ignited Turbocharged Engines **(2019-24-0014)** **Rohit Koli, Daniel Egan, Qilun Zhu and Robert Prucka,** Clemson University
17:10		Experimental Validation of a Model-based Water Injection Combustion Control System for On-board Application **(2019-24-0015)** **Francesco Ranuzzi, Nicolo Cavina, Guido Scocozza and Alessandro Brusa,** University of Bologna**; Matteo De Cesare,** Magneti Marelli SpA - Driveline Division
17:30		Learning based MPC control of combustion timing in Multi-Cylinder Partially Premixed Combustion Engine **(2019-24-0016)** **Xiufei Li, Lianhao Yin, Per Tunestal and Rolf Johansson,** Lund University
17:50		Cylinder Pressure Based Method for In-Cycle Pilot Misfire Detection **(2019-24-0017)** **Carlos Jorques Moreno and Ola Stenlaas,** Scania CV AB**; Per Tunestal,** Lund University

Tuesday 17 September

	Room Capri	*Room Rotonda*
	ICENA103 - Combustion and Flow Diagnostics **Chairperson: Ezio Mancaruso**	**ICENA402 - Emission Control Modeling** **Chairpersons: Dimitrios Zarvalis, Panayotis Dimopoulos Eggenschwiler**
15:10	In-Cylinder Flow Measurements in a Transparent Spark Ignition Engine **(2019-24-0099) - Vasileios D. Tsiogkas; Anastasios Chraniotis, Dimitrios Kolokotronis and Antonios Tourlidakis,** University of Western Macedonia	Development of Three Way Catalyst (TWC) ageing model: application of real driving emission condition **(2019-24-0047)** **Julie Le Louvetel-Poilly, Shankar balaji and Francois Lafossas,** Toyota Motor Europe NV/SA
15:30	PIV and DBI Experimental Characterization of Air flow-Spray Interaction and Soot Formation in a Single Cylinder Optical Diesel Engine using a Real Bowl Geometry Piston **(2019-24-0100)** **Jose V. Pastor, Antonio Garcia, Carlos Micó and Felipe Lewiski,** Universitàt Politecnica de Valencia**; Alberto Vassallo,** GM Global Propulsion Systems**; Francesco Concetto Pesce,** General Motors Italia S.r.l.	Multidimensional Modeling of SCR Systems via the Lattice Boltzmann Method **(2019-24-0048)** **Vesselin Krastev,** University of Rome Tor Vergata**; Giovanni Di Ilio,** University of Rome Niccolò Cusano**; Gino Bella,** University of Rome Tor Vergata**; Stefano Ubertini,** University of Tuscia**; Giacomo Falcucci,** University of Rome Tor Vergata
15:50	**ICENA504 - Engine Boosting Systems** **Chairpersons: Silvia Marelli, Colin Copeland**	A New Take on Porous Medium Approach for Modelling Monoliths and Other Multiple Channel Devices **(2019-24-0049)** **Gianluca Padula, Jonathan Saul, Svetlana Aleksandrova, Humberto Medina and Stephen Benjamin,** Coventry University
15:50	A Comprehensive Study on BSVI Turbocharger Selection and its Deterioration with Closed Crank-Case Ventilation in Heavy Commercial Vehicles **(2019-24-0061)** **Aravind Mohan, Juzer Jaliwala, Kunaal Bhagat, Kumar Patchappalam,** VE Commercial Vehicles, Ltd	
16:10	Inner-Insulated Turbocharger Technology to Reduce Emissions and Fuel Consumption from Modern Engines **(2019-24-0184)** **Richard Burke, Yang Liu and Ramkumar Vijayakumar,** University of Bath**; Jürgen Werner,** BorgWarner Turbo Systems**; Joshua Dalby,** Ricardo UK Ltd	A Novel 1D Co-Simulation Framework for the Prediction of Tailpipe Emissions Under Different IC Engine Operating Conditions **(2019-24-0147) - Tarcisio Cerri, Gianluca D'Errico, Gianluca Montenegro and Angelo Onorati,** Politecnico di Milano**; Grigorios Koltsakis and Zissis Samaras,** Aristotle University of Thessaloniki**; Konstantinos Michos, Vasileios Tziolas and Nikolaos Zingopis,** Exothermia**; Panayotis Dimopoulos Eggenschwiler, Viola Papetti, Jakub Rojewski** and **Patrik Soltic,** EMPA
16:30	Axial Flow Turbine Concept for Conventional and E-Turbocharging **(2019-24-0185)** **Alessandro Cappiello, Raffaele Tuccillo and Maria Cristina Cameretti**, Università di Napoli Federico II**; Apostolos Pesyridis,** Brunel University	Exhaust Purification Performance Enhancement by Early Activation of Three Way Catalysts for Gasoline Engines Used in Hybrid Electric Vehicles **(2019-24-0148)** **Toshinori Okajima, Ryota Sone, Xieyang Yan, Ryoya Inoue, Suchitra Sivakumar, Hajime Shingyouchi, Jin Kusaka and Kyohei Yamaguchi,** Waseda Univesity**; Makoto Nagata,** NE Chemcat Corporation
16:50	Incipient Surge Detection in Automotive Turbocharger Compressors **(2019-24-0186)** **Silvia Marelli, Paolo Silvestri, Vittorio Usai and Massimo Capobianco,** Università degli Studi di Genova	Experimental and Computational Investigation of Particle Filtration Mechanisms in Partially Damaged DPFs **(2019-24-0149)** **Onoufrios Haralampous, Marios Mastrokalos, Fotini Tzorbatzoglou and Chris Dritselis,** University of Thessaly
17:10	Development and Application of a Quasi-3D Model for the Simulation of Radial Compressors of Turbochargers for Internal Combustion Engines **(2019-24-0187)** **Gianluca Montenegro, Matteo Tamborski, Augusto Della Torre, Angelo Onorati and Andrea Marinoni,** Politecnico di Milano**; Silvia Marelli,** Università degli Studi di Genova	Analysis and Modeling of NOx Reduction Based on the Reactivity of Cu Active Sites and Brønsted Acid Sites in a Cu-Chabazite SCR Catalyst **(2019-24-0150)** **Yoshihisa Tsukamoto, Takao Fukuma and Jin Kusaka,** Waseda University
17:30	Evaluation of Hybrid Electric Turbocharging for Medium Speed Engines **(2019-24-0188)** **B.T.W. Mestemaker and J.A. Westhoeve,** Royal IHC**; K. Visser,** Delft University of Technology	Pressure Drop of Particulate Filters and Correlation with the Deposited Soot for Heavy-Duty Engines **(2019-24-0151) - Ourania Voutsi and Dimitrios Tsinoglou,** FPT Industrial**; Dimitrios Karamitros and Grigorios Koltsakis,** Aristotle University Thessaloniki
17:50		Holistic virtual calibration approach to reduce vehicle and engine testing on a Heavy Duty off-highway stage V programme **(oral only)** **Rindone Gianfranco** Ricardo UK, Ltd**.**

