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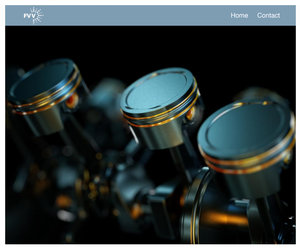


FVV-Newsletter 01/2021

The term "sustainability" stands for the effort to find a balance between the use of resources and the regenerative capacity of the ecosystem. This also includes the step towards sustainable mobility, i.e. transport concepts in which people and goods can be transported without burdening the environment or the climate. How can this work? And is "combustion" really this problem? The answer is no: regenerative energy sources in combination with chemical energy carriers/storages, innovative combustion processes and state-of-the-art exhaust gas aftertreatment systems will enable CO2-neutral, near-zero emission mobility and energy conversion that will not rely on fossil fuels. And on the fast track to complete decarbonisation or defossilisation, we need technologies that are as environmentally and climate friendly as possible. The FVV's current research programme reflects this multi-technology approach. We have set up a separate planning group for the fuel cell. And many of our projects from the seven other PGs are concerned with how regeneratively produced energy sources or sustainable biofuels and gases can optimally interact with innovative powertrain concepts. Incidentally, the human factor and its inventive spirit do play a very significant role in this. Since "individuals reach their limits relatively quickly", we use to work in networks and have been cultivating common interests for 65 years. So, please, stay connected.

#staytogether

THE PEOPLE BEHIND MODERN RESEARCH

Setting the course

Individuals reach their limits relatively quickly // Aerospace scientist Dr Dirk Hilberg almost pursued a career at a freight forwarding company. Now he organises research projects in future technologies, both for his employer, Rolls-Royce, as well as at FVV. He is convinced that there is more than one way forward in life. But at some point, decisions have to be made.

Dr Hilberg is Deputy Chairman of the association's Scientific Advisory Committee and heads the Planning Group PGT »Turbomachinery«.

Learn More

THEMIS News

THEMIS calendar:
FVV meetings in February

All dates of the FVV Spring Conference at a glance:
Information sessions & internal committee meetings

Learn More

FVV 2021 Spring Conference I Digital Event

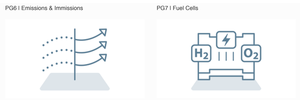
Our passion for research on sustainable prime movers, such as aero engines, turbomachines, internal combustion engines, hybrids and fuel cells, is stronger than ever!

We are glad to invite our members, partners and friends again to a digital conference: Learn about interim and final reports from our current research programme.

And please join us to shape the future of individual mobility, transportation and power generation: The deadline for submitting new ideas and proposals is **Friday, 12.02.2021**.

Learn More

PG6 I Emissions & Immissions



H2 DeNOx I 1319

Low-temperature NOx reduction by H2 in the exhaust of diesel engines

RTD Performers: Prof Dr Peter Eilts (ivb, TU Braunschweig), Prof Dr K. Andreas Friedrich (IGTE, University of Stuttgart), Prof Dr Sven Kureti (IEC, TU Freiberg) **Coordinator:** Dr Frank Bunar (IAV)

Learn More

PG2 I Combustion SI

ICE2025+: Ultimate System Efficiency I 1307

Exploiting the limits of SI engine efficiency in an optimised hybrid-powertrain to minimise greenhouse gas emissions

RTD Performers: Prof Dr Stefan Pischinger (vka, RWTH Aachen University), Prof Dr Michael Bargende (IFS, University of Stuttgart), Prof Dr Peter Eilts (ivb, TU Braunschweig), Univ Prof Dr Christian Beidl (VKM, TU Darmstadt) **Coordinators:** Arndt Döhler (Opel Automobile), Dr André Casal Kulzer (Porsche)

Learn More

PostOxidation I 1336

Post-oxidation (HC, CO and PM) in the exhaust manifold of SI engines

RTD Performers: Prof Dr Michael Bargende (IFS, University of Stuttgart), Prof Yasuo Moriyoshi (Chiba University, Associate Professor Tetsuya Aizawa (Meiji University) **Coordinators:** Christine Burkhardt (EngineOS), Yoshihiro Imaoka (Nissan Motor Co)

