



Two Conferences One Goal

6. International Conference
Ignition Systems for SI Engines

7. International Conference
Knocking in SI Engines

Berlin, September 17 – 18, 2024
Akademie der Wissenschaften

Program Day 1 – 17.09.2024

Time	Title	Speaker	Co-Author(s)
08:45	Welcome	Marc Sens; <i>IAV GmbH</i>	
09:00	Synthetic Fuel to Energize Mobility	Dr. Pierre Olivier Calendini; <i>Aramco Fuel Research Center</i>	
	Ignition System Fundamentals	Chair: Matthias Biehl; Robert Bosch GmbH	
09:30	Software-features for optimization of ignition timing	Sascha Gerhardt, Danny Jäger; <i>Robert Bosch GmbH</i>	Carsten Kluth, Jakub Kaleta; <i>Robert Bosch GmbH</i>
10:00	AI-based detection of semi-surface discharge and ceramic punctures in a spark plug test rig	Dr. Metin Korkmaz; <i>Tenneco GmbH</i>	Fatmanur Gül, Gül Dr. Tycho Weißgerber, <i>Weißgerber Engineering GmbH</i>
10:30	Coffee Break		
	Pre Chamber Fundamentals I	Chair: Dr. Pierre Olivier Calendini; Aramco Fuel Research Center	
11:00	On the origin of pre-ignition inside a pre-chamber spark plug – gas analysis	Moritz Grüninger; <i>Karlsruhe Institute of Technology, IKFM</i>	Dr. Olaf Toedter, Prof. Dr. Thomas Koch; <i>Karlsruhe Institute of Technology, IKFM</i> Ahmed Assabiki; <i>Tenneco Powertrain (Federal-Mogul Ignition GmbH)</i>
11:30	Overview of current developments of pre-chamber spark plugs for passenger car applications	Dr. Metin Korkmaz; <i>Tenneco GmbH</i>	Marko Certic; <i>AVL List GmbH</i>
12:00	Pre-chamber ignition and the challenges for knock detection	Timo Rehm; <i>Robert Bosch GmbH</i>	Philipp Hahn; <i>Robert Bosch GmbH</i>
12:30	Lunch Break		
	Hydrogen ICE Ignition Systems	Chair: Dr. Kelly Senecal; Convergent Science	
14:00	Development of ignition systems for hydrogen-powered internal combustion engines	Maxime Chandelier; <i>Tenneco/Champion</i>	Stefano Papi; <i>Tenneco/Champion</i> Florence Duffour, Thierry Colliou, David Serrano; <i>IFPEN</i>
14:30	Robust ignition and sparkplug wear for H2 SI-ICE	Dr. Jakob Ängeby; <i>SEM AB</i>	Anders Johnsson, Bert Gustafsson, Dr. Johan Tidholm; <i>SEM AB</i> Prof. Mattias Richter, Kailun Zhang; <i>Lund University</i>
15:00	Smart ignition coil diagnostic system for H2 ICE combustion detection	Stefano Papi; <i>Tenneco GmbH</i>	
15:30	Coffee Break		
	Pre Chamber Fundamentals II	Chair: Sandro Pino; Tenneco / Prof. Dr. André Casal Kulzer; IFS	
16:00	Consideration of the relationship between flame formation and fast combustion in the second half of the combustion phase of pre-chamber jet combustion	Ryosuke Shiina; <i>Honda R&D Co., Ltd.</i>	Yusuke Shintani, Hirokazu Ando, Noritaka Kimura; <i>Honda R&D Co., Ltd.</i>
16:30	3D CFD modelling of TJI combustion achieved by active or passive pre-chamber	Alessandro Nodi; <i>Politecnico di Milano</i>	Prof. Dr. Tommaso Lucchini, Dr. Lorenzo Sforza; <i>Politecnico di Milano</i>
17:00	Assessment of passive TJI technology on a mild hybrid powertrain and its performance on cold operating conditions	Dimitrios Karageorgiou; <i>Aramco Fuel Research Center</i>	Thierry Prunier; <i>Horse</i>
17:30	End of day 1		
18:30	Shuttle to event location (starts at Akademie der Wissenschaften)		
19:00	Evening Event at Treehouse		