Wednesday 18 September

8:30	**Registration**	
8:30	**The Engine Imperative - Fabien Redon,** Achates Power (USA) **/ Chairperson: Prof. Sam Akehurst**	
	Room Teatro	***Room Donna Lucia***
	ICENA102 - Multi-Dimensional Engine Modeling **Chairpersons: Federico Millo, Stefano Fontanesi**	**ICENA302 - Fuel Injection and Sprays: Experiments** **Chairpersons: Alessandro Montanaro, Josè V. Pastor**
9:20	Validation of Diesel Combustion Models with Turbulence Chemistry Interaction and Detailed Kinetics **(2019-24-0088)** **Qiyan Zhou, Tommaso Lucchini and Gianluca D'Errico,** Politecnico di Milano**; Gilles Hardy,** FPT Motorenforschung AG	Optical Investigation of Mixture Formation in a Small Bore DISI Engine by Laser Induced Exciplex Fluorescence (LIEF) **(2019-24-0133)** **Alexander Pauls and Peter Eilts,** Technische Univ. Braunschweig
9:40	Virtual Investigation of Real Fuels by Means of 3D-CFD Engine Simulations **(2019-24-0090)** **Francesco Cupo and Marco Chiodi,** FKFS**; Michael Bargende,** Universität Stuttgart**; Daniel Koch and Georg Wachtmeister,** Technical Univ of Munich**; Donatus Wichelhaus,** Volkswagen AG	Optical evaluation of directly injected methane using a newly developed highly repetitive laser diagnostics system **(2019-24-0134)** **Mirko Geiger, Lukas Schroeder, Christian Zoellner and Dieter Brueggemann,** Bayreuth Engine Research Center**; Juergen Goldluecke,** Goldlücke GmbH**; Matthias Resch,** InnoLas Laser GmbH Technology
10:00	Validation and Analysis of Heat Losses Prediction Using Conjugate Heat Transfer Simulation for an Internal Combustion Engine **(2019-24-0091)** **Alberto Broatch, Xandra Margot, Jorge Garcia-Tiscar and Johan Escalona,** CMT-Universität Politècnica de València	Experimental Characterization of Methane Direct Injection From an Outward-Opening Poppet-Valve Injector **(2019-24-0135)** **Maurizio Lazzaro, Francesco Catapano and Paolo Sementa,** Istituto Motori CNR
10:20	The Effect of Post Injection Coupled with Extremely High Injection Pressure on Combustion Process and Emission Formation in an Off-Road Diesel Engine: a Numerical and Experimental Investigation **(2019-24-0092)** **Federico Millo, Andrea Piano, Benedetta Peiretti Paradisi, Giulio Boccardo and Mohsen Mirzaeian,** Politecnico di Torino**; Luigi Arnone and Stefano Manelli,** Kohler Engines	In Situ Injection Rate Measurement to Study Single and Split Injections in a Heavy-Duty Diesel Engine **(2019-24-0136)** **Bassam S. E. Aljohani, Moez Ben Houidi, Rafig Babayev, Khalid Aljohani and Bengt Johansson,** King Abdullah University of Science & Tech.
10:40	Integrated CFD-Experimental Methodology for the Study of a Dual Fuel Heavy Duty Diesel Engine **(2019-24-0093)** **Maria Cristina Cameretti, Roberta De Robbio and Raffaele Tuccillo,** University of Napoli Federico II**; Vinícius Pedrozo and Hua Zhao,** Brunel University London	High-speed imaging of a vaporizing GDI spray: a comparison between Shadowgraph, DBI and Scattering **(oral only)** **Maurizio Lazzaro,** Istituto Motori CNR
11.00	**Coffee break**	