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PG7 I Fuel Cells

Cathode Air Quality Requirements for LT-PEM Fuel Cells I 1295

Experimental and modelling-based determination of the cathode air quality requirements for LT-PEM fuel cells

RTD Performers: Prof Dr Markus Hölzle (ZSW, Ulm) **Coordinator:** Dr Michael Harenbrock (MANN+HUMMEL)

Learn More

PGT I Turbomachinery

Metal-graphite Composites for Plain Bearings (MeGraV) I 1330

Methodical development of metal-graphite composites for plain bearing applications at high temperatures

RTD Performers: Prof Dr Hubert Jäger (ILK, TU Dresden), Prof Dr Matthias Busse (Fraunhofer-IFAM, Bremen) **Coordinator:** Dan Roth-Fagaraseanu (Rolls-Royce Deutschland)

Learn More

Simulation-Crack Behaviour-Coarse Grain I 1251

Simulation of crack behaviour of nickel cast alloys with a large grain size at high temperature

RTD Performers: Prof Dr Matthias Oechsner (MPA-IRW, TU Darmstadt), Prof Dr Stefan Weihe (MPA, Uni Stuttgart) **Coordinator:** Markus Fried (MTU Aero Engines)

Learn More

You can download the full programme of the FVV 2021 Spring Conference here.

EVENTS

The International Stuttgart Symposium on Automotive and Engine Technology has been one of the largest congresses on vehicle and engine development in Europe for many years and is one of the most important get-togethers in the automotive industry. That is why we are very pleased that the **FVV is there** with three research projects in a dedicated **session on 31/03/2021 (13h00 to 15h00 CEST)**:

1 I **Validation of homogeneous CNG DI combustion processes in combination with high-load EGR, Miller cycle and alternative ignition systems** I PG2 »Combustion SI« I 1200 I **RTD Performers:** (vka, RWTH Aachen University), (IMS-EMA, OVGU Magdeburg)

2 I **RCCI combustion system in HD applications to reach lowest fuel consumption and emissions** I PG3 »Combustion CI« I 1284 I **RTD Performers:** (ITV, RWTH Aachen University), (vka, RWTH Aachen University), (TNO Automotive), (IFKM, KIT), (PCFC, RWTH Aachen University)

3 I **Novel insight into engine near-wall flows and wall heat transfer using direct numerical simulations and high-fidelity experiments** I PG2 »Combustion SI« I 1280 I **RTD Performers:** (IRSM, TU Darmstadt), (LAV, ETH Zurich)

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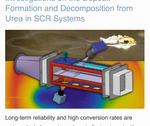
You will find further information on our websites: Events I THEMIS Calendar

JOURNALS

MTZ WORLDWIDE 01/2021

Investigations on the Deposit Formation and Decomposition from Urea in SCR Systems



Long-term reliability and high conversion rates are major criteria for engine exhaust aftertreatment with selective catalytic reduction by a Urea-water Solution. Unfavourable operating conditions may lead to the formation of solid deposits which degrade the system efficiency. Within the framework of the FVV project »AdBlue« (1262), at the Karlsruhe Institute of Technology (KIT) and the Vienna University of Technology (TUW), fundamental experimental and numerical investigations on deposit formation and decomposition were carried out.

Learn More

MTZ WORLDWIDE 02/2021

Thermal Influence on the Overall TC System with Consideration of the Coupled Bearings

Model-based calculation tools are for early design evaluation. They can only be used in a meaningful way if thermodynamic processes can be represented realistically, for which a sufficiently deep understanding is required. For this reason, the processes at the plain bearings and the heat flow mechanisms within a passenger car turbocharger were investigated within the framework of the FVV project »Thermally Influenced TC Bearing Friction« (1230) at the Leibniz University Hannover (LUH) and the Clausthal University of Technology (TUC).

Learn More

You will find further information on our website: FVV Research Priorities I MTZ Project Reports

For questions regarding your newsletter subscription, please contact Petra Tutsch or Stephanie Smieja at newsletter@fvv-net.de

FVV I Research Association for Combustion Engines eV
Lyoner Strasse 18 I 60528 Frankfurt/M. I Germany

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