

## Welcome and Opening

08:15 Welcome and Opening by the Organizing Professors

## Keynote-Speech

Session Chair: Prof. Pischinger

08:25 RDE of Motorcycles, LDVs and HDVs – Measuring Challenges and Relevant Parameters  
Prof. Dr. Helmut Eichlseder | Technische Universität Graz

## Real Driving Emissions

09:10 Understanding the Real World Driving Performance of Water Injection System for GDI Engines

B. Wagener, G. Dober, C. Letty, G. Scott | Delphi Technologies

09:40 Emission Constrained Eco-Driving and its HIL Validation

J. Deng, L. del Re | Johannes Kepler University Linz

10:10 RDE-Cycle-Generation – a Statistical Approach to Provide a Secure Base to Approve RDE Legislation Compliance

J. Claßen, F. Dorscheidt, S. Sterlepper | VKA, RWTH Aachen University

A. Balazs, M. Doucet, M. Görger, S. Krysmon, M. Nijs, J. Scharf | FEV Europe GmbH

10:40 Break and Postersession - Further information on the next page

## Control Units and Calibration

Session Chair: Prof. Schulte

11:30 Sensitivity Study towards Dynamic Combustion Control

T. Sakai, T. Kuronita | DENSO CORPORATION

O. Hermann, B. Moergastel, R. Puts, D. Queck, S. Visser | DENSO AUTORMOTIVE Deutschland GmbH

12:00 Real-Time NOx Simulation in a Scalable Closed-Loop Application Framework

M. Wiedemeier, C. Kriese, N. Meyer, J. Sauer | dSPACE GmbH

12:30 Feedback Combustion Control with a Full Functional Engine Control Unit Based on a Multiple-Core Microcontroller for Compression Ignition Engine

C. Fang, P. Tunestal | Lund University

F. Yang | Tsinghua University

13:00 Lunch

## Keynote-Speech

Session Chair: Prof. Andert

14:15 Large Engine Combustion Control

Dr.-Ing. Christian Poensgen | Senior Vice President Engineering | MAN Diesel-Turbo

## Learning Algorithm

15:00 Learning Unstable Combustion Limits in SI Engines at EGR-Diluted Conditions Using an Explicit Reference Governor Approach

B. Maldonado, I. Kolmanovsky, A. Stefanopoulou | University of Michigan

15:30 Feedback Control for Multi-modal heat Release

G. Moretto | ETH Zurich

16:00 Stochastic Knock Control with Normal-Gamma Distribution Learning for Gasoline Engines

K. Zhao, T. Shen | Sophia University

16:30 Break

## Advanced Control Algorithm / OC

Session Chair: Dr. Albin

17:00 Integrated Emission Management Control Strategy for Optimal Real-World Performance

P. Mentink, X. Seykens | TNO Automotive

17:30 Model-Predictive Air-Path Control for a Turbo-Charged SI-Engine with Low Pressure EGR

M. Keller, D. Abel | irt, RWTH Aachen University

S. Geiger, M. Günther, S. Pischinger | VKA, RWTH Aachen University

T. Albin | IDSC, ETH Zurich

18:00 End of Lectures – Day One

19:30 Dinner at the Restaurant Eisenbrunnen

## Keynote-Speech

- 08:15 DualFuel Combustion and their HPDI Technology  
David Mumford, M.A.Sc. | Senior Director, HPDI Product Portfolio | Westport Innovations

## Modeling

Session Chair: Prof. Willems

- 09:00 Semi-Physical State and Parameter Estimation of Diesel Combustion Phases  
A. Weber | TU Darmstadt
- 09:30 Gasoline Engine Performance Simulation of Water Injection and Cooled Low Pressure EGR using Tabulated Chemistry  
T. Franken, F. Mauß | BTU Cottbus-Senftenberg  
L. Seidel | LOGE Germany GmbH  
A. Matrisciano | Chalmers University of Technology  
M. Gern, M. Kauf | TU Berlin  
A. Kulzer | Porsche AG
- 10:00 A Physics-based Model for Model Based Control of PCCI Diesel Combustion Engine  
W. Pan, M. Korkmaz, H. Pitsch | itv, RWTH Aachen University

10:30 Break

## Actuators and Sensors

Session Chair: Prof. Fussey

- 11:00 iVT, Intelligent Valve Technology, Development of a 16 Valve Cylinder Head  
C. Douglas | Camcon Auto Ltd.
- 11:30 The Effect of Operating Parameters of an Aperometric NOx-O 2 Sensor on the Sensor Response  
M. Aliramezani | University of Alberta
- 12:00 HCCI Combustion Stability Improvement Using a Rapid Ignition System  
D. Gordon, C. Koch | Mechanical Engineering, University of Alberta  
C. Wouters, B. Lehrheuer, S. Pischinger | VKA RWTH Aachen University  
S. Kinoshita | SOKEN, INC.  
J. Andert, M. Wick | Mechatronic Systems for Combustion Engines, RWTH Aachen University

13:00 Conclusion and Final Remarks

## Postersession

Wednesday, 10:40 - 11:30

- 1 Data-Based Model-Predictive Control of a Turbocharged SI-Engine with Low Pressure EGR  
D. Sakai | irt RWTH Aachen University
- 2 Evaluation of Model Based Control Systems for Multi-Stage Heat Release of Advanced Diesel Combustion  
Y. Yamasaki | The University of Tokyo
- 3 Detailed Analysis of the Influence of Direct Water Injection on HC Emissions in an HCCI-Engine  
M. Wick | FEV Europe GmbH
- 4 An Application of C/GMRES Model Predictive Control to a Diesel Engine Air Path System  
H. Nakada | Toyota Motor Corporation
- 5 Online Calibration Tool (OCT) – Gateway for Efficient Connected Drivetrains  
L. Posdena | VEMAC GmbH & Co. KG

## Organizers



Prof. Dr.-Ing. Stefan Pischinger, Head of the Institute  
Prof. Dr.-Ing. Jakob Andert, Junior Professor for Mechatronic Systems for Combustion Engines



Prof. Dr.-Ing. Dirk Abel, Head of the Institute of Automatic Control



Prof. Dr.-Ing. Heinz Pitsch, Head of the Institute for Combustion Technology