Wednesday 18 September

	Room Teatro	*Room Donna Lucia*
	ICENA102 - Multi-Dimensional Engine Modeling **Chairpersons: Federico Millo, Xandra Margot**	**ICENA302 - Fuel Injection and Sprays: Experiments** **Chairpersons: Alessandro Montanaro, Josè V. Pastor**
11:30	Numerical Simulation of Syngas Blends Combustion in a Research Single-Cylinder Engine **(2019-24-0094)** **Valentina Pessina and Alessandro D'Adamo, Clara Iacovano, Stefano Fontanesi,** Università di Modena e Reggio Emilia**; Santiago Martinez,** Universidad de La Republica**; Pedro Lacava,** Instituto Tecnologico de Aeronautica	Effects of Droplet Behaviors on Fuel Adhesion of Flat Wall Impinging Spray injected by a DISI Injector **(2019-24-0034)** **Hongliang LUO, Youichi Ogata and Keiya Nishida,** Hiroshima University
11:50	CFD Modeling of Gas Exchange, Fuel-Air Mixing and Combustion in Gasoline Direct-Injection Engines **(2019-24-0095)** **Tommaso Lucchini, Gianluca D'Errico, Davide Paredi, Lorenzo Sforza and Angelo Onorati,** Politecnico di Milano	Experimental High Temperature Analysis of a Low-Pressure Diesel Spray for DPF Regeneration **(2019-24-0035)** **Lucio Postrioti and Gabriele Brizi,** Università degli Studi di Perugia**; Nic Van Vuuren,** Continental Automotive Systems US Inc
12:10	Development and Validation of SI Combustion Models for Natural-Gas Heavy-Duty Engines **(2019-24-0096)** **Lorenzo Sforza, Tommaso Lucchini, Giovanni Gianetti and Gianluca D'Errico,** Politecnico di Milano	Dynamic Thermal Behavior of a GDI Spray Impacting on a Heated Thin Foil by Phase-Averaged Infrared Thermography **(2019-24-0036)** **Mattia Contino,** University of Naples Federico II**; Luigi Allocca and Alessandro Montanaro,** Istituto Motori CNR**; Gennaro Cardone and Mirko Zaccara,** University of Naples Federico II
12.30	Effects of the Domain Zonal Decomposition on the Hybrid URANS/LES Modeling of the TCC-III Motored Engine Flow **(2019-24-0097)** **Vesselin Krastev,** University of Rome Tor Vergata**; Alessandro D'Adamo, Federico Rulli and Stefano Fontanesi,** Università di Modena e Reggio Emilia	1D Modeling of Alternative Fuels Spray in a Compression Ignition Engine using Injection Rate Shaping Strategy **(2019-24-0132)** **Ezio Mancaruso,** Istituto Motori CNR**; Carmela Perozziello,** Univ.di Napoli Parthenope, Istituto Motori CNR**; Luigi Sequino,** Istituto Motori CNR
12.50	A Coupled Tabulated Kinetics and Flame Propagation Model for the Simulation of Fumigated Medium Speed Dual-Fuel Engines **(2019-24-0098)** **Gilles Decan,** Ghent University**; Tommaso Lucchini and Gianluca D'Errico,** Politecnico di Milano**; Sebastian Verhelst,** Lund University	
13:10	**Lunch break**	

