

IAV SPARK26



September 29, 2026
Program Day 1

**IAV Symposium on Pre-ignition,
Auto-ignition, Reactivity, and Knock**

**September 29 – 30, 2026
Alice Rooftop, Berlin**

08:45 **Welcome to IAV SPARK26**
Marc Sens (IAV)

Keynote Speech I

09:00 **On the Importance on Renewable
Fuels out of the View of VDA e.V.**

Presenting Author:
Eric Woydte (VDA e.V.)

Combustion Anomalies

Chair: Sandro Pino (Champion Ignition / Tenneco Group)

09:30 **Experimental Investigations of Oil-
induced Combustion Anomalies in
Hydrogen Engines Using Dosing
and Engine-based Methods**

Presenting Author:
Peter Kappacher (TU Graz)

Co-Authors:
David Kapeller (TU Graz)
Dr. Theo Maulbetsch (Fuchs Lubricants GmbH)
Peter Günter (Liebherr Machines Buelle SA)
Dr. Gottfried Lurf (AVL List GmbH)

10:00 **Lube Oil Formulation as a Lever
to Mitigate Combustion Anomalies
in Liebherr Off-highway Hydrogen-
fueled ICE**

Presenting Author:
Vincent Boucand (Liebherr Machines Bulle SA)

10:30 **Coffee Break**

Passive Pre-chamber Spark Plug I

Chair: Prof. Dr. André Kulzer (IFS, University of Stuttgart) and
Matthias Biehl (Bosch)

11:00 **From Twin Spark to Pre-chamber:
Ignition System Upgrade Strategy
for a 6.6L Gasoline V8**

Presenting Authors:
Dr. Antowan Zyada (General Motors)
Marcus Woebke (IAV)

Co-Author:
Michael Riess (IAV)

11:30 **Evaluation of a Passive Pre-
chamber System for a High-
performance Turbocharged Engine**

Presenting Author:
Giovanni Bonandrini (Automobili Lamborghini SpA)

Co-Authors:
Antonio Aliperti (Automobili Lamborghini SpA)
Davide Bizzari (Automobili Lamborghini SpA)
Paolo Scarpato (Automobili Lamborghini SpA)

12:00 **H18 High Efficiency Engine with
TJI Technology**

Presenting Author:
Fabiano Ferreira Pinto (Horse Technologies SL)

Co-Authors:
Dimitrios Karageorgiou (Aramco Europe)
Matej Myslivecek (Aramco Europe)
Thierry Prunier (Ampere Renault Group)

12:30 **The Effect of Fuels with Higher
Alcohol Content on the Ignition
System and Combustion
Anomalies in Gasoline Engines**

Presenting Author:
Dr. Karsten Michels (Volkswagen AG)

Co-Authors:
Max Schüttenhelm (Volkswagen AG)
Prof. Thomas Garbe (Volkswagen AG)

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13:00 Lunch Break

Active / Passive Pre-chamber Spark Plug

Chair: Ragnar Burenius (HORSE Powertrain) and Prof. Dr. Hermann Rottengruber (Otto von Guericke University Magdeburg)

14:30 Physics-based 0D/1D Modelling of Pre-chamber Combustion for SACI Applications

Presenting Author:

Ferdinand Meyer (IFS, University of Stuttgart)

Co-Authors:

Prof. Andre Casal Kulzer (IFS, University of Stuttgart)
Dr. Qirui Yang (FKFS)
Tobias Tietz (TME, RWTH Aachen)
Prof. Marco Günther (TME, RWTH Aachen)

15:00 Impact of Injection Strategy on Autoignition and Combustion Regime of Ultra-lean SACI Combustion with RON95E10

Presenting Author:

Tobias Tietz (TME, RWTH Aachen)

Co-Authors:

Prof. Stefan Pischinger (TME, RWTH Aachen)
Prof. Marco Günther (TME, RWTH Aachen)

15:30 Renewable Methanol for Spark-ignition Passenger-car Engines: Potential of Direct Injection and Pre-chamber Ignition for Efficient Low-emission Combustion

Presenting Author:

Dr. Metin Korkmaz (Champion Ignition / Tenneco Group)

Co-Authors:

Sandro Pino (Champion Ignition / Tenneco Group)
Maximilian Dobberkau (TU Dresden)
Ronny Werner (TU Dresden)
Frank Atzler (TU Dresden)

16:00 Coffee Break

Knock Suppression

Chair: Dr. Michael Fischer (40 Yo ICE)

16:30 Reduced Emissions and Expanded Stoichiometric Operation with Early Intake Valve Closing and Elevated Charge Motion

Presenting Author:

Dr. Justin Ketterer (General Motors)

Co-Authors:

Andrew Aerts (General Motors)
Anbarasu Muniappan (General Motors)
Kevin Luchansky (General Motors)

Panel

Chair: Marc Sens (IAV) and Dr. Michael Fischer (40 Yo ICE)

17:00 Powering Tomorrow: Is ICE Ready for Its Next Chapter?

