



Science for a
moving society

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PROGRAMME · AUTUMN 2023

The FVV
Transfer + Networking
Event

4–6 October 2023

WÜRZBURG · GERMANY



Collective intelligence –
FVV members



Empowering a moving
society – Participating
research and technology
(RTD) performers



Science for a
moving society

Transfer + Networking

- + Industrial Collective Research (IGF) has a particular commitment to the transfer of knowledge. It empowers companies to meet the requirements of social responsibility and sustainable development and to address the associated technological change by solving common R&D issues on a pre-competitive, science-based approach. This unique collaboration bridges the gap between basic research and industrial application. The results are available to all interested parties and form the basis for individual adaptations and further development in the companies.
- + FVV organises open-topic research along the value chains, bringing together companies with the same interests regardless of size and economic power. We network bright minds and benefit from their knowledge and experience. At FVV manufacturers and suppliers, developers and scientists, leading industrial engineers, renowned academic researchers and excellent young talents meet on a regular basis, thus creating mutual understanding. This is very important to us: ideas sometimes need time and a prolific place to grow.

At FVV Transfer + Networking Events you will find both.

Information Sessions

5 October 2023

Session 1
DEVELOPMENT TOOLS, FUELS, MATERIALS
 09:00 – 12:45

4–5

Session 2
ORIENTATION STUDIES, EMISSIONS, EFFICIENCY
 14:15 – 18:00

6–7

Session 3
TURBOMACHINERY
 09:30 – 18:00

8–10

10:30 – 11:15 Coffee Break · 12:45 – 14:15 Lunch Break · 15:45 – 16:30 / 16:15 – 17:00 Coffee Break

EVENING RECEPTION

Start 19:00 · Evening reception for all conference participants
 Venue: Maritim Hotel Würzburg, Pleichertorstr. 5, 97070 Würzburg, Germany

FVW Committee Meetings

4 + 6 October 2023

The committee meetings are for members of the FVW only.
 FVW members will receive the related agendas and documents fifteen days prior to the meeting.

- 4 October **12:00 – 15:00** Expert Group Electric Motors
- 16:00 – 18:00** Research Committee
- 6 October **09:00 – 10:00** Annual Meeting of Members
- 10:00 – 11:00** Scientific Advisory Committee
- 11:00 – 16:00** Expert Groups Sustainable Powertrain Systems, Engines, Fuel Cells, Turbo Machines, Zero-impact Emissions, Materials Science and Recycling
- 16:00 – 18:00** Research Committee

MAKE IT NEW: MAKING PROJECTS WORK

11

REGISTRATION & CONTACT

12

09:00 SACI Combustion System with Active Pre-chamber

Investigation of the CO₂-reduction potentials of a combustion system based on spark-assisted compression ignition (SACI) in combination with an active pre-chamber

PROJECT	1431 · Development Tools · EG Engines · Final report
PRESENTERS	Francesco Salerno (IFS, University of Stuttgart) Patrick Burkardt (tme, RWTH Aachen University)
RTDs	Prof. Dr. Stefan Pischinger (tme, RWTH Aachen University) Prof. Dr. André Casal Kulzer (IFS, University of Stuttgart) Prof. Dr. Alexander Heufer (PCFC, RWTH Aachen University)
COORDINATION	Dr. Jonas Villforth (Dr. Ing. h.c. F. Porsche AG)
SPONSOR	FVV own funds

09:30 Modelling Turbulence

Modelling of turbulence III: quasi-dimensional modelling of the cycle-to-cycle variations of the in-cylinder flow field with focus on high-efficiency engines (long-stroke, high-turbulence, Miller / Atkinson)

PROJECT	1435 · Development Tools · EG Engines · Final report
PRESENTERS	Ye Feng (IFS, University of Stuttgart) Niklas Mirsch (tme, RWTH Aachen University) Jana Hoffmann (ITFE, FH Nordwestschweiz)
RTDs	Prof. Dr. André Casal Kulzer (IFS, University of Stuttgart) Prof. Dr. Stefan Pischinger (tme, RWTH Aachen University) Prof. Dr. Kai Herrmann (ITFE, FH Nordwestschweiz)
COORDINATION	Marinus Wieser (Bosch Engineering GmbH)
SPONSOR	FVV own funds, CORNET / BMWK / AiF

10:00 Hydrogen Combustion and Comparison PFI/DI concepts

Study of hydrogen combustion characteristics and comparison between SI and CI combustion concepts for HD applications

PROJECT	1442 · Fuels · EG Engines · Final report
PRESENTER	Prof. Dr. Thomas Koch (IFKM, KIT Karlsruhe)
RTD	Prof. Dr. Thomas Koch (IFKM, KIT Karlsruhe)
COORDINATION	PD Dr. Reza Rezaei (IAV GmbH)
SPONSOR	FVV own funds

10:30 Coffee Break

11:15 Shaft Bores

Development of a method to increase torsion fatigue strength on bored shafts

PROJECT	1377 · Development Tools · EG Materials Science and Recycling · Final report
PRESENTER	Felix Christian Reissner (Fraunhofer LBF)
RTDs	Prof. Dr. Tobias Melz (Fraunhofer LBF) Prof. Dr. Thomas Bergs (WZL, RWTH Aachen University)
COORDINATION	Stefan Roth (MAN Energy Solutions SE)
SPONSOR	BMWK / AiF