Wednesday 18 September

	Room Capri	*Room Rotonda*
	ICENA602 - Controls for Hybrids and Electric Powertrains **Chairperson: Nicolò Cavina**	**ICENA203 - LTC/HCCI/PCCI/RCCI** **Chairpersons: Donatus Wichelhaus, Jesus V. B. Calvo**
9:20	Energetic Costs of ICE Starts in PHEV – Experimental Evaluation and its Influence on Optimization Based Energy Management Strategies **(2019-24-0203)** **Lukas Engbroks, Pascal Knappe, Daniel Goerke, Stefan Schmiedler and Tobias Goedecke,** Daimler AG**; Bernhard Geringer,** Vienna University of Technology	Experimental and numerical investigation of the maximum pressure rise rate for an LTC concept in a single cylinder CI engine **(2019-24-0023)** **Metin Korkmaz,** RWTH Aachen Univ.**; Raghavan Lakshmanan, Tobias Falkenstein, Joachim Beeckmann and Heinz Pitsch,** RWTH Aachen Univ.
9:40	Efficiency Prediction for Optimal Load Point Determination of Internal Combustion Engines in Hybrid Drives **(2019-24-0204)** **Bastian Beyfuss, Peter Hofmann and Bernhard Geringer,** Vienna University of Technology	HCCI with Wet Ethanol: Investigating the Charge Cooling Effect of a High Latent Heat of Vaporization Fuel **(2019-24-0024)** **Brian Gainey, James Gohn, Ziming Yan, Khurram Malik, Mozhgan Rahimi Boldaji and Benjamin Lawler,** Stony Brook University
10:00	Fuel-optimal Power Split and Gear Selection Strategies for a Hybrid Electric Vehicle **(2019-24-0205)** **Johannes Ritzmann, Andreas Christon, Mauro Salazar and Christopher Onder,** ETH Zurich	Study of fuel octane sensitivity effects on gasoline partially premixed combustion using optical diagnostics **(2019-24-0025)** **Hao Shi, Yanzhao An and Bengt Johansson,** King Abdullah Univ of Science & Tech
10:20	Optimal Engine Re-Start Strategy on a Mild Hybrid Powertrain by Means of Up-Front Modelling **(2019-24-0206)** **Harald Stoffels, Shan-An Kao and Michael Frenken,** Ford Werke GmbH	On the HCCI Octane Boosting Effects of γ-Valerolactone **(2019-24-0026)** **Jean-Baptiste Masurier, Binod Giri, Gani Issayev, Bengt Johansson and Aamir Farooq,** King Abdullah Univ. of Science & Tech.
10:40	**ICENA601 - Advanced Hybrid and Electric Vehicle Powertrains** **Chairpersons: Ivan Arsie, Laura Tribioli** Design of a hybrid power unit for Formula SAE application: packaging optimization and thermomechanical design of the electric motor case **(2019-24-0197)** **Valerio Mangeruga, Matteo Giacopini, Saverio Giulio Barbieri and Fabio Berni, Enrico Mattarelli and Carlo Rinaldini,** Università di Modena e Reggio Emilia	A Review of Spark-Assisted Compression Ignition (SACI) Research in the Context of Realizing a Production SACI Strategy **(2019-24-0027)** **Dennis Robertson and Robert Prucka,** Clemson University
11:00	**Coffee break**	

Wednesday 18 September

	Room Capri	*Room Rotonda*
	ICENA201 - Combustion In Spark Ignition Engines **Chairpersons: Christine Mounaime Rousselle, Jamie Turner**	**ICENA203 - LTC/HCCI/PCCI/RCCI** **Chairpersons: Donatus Wichelhaus, Jesus V. B. Calvo**
11:30	Evaluation of Water and EGR Effects on Combustion Characteristics of GDI Engines Using a Chemical Kinetics Approach **(2019-24-0019)** **Giulio Cazzoli, Gian Marco Bianchi, Stefania Falfari and Matteo Ricci,** University of Bologna**; Claudio Forte,** NAIS	Optical Diagnostics Investigation on the Effect of Fuel Injection Timing on Partially Premixed Combustion Stratification and Soot Formation in a Single-Cylinder Optical Compression Ignition Engine **(2019-24-0028)** **Dimitrios P. Touloupis, George Vourliotakis, Christos Keramiotis, Kumara Gurubaran Ramaswamy, Yannis Hardalupas and Alexander Taylor,** Imperial College London
11:50	Computational Chemistry Consortium: Surrogate Fuel Mechanism Development, Pollutants Submechanisms And Components Library **(2019-24-0020)** **Matteo Pelucchi,** Politecnico di Milano**; Liming Cai,** RWTH Aachen Univ**; Warumporn Pejpichestakul,** Politecnico di Milano**; Rupali Tripathi,** RWTH Aachen Univ**; Scott Wagnon,** Lawrence Livermore National Lab**; Kuiwen Zhang and Mandhapati Raju,** Convergent Science Inc.**; Marco Mehl and Tiziano Faravelli,** Politecnico di Milano**; William Pitz,** Lawrence Livermore National Lab**; Heinz Pitsch,** RWTH Aachen Univ**; Henry Curran,** National University of Ireland Galway**; Peter Kelly Senecal,** Convergent Science Inc	Optimization of Multi Stage Direct Injection-PSCCI Engines **(2019-24-0029)** **Annarita Viggiano and Vinicio Magi,** Università degli Studi della Basilicata
12:10	Impact of cooled EGR on performance and emissions of a turbocharged Spark-Ignition engine under low-full load conditions **(2019-24-0021)** **Luca Marchitto, Cinzia Tornatore and Gerardo Valentino,** Istituto Motori CNR**; Luigi Teodosio,** University of Naples	Injection Pattern Investigation for Gasoline Partially Premixed Combustion Analysis **(2019-24-0112)** **Federico Stola,** Magneti Marelli SpA - Powertrain**; Vittorio Ravaglioli, Giacomo Silvagni and Fabrizio Ponti,** University of Bologna**; Matteo De Cesare,** Magneti Marelli SpA - Powertrain
12:30	Potential to Reduce Nano-Particle Emission in SG-DISI Engine with Normal Butane **(2019-24-0022)** **Sangjae Park, Sanguk Lee, Yonghyun Na and Choongsik Bae,** Korea Advanced Inst of Science & Tech	A Mixing Timescale Model for PDF Simulations of LTC Combustion Process in Internal Combustion Engines **(2019-24-0113)** **Fadila Maroteaux,** University of Versailles Saint Quentin**; Ezio Mancaruso and Bianca Maria Vaglieco,** Istituto Motori CNR
12:50	Experimental Analysis of the Influence of Water Injection Strategies on DISI Engine Particle Emissions **(2019-24-0101)** **Maike Sophie Gern,** Technische Universität Berlin**; Antonino Vacca and Michael Bargende,** IVK - University of Stuttgart	Influence of Injection Strategies on Engine Efficiency for a Methanol PPC Engine **(2019-24-0116)** **Erik Svensson, Martin Tuner and Sebastian Verhelst,** Lund University
13:10	**Lunch break**	