Join a candid, interactive discussion with the expert audience and the scientific advisory board, moderated by IAV.

Ragnar Burenius (Horse Powertrain)
Pierre-Olivier Calendini (Aramco)
Ryan Heinbuch (GM)
Sandro Pino (Champion Ignition)
Erik Woydte (VDA)

17:55 End of Day 1

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Program Day 2

08:45 **Welcome to Day 2**
Marc Sens

Keynote Speech II
Chair: Marc Sens (IAV)

09:00 **Future Fuels from another Perspective**

Presenting Author:
Thorsten Herdan (Former HIF Global)

Alternative Fuels
Chair: Dr. Olaf Toedter (Karlsruhe Institute of Technology)

09:30 **3D Ignition Modelling in Alternative-fuel Engines: Passive Pre-chamber Design and Cycle-to-cycle Variability**

Presenting Author:
Dr. Lorenzo Sforza (Politecnico di Milano)

Co-Authors:
Alessandro Nodi (Politecnico di Milano)
Prof. Tommaso Lucchini (Politecnico di Milano)
Prof. William Northrop (University of Minnesota)

10:00 **Sustainable Fuels in High Performance Engines: Transferring Racing Experience to Future Road Powertrains**

Presenting Author:
Alessandro Ferrari (Haltermann Carless Group)

10:30 **Investigation of the Knock Behavior of the Spark Ignited Argon Power Cycle**

Presenting Author:
Lukas Kniestedt (WTZ Roßlau gGmbH)

11:00 **Coffee Break**

Ignition Systems
Chair: Ryan Heinbuch (General Motors)

11:30 **Monitoring Spark Plug Wear Using Smart Ignition Coil Diagnostic Signal**

Presenting Author:
Dr. Federico Ricci (Champion Ignition / Tenneco Group)

Co-Authors:
Stefan Papi (Champion Ignition / Tenneco Group)
Massimo Dal Re (Champion Ignition / Tenneco Group)
Massimiliano Avana (University of Perugia)

12:00 **The Influence of Operating Parameters on Spark Plug Wear and its Prediction Potential**

Presenting Author:
Celine Krnac (Karlsruhe Institute of Technology)

Co-Authors:
Dr. Olaf Toedter (Karlsruhe Institute of Technology)
Moritz Grüninger (Karlsruhe Institute of Technology)

12:30 **Measurement of In-cylinder Pressure through Elastic Deformation of the Spark Plug Housing**

Presenting Author:
Albert Guggenheimer (University of Applied Sciences Karlsruhe)

Co-Authors:
Prof. Maurice Kettner (University of Applied Sciences Karlsruhe)
Dr. Nicolas Wippermann (multitorch Services GmbH)
Dr. Steffen Kuhnert (multitorch Services GmbH)

13:00 **Lunch Break**

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Program Day 2

Active Pre-chamber Spark Plug

Chair: Dr. Michael Fischer (Honda)

14:00 **Experimental and Numerical Investigation of Active Turbulent Jet Ignition Quenching Limits**

Presenting Author:

Dimitrios Karageorgiou (Aramco Europe)

14:30 **Influence of the Pre-chamber Gas Composition on the Ignition Process of an Active Pre-chamber**

Presenting Author:

Frank Wittmann (University of Erlangen)

Co-Authors:

Christopher Kowis (University of Erlangen)
Rafael Clemente Mallada (University of Erlangen)
Dr. Sebastian Rieß (University of Erlangen)
Prof. Michael Wensing (University of Erlangen)

15:00 **Coffee Break**

Combustion

Chair: Dr. Christian Maas (Volkswagen AG)

15:30 **In-situ Measurement of Crank Resolved Fuel Concentration near Spark Plug in Catalytic Light-off Conditions**

Presenting Author:

Dr. Kulwinder Singh (General Motors)

Co-Author:

Ashish Shah (General Motors)

16:00 **Knock Analysis in Hypercar Engine Development**

Presenting Author:

Dr. Dáire James Corrigan (Bugatti Rimac)

16:30 **End of Day 2**
Marc Sens (IAV)

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