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Program Day 2 – 18.09.2024

Time	Title	Speaker	Co-Author(s)
08:50	Welcome into 2. Day	Marc Sens; <i>IAV GmbH</i>	
09:00	Keynote Speech: Simulation for sustainable engines	Dr. Kelly Senecal; <i>Convergent Science</i>	
Pre Chamber Alternative Fuels		Chair: Dr. Olaf Toedter; KIT / Dr. Christian Maas; Volkswagen	
09:30	Virtual analysis of the efficiency gain with pre-chamber combustion systems in heavy-duty natural gas engine for long-haul truck application	Dr. Dario Di Maio; <i>CNR-STEMS</i>	Dr. Pierpaolo Napolitano, Dr. Chiara Guido, Dr. Carlo Beatrice; <i>CNR-STEMS</i> Dr. Lorenzo Sforza, Prof. Dr. Tommaso Lucchini; <i>Department of Energy - Politecnico di Milano</i> Dr. Stefano Golini, Dr. Nicola Rapetto; <i>FPT Industrial</i>
10:00	Design optimization of a CNG-single-cylinder engine for lean mixture operation via active pre-chamber system: numerical investigation and experimental validation	Dr. Antonino Vacca; <i>FKFS</i>	Cristian Tortorella, Dr. Marco Chiodi; <i>FKFS</i> Prof. Dr. André Casal Kulzer; <i>IFS</i> Sebastian Bucherer; <i>KTM FE GmbH</i> Florian Helmut Karl Sobek, Paul Rothe, Ivica Kraljevic; <i>ICT</i> Albert Breuer, Dr. Helmut Ruhland; <i>Ford Werk GmbH</i>
10:30	Integrative insights from the FUELCOM3 project on pre-chamber-based ignition systems for advanced combustion engines	Dr. Abdullah AlRamadan; <i>Saudi Aramco Research and Development Center</i>	Dr. Emre Cenker, Balaji Mohan, Amer Amer; <i>Saudi Aramco Research and Development Center</i> Andre Nicolle; <i>Aramco Fuel Research Center</i> William Roberts, Moez Ben Houidi, Hong Im, James Turner, Gaetano Magnotti, Aamir Farooq, Mani Sarathy; <i>King Abdullah University of Science and Technology (KAUST), CCRC, PSE</i>
11:00	Coffee Break		
Irregular Combustion Fundamentals		Chair: Dr. Michael Fischer; Tenneco	
11:30	Assessment of pre-ignition phenomena by thermodynamically approach	Dr. Thomas Emmrich; <i>IAV GmbH</i>	
12:00	A fundamental investigation of oil additives on pre-ignition in a high pressure combustion chamber	Jan Reimer; <i>Karlsruhe Institute of Technology, IKFM</i>	Jürgen Pfeil, Prof. Dr. Thomas Koch; <i>Karlsruhe Institute of Technology, IKFM</i> Dr. Frank Altenschmidt; <i>Mercedes-Benz Group AG</i>
12:30	Simulating fuel ignition and combustion in ic engines with Lagrangian-Eulerian Spark Ignition (LESI) model and detailed chemistry	Dr. Josep Gómez Soriano; <i>CMT – Clean Mobility & Thermofluids</i>	Dr. Lu Li, Dr. Yee Chee See, Dr. Sameera Wijeyakulasuriya; <i>Convergent Science inc</i> Dr. Riccardo Scarcelli, Dr. Pinaki Pal; <i>Argonne National Laboratory</i> Prof. Ricardo Novella; <i>CMT – Clean Mobility & Thermofluids</i>
13:00	Lunch Break		
H₂/Methanol Combustion and Fundamentals		Chair: Prof. Dr. André Casal Kulzer; IFS / Prof. Dr. Hermann Rottengruber; OVGU	
14:00	Modeling the impact of mixture formation on ignition and flame propagation in a hydrogen direct-injection engine	Dr. Riccardo Scarcelli; <i>Argonne National Laboratory</i>	Yiqing Wang, Chao Xu; <i>Argonne National Laboratory</i> Ales Srna; <i>Sandia National Laboratories</i>
14:30	Determining the transition from auto-ignition to knock in methanol operation by application of the bradley theory	Philipp Hermsen; <i>TME, RWTH Aachen</i>	Lukas Plum, Dr. Marco Guenther, Prof. Dr. Stefan Pischinger; <i>TME, RWTH Aachen University</i>
15:00	Observations on pre-ignition in a port injected heavy duty hydrogen internal combustion engine	Robert H. Mitchell; <i>Southwest Research Institute Powertrain Engineering Division</i>	Dr. Thomas E. Briggs, D. Ryan Williams, Julian M. Wallace; <i>Southwest Research Institute Powertrain Engineering Division</i>
15:30	Higher efficiency through model-based, predictive knock control	Dr. Michael Fischer; <i>Tenneco GmbH</i>	Dr. Michael Grill, Prof. Dr. André Kulzer; <i>FKFS</i> Dr. Marco Guenther, Prof. Dr. Stefan Pischinger; <i>TME, RWTH Aachen University</i>
16:00	Closing Words		
16:15	End of Conference		