Wednesday 18 September

14:00	**The Italian Technology Cluster on Sustainable Mobility: a tool for Made in Italy innovation - Gianpiero Mastinu,** Politecnico di Milano **/ Chairperson: Nicolò Cavina**	
14:40	**Coffee break**	
	Room Teatro	***Room Donna Lucia***
	ICENA404 - Particle Emissions from Combustion Sources **Chairpersons: Vinay Premnath, Silvana Di Iorio**	**ICENA101 - 0-D and 1-D Modeling and Numerics** **Chairpersons: Luciano Rolando, Federico Millo**
15:10	Chemical and Physical Characterization of Organic Particulate Matter from Last Generation Exhaust Aftertreatment System of Medium Duty Diesel Engine **(2019-24-0053)** **Ezio Mancaruso and Bianca Maria Vaglieco,** Istituto Motori-CNR**; Wolfgang Gstrein and Konstantinos Priftis,** FPT Motorenforschung AG**; Antonio Tregrossi, Carmela Russo, Anna Ciajolo and Barbara Apicella,** Istituto Ricerche Sulla Combustione	Set-up and Validation of an Integrated Engine Thermal Model in GT-SUITE for Heat Rejection Prediction **(2019-24-0078)** **Eduardo Graziano, Luigi Bruno and Paolo Corrado,** POWERTECH Engineering S.r.l.**; Steven Pierson and Giuseppe Virelli,** Jaguar Land Rover Limited
15:30	Sub-23 nm Particulate Emissions from a Highly Boosted GDI Engine **(2019-24-0159)** **David Robert Emberson,** Norwegian Univ of Science and Technology**; Behzad Rohani,** Brunel University London**; Liang Wang PhD,** SINTEF**; Ragnhild Sæterli PhD and Terese Lovas,** Norwegian Univ of Science and Technology	A New Co-Simulation Approach for Tolerance Analysis on Vehicle Propulsion Subsystem **(2019-24-0079)** **Mancuso Claudio, Domenico Cavaiuolo, Giuseppe Corbo,** GM Global Propulsion Systems Italy**; Iakovos Papadimitriou,** Gamma Technologies LLC**; Nicolas Brown,** Synopsys Inc
15:50	Impact of Ethanol and Aromatic Hydrocarbons on Particulate Emissions from a Gasoline Vehicle **(2019-24-0160)** **Toni Tahtouh, Arij Ben Amara, Patricia Anselmi and Laurie Starck,** IFP Energies Nouvelles, France	Heavy Duty Diesel Engine and EAS Modelling and Validation for a Hardware-in-the-Loop Simulation System **(2019-24-0082)** **Antonio Riccio, Felice Di Iorio and Fabio Siccardi,** Kohler Engines**; Daniele Severi and Gabriele Lucchetti,** AVL Italia SRL**; Alexander Karlon and Plamen Valchev,** AVL LIST GmbH
16:10	Analysis of the Effect of the Sampling Conditions on the Sub-23nm Particles Emitted by a Small Displacement PFI and DI SI Engines Fuelled with Gasoline and Ethanol **(2019-24-0161)** **Panagiotis Maniatis, Daniel Erforth, Uwe Wagner and Thomas Koch,** KIT - Karlsruhe Institute of Technology	**ICENA304 - Automotive Lubricants** **Chairperson: Chiara Guido** Morphological Characterisation of Gasoline Soot-in-Oil: Development of Semi-Automated 2D-TEM and Comparison with Novel High-Throughput 3D-TEM **(2019-24-0042)** **Ephraim Haffner-Staton, Antonino La Rocca, Alasdair Cairns and Michael Fay,** University of Nottingham
16:30	Source apportionment of the quasi-ultrafine particle number (PN) concentration near the Amsterdam Airport - Schiphol (AMS) using positive matrix factorization (PMF) **(oral only)** **Milad Pirhadi, Mohammad Sowlat and Amirhosein Mousavi,** University of Southern California; **Flemming Cassee,** National Institute for Public Health	Experimental Investigation on the Use of Argon to Improve FMEP Determination Through Motoring Method **(2019-24-0141)** **Carl Caruana and Mario Farrugia,** Univ of Malta**; Gilbert Sammut,** Jaguar & Land Rover**; Emiliano Pipitone,** Università degli Studi di Palermo
16:50	Development of a Burner-Based Test System to Produce Controllable Particulate Emissions for Evaluation of Gasoline Particulate Filters **(oral only)** **Thakral Nishant,** Southwest Research Institute-United States, **Vinay Premnath, Scott Eakle and Imad Khalek,** Southwest Research Institute	
	ICENA403 - Emissions Measurement and Testing **Chairpersons: Antonino La Rocca, Danilo Engelmann**	
17:10	Solid Nucleation Mode Engine Exhaust Particles Detection at High Temperatures with an Advanced Half Mini DMA **(2019-24-0052)** **Penelope Baltzopoulou, Anastasios D. Melas, Nickolas Vlachos, Danis Deloglou, Eleni Papaioannou and Athanasios G. Konstandopoulos,** CERTH/CPERI	

Wednesday 18 September

	Room Capri	*Room Rotonda*
	ICENA301 - Fuel Injection and Sprays: Modeling **Chairpersons: Michele Battistoni, Roberto Torelli**	**ICENA204 - Combustion in Gaseous-Fueled Engines** **Chairpersons: Fadila Maroteaux, Cosmin Dumitrescu**
15:10	Nozzle Flow and Spray Development One-way Coupling Methodology for a Multi-Hole GDi Injector **(2019-24-0031)** **Navid Shahangian and Leila Sharifian,** Toyota Motor Europe NV/SA**; Jun Miyagawa, Kazuhiro Uehara and Yasushi Noguchi,** Toyota Motor Corp**; Stefano Bergamini,** AKKA**; Pedro Marti-Aldaravi, María Martínez and Raul Payri,** Universitàt Politecnica de Valencia	Emissive Behavior of a Heavy-Duty SI Gas Engine During WHTC **(2019-24-0121)** **Chiara Guido, Valentina Fraioli, Pierpaolo Napolitano, Salvatore Alfuso and Carlo Beatrice,** Istituto Motori CNR
15:30	Predictive CFD auto-tuning approach for in-cylinder EU6 LDD DI engine **(2019-24-0033)** **Daniel Nsikane, Konstantina Vogiatzaki and Robert Morgan,** University of Brighton**; Kenan Mustafa and Andy Ward,** Ricardo UK Ltd	Literature Review on dual-fuel combustion modelling **(2019-24-0120)** **Menno Merts and Sebastian Verhelst,** Lund University
15:50	Exploration of Cavitation-suppressing Orifice Designs for a Heavy-duty Diesel Injector Operating with Straight-Run Gasoline **(2019-24-0126)** **Roberto Torelli, Gina M. Magnotti and Sibendu Som,** Argonne National Laboratory**; Yuanjiang Pei and Michael L. Traver,** Aramco Research Center - Detroit	Experimental and Numerical Analysis of a Dual Fuel Operation of Turbocharged Engine at Mid-High Load **(2019-24-0122)** **Darko Kozarac, Mladen Bozic, Ante Vucetic, Josip Krajnovic and Momir Sjeric,** Univ of Zagreb
16:10	Effects of the LES-mode SGS viscosity formulation on the hybrid URANS/LES modeling of turbulent fuel sprays **(2019-24-0127)** **Giovanni Di Ilio,** University of Rome Niccolò Cusano**; Vesselin Krastev and Gino Bella,** University of Rome Tor Vergata	A Fundamental Study on Combustion Characteristics in a Pre-Chamber Type Lean Burn Natural Gas Engine **(2019-24-0123)** **Masashi Tanamura, Shintaro Nakai, Mahoko Nakatsuka, Shota Taki, Kohei Ozawa, Beini Zhou, Ratnak Sok, Yasuhiro Daisho and Jin Kusaka,** Waseda University
16:30	Development of a CFD Solver For Primary Diesel Jet Atomization in FOAM-Extend **(2019-24-0128)** **Vuko Vukcevic and Robert Keser,** University of Zagreb**; Hrvoje Jasak,** Wikki, Ltd.**; Michele Battistoni,** Università degli Studi di Perugia; **Hong Im,** King Abdullah Univ of Science & Tech**; Johan Roenby,** University of Aalborg	Experimental Investigation of Combustion Characteristics in a Heavy-Duty Compression-Ignition Engine Retrofitted to Natural-Gas Spark-Ignition Operation **(2019-24-0124)** **Jinlong Liu, Cosmin Dumitrescu,** West Virginia University
16:50	Investigation of the Ignition Process of Pilot Injections Using 3D CFD **(2019-24-0129)** **Christophe Barro and Omar Seddik,** ETH Zurich**; Yuri M. Wright,** ETH Zurich/Combustion+FlowSolutions GmbH**; Sushant Pandurangi,** ETH Zurich**; Panagiotis Kyrtatos,** Vir2sense GmbH**; Konstantinos Boulouchos,** ETH Zurich	Heavy-Duty Compression-Ignition Engines Retrofitted to Spark-Ignition Operation Fueled with Natural Gas **(2019-24-0030)** **Lorenzo Gasbarro,** Università degli Studi di Perugia**; Jinlong Liu, Cosmin Dumitrescu and Christopher Ulishney,** West Virginia Univ**; Michele Battistoni and Luca Ambrogi,** Università degli Studi di Perugia
17:10	CFD Modeling and Validation of the ECN Spray G Experiment Under a Wide Range of Operating Conditions **(2019-24-0130)** **Marianna Migliaccio and Alessandro Montanaro,** Istituto Motori CNR**; Davide Paredi and Tommaso Lucchini,** Politecnico di Milano**; Luigi Allocca,** Istituto Motori CNR**; Gianluca D'Errico,** Politecnico di Milano	
17:30	Large Eddy Simulations and Tracer-LIF Diagnostics of wall film dynamics in an optically accessible GDI research engine **(2019-24-0131)** **Nicolò Frapolli and Konstantinos Boulouchos,** ETH Zurich; **Yuri M. Wright,** ETH Zurich/Combustion+FlowSolutions GmbH**; Jan N. Geiler and Andreas Manz,** Robert Bosch GmbH**; Sebastian A. Kaiser,** U. of Duisburg-Essen	
17:50	Gasoline Spray Models Calibration Under Diesel Engine Like Conditions **(oral only)** **Blacodon Yohan,** Blacodon France	

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9:00	**The Porsche high efficient Drive Train - Donatus Wichelhaus-** Race Engine Development, Porsche (Germany) **/ Chairperson: Bianca Maria Vaglieco**	
	Room Teatro	***Room Donna Lucia***
	ICENA506 - Enabling Technologies **Chairperson: Felix Leach**	**ICENA201 - Combustion In Spark Ignition Engines** **Chairpersons: Christine Mounaime Rousselle, Simona Silvia Merola**
9:50	Experimental Evaluation of Novel Thermal Barrier Coatings in a Single Cylinder Light Duty Diesel Engine. **(2019-24-0062)** **Joop Somhorst,** Volvo Car Corporation**; Wellington Uczak De Goes,** University West**; Michael Oevermann,** Chalmers Technical University**; Mirko Bovo,** Volvo Car Corporation	Experimental Studies of Gasoline Auxiliary Fuelled Turbulent Jet Igniter at Different Speeds in Single Cylinder Engine **(2019-24-0105)** **Khalifa Isa Bureshaid,** Brunel University**; Dengquan Feng,** University in Tianjin**; Michael Bunce,** Mahle Powertrain Ltd**; Hua Zhao,** Brunel University
10:10	A Proposed Diesel Powertrain to Meet Future Emission Standards and Achieve High Engine Efficiency **(2019-24-0191)** **Konstantinos Priftis, Apostolos Karvountzis Kontakiotis, Wolfgang Gstrein and Christoph Schuette,** FPT Motorenforschung AG	A Study on Combustion Characteristics of a High Compression Ratio SI Engine with High Pressure Gasoline Injection **(2019-24-0106)** **Takashi Kaminaga, Kyohei Yamaguchi, Sok Ratnak and Jin Kusaka,** Waseda Univ; **Takashi Youso, Tatsuya Fujikawa and Masahisa Yamakawa,** Mazda Motor Corp
10:30	Efficient Test Bench Operation with Early Damage Detection Systems **(2019-24-0192)** **Thomas Laible and Stefan Pischinger,** RWTH Aachen University**; Matthias Pouch and Carsten Küpper,** BEA Testing GmbH	A Study of Lean Burn Pre-chamber Concept in a Heavy Duty Engine **(2019-24-0107)** **Ponnya Hlaing, Manuel Echeverri Marquez and Vijai Shankar Bhavani Shankar,** King Abdullah Univ of Science & Tech**; Emre Cenker,** Saudi Aramco**; Moez Ben Houidi and Bengt Johansson,** King Abdullah Univ of Science & Tech
10:50	Optical Sensor for the Needle Lift Detection in the Common Rail Injector **(2019-24-0193)** **C Coratella, L. Parry, A. Sahu and H. Xu,** The University of Birmingham, UK	Knock and Pre-Ignition Limits on Utilization of Ethanol in Octane–on–Demand Concept **(2019-24-0108)** **Eshan Singh, Kai Morganti and Saudi Aramco; Robert Dibble,** King Abdullah Univ. of Science & Tech**.**
	ICENA605 - Energy Storage **Chairperson: Marco Sorrentino**	**ICENA205 - Abnormal Combustion and Cyclic Dispersion** **Chairperson: Tommaso Lucchini**
11:10	A Coupled Lattice Boltzmann-Finite Volume Method for the Thermal Transient Modeling of an Air-Cooled Li-ion Battery Module for Electric Vehicles **(2019-24-0207)** **Daniele Chiappini and Laura Tribioli,** Università di Roma Niccolò Cusano**; Gino Bella,** Università Tor Vergata	Development of a Predictive Model for Knock Intensity in a Spark-Ignition Engine with Gasoline-Ethanol-nButanol Blend Fuel by Using Rapid Compression Machine **(2019-24-0125)** **Jaeyoung Cho and Han Ho Song,** Seoul National Univ. South Korea
11:30	Predictive Thermal-Electrochemical Battery Modeling for Optimization of EV Thermal Management **(oral only)** **Fabio Valesano,** Gamma Technologies	
12:30	**Closing Remarks and Farewell Party** **Zoran Filipi**, CUICAR (USA) **Bianca Maria Vaglieco**, Istituto Motori-CNR (Italy)	

Thursday 19 September

	Room Capri	*Room Rotonda*
	ICENA503 - Thermal Management **Chairpersons: Sergio Bova, Giovanni Vorraro**	**ICENA203 - LTC/HCCI/PCCI/RCCI** **Chairpersons: Donatus Wichelhaus, Jesus V. B. Calvo**
9:50	Inverted Brayton Cycle as an Option for Waste Energy Recovery in Turbocharged Diesel Engine **(2019-24-0060)** **Davide Di Battista, Roberto Cipollone and Roberto Carapellucci,** Università degli Studi dell'Aquila	Dual-Fuel Ethanol-Diesel Technology Applied in Mild and Full Hybrid Powertrains **(2019-24-0115)** **Jesus Benajes, Antonio Garcia, Javier Monsalve-Serrano and Santiago Martinez,** Universitàt Politecnica de Valencia
10:10	Friction Reduction by Optimization of Local Oil Temperatures **(2019-24-0177)** **Oemer Oezdemir,** University of Kassel**; Kevin Huttinger and Michael Bargende,** University of Stuttgart**; Adrian Rienäcker,** University of Kassel	A Study of Flow Characteristics on the Diesel-Gasoline Dual-Fuel Combustion by 3-D CFD **(2019-24-0117)** **Sunyoung Moon, Sanghyun Chu, Taewoo Nam and Kyoungdoug Min,** Seoul National Univ.
10:30	CFD Modeling of Compact Heat Exchangers for I.C. Engine Oil Cooling **(2019-24-0179)** **Augusto Della Torre, Gianluca Montenegro and Angelo Onorati,** Politecnico di Milano**; Sumit Khadilkar,** UFI Innovation Center**; Roberto Icarelli,** UFI Filters	Experimental Assessment of Ozone Addition Potential in Direct Injection Compression Ignition Engines **(2019-24-0118)** **Michele Bardi, Guillaume Pilla and Mickaël Matrat,** IFP Energies nouvelles-Institut Carnot
10:50	Temperature Measurements of the Piston surface in a Research Compression Ignition Engine in Transient Conditions for 1d Model of Heat Transfer **(2019-24-0182)** **Ezio Mancaruso, Luigi Sequino and Bianca Maria Vaglieco,** Istituto Motori CNR	Oxy-Fuel HCCI Combustion in a CFR Engine with Carbon Dioxide as a Thermal Buffer **(2019-24-0119)** **Abdulrahman Mohammed, Jean-Baptiste Masurier, Ali Elkhazraji and Bengt Johansson,** King Abdullah Univ of Science & Tech
11:10	Knock Mitigation by Means of Coolant Control **(2019-24-0183)** **Diego Perrone, Luigi Falbo, Teresa Castiglione and Sergio Bova,** Università della Calabria	Assessment of the Hydraulic Flow and Fuel Injection Parameters Effects in RCCI Dual-Fuel Combustion mode on Light and Heavy-Duty Engines **(oral only)** **Michael Saccullo,** Chalmers Univ. of Technology**; Carlo Beatrice, Gabriele Di Blasio,** Istituto Motori CNR**, Ingemar Denbratt,** Chalmers Univ of Technology
12:30	**Closing Remarks and Farewell Party** **Zoran Filipi**, CUICAR (USA) **Bianca Maria Vaglieco**, Istituto Motori-CNR (Italy)	

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