11:45 Exhaust Gas Effected Tribosystems

Characterization of the wear mechanism of unlubricated tribological systems exposed to exhaust gases

PROJECT	1402 · Materials · EG Materials Science and Recycling · Final report
PRESENTER	Tobias König (Fraunhofer IWM)
RTDs	Prof. Dr. Peter Gumbsch (Fraunhofer IWM) Prof. Dr. Martin Dienwiebel (IAM-ZM, KIT Karlsruhe)
COORDINATION	Dr. Heiko Haase (Rolls-Royce Solutions GmbH)
SPONSOR	BMWK / AiF

12:15 Energy Recovery in Fuel Cell Applications

A comparison of architectures for energy recovery in fuel cell systems and corresponding turbine design

PROJECT	1406 · Materials · EG Fuel Cells · Final report
PRESENTER	Prof. Dr. Jörg Seume (TFD, University of Hannover)
RTD	Prof. Dr. Jörg Seume (TFD, University of Hannover)
COORDINATION	Dr. Dirk Jenssen (Volkswagen AG)
SPONSOR	FVV own funds

12:45 Lunch Break

14:15 Future Mobility Dialogue

Developing communication methods to achieve a credible and attention-catching science dialogue on tomorrow's mobility

PROJECT	1463 · Orientation Studies · EG Sustainable Powertrain Systems · Final report
PRESENTERS	Jördis Dreinert & Jan Lukas Fründ & Daniel Reinhart (IWD, TH Ostwestfalen-Lippe)
RTD	Prof. Dr. Andreas Welling (IWD, TH Ostwestfalen-Lippe)
COORDINATION	Prof. Dr. Thomas Garbe (Volkswagen AG)
SPONSOR	FVV own funds

14:45 CO₂-neutral Long-haul Heavy-duty Powertrains 2050 II

Study on CO₂-emissions, energy consumption and costs of long-haul heavy-duty trucks with SOFC, H₂-ICE, efficiency-optimised hybrid concept considering future energy supply for 2050

PROJECT	1429 · Efficiency · EG Sustainable Powertrain Systems · Final report
PRESENTERS	Andreas Geß (IABP-GaBi, University of Stuttgart) Dr. Dennis Jünemann & Dr. Hubertus Ulmer (IAV GmbH)
RTD	Prof. Dr. Philip Leistner (IABP-GaBi, University of Stuttgart)
COORDINATION	Herbert Schneider (ISUZU MOTORS Germany GmbH)
SPONSOR	FVV own funds

15:15 Acoustics of Hydrogen Piston Engines

Detection and evaluation of the combustion noise of the hydrogen piston engine

PROJECT	1457 · Efficiency · EG Sustainable Powertrain Systems · Final report
PRESENTER	Tongfang Fu (tme, RWTH Aachen University)
RTD	Prof. Dr. Stefan Pischinger (tme, RWTH Aachen University)
COORDINATION	Dr. Stefan Heuer (MAN Truck & Bus SE)
SPONSOR	FVV own funds

15:45 Coffee Break

16:30 Lubrication Large Bore Engines II

Scientific deepening of the comprehension about particle emission formation traceable to lubricating oil consumption in medium speed marine engines

PROJECT	1382 · Emissions · EG Sustainable Powertrain Systems · Final report
PRESENTER	Prof. Dr. Friedrich Wirz (ASM, TU Hamburg-Harburg)
RTDs	Prof. Dr. Michael Thiemke (HS Flensburg) Prof. Dr. Gerhard Matz (IAM-Hamburg e. V.) Prof. Dr. Friedrich Wirz (ASM, TU Hamburg-Harburg)
COORDINATION	Dr. Udo Schlemmer-Kelling (form. FEV Europe GmbH) Dr. Tobias C. Wesnigk (form. M. JÜRGENSEN GmbH & Co. KG)
SPONSOR	FVV own funds

17:00 Cleaning Mechanisms in the Exhaust Path

On-board removal of carbon-based deposits from the exhaust gas path of internal combustion engines

PROJECT	1391 · Emissions · EG Zero-impact Emissions · Final report
PRESENTER	Prof. Dr. Sven Kureti (IEC-RT, TU Freiberg)
RTDs	Prof. Dr. Sven Kureti (IEC-RT, TU Freiberg) Prof. Dr. Peter Eilts (ivb, TU Braunschweig)
COORDINATION	Dr. Bernhard Lüers (FEV Europe GmbH) Raimund Vedder (form. Atlanting GmbH)
SPONSOR	BMWK / AiF

17:30 TWC Impact on Particulate Properties

Investigation of the change in particulate emission characteristics of a Otto engine in a 3-way catalytic converter

PROJECT	1398 · Emissions · EG Zero-impact Emissions · Final report
PRESENTER	Dr. Stefan Sterlepper (tme, RWTH Aachen University)
RTDs	Prof. Joachim Mayer (GFE, RWTH Aachen University) Prof. Dr. Stefan Pischinger (tme, RWTH Aachen University)
COORDINATION	Dr. Julie Le Louvetel-Poilly (Toyota Motor Europe NV/SA)
SPONSOR	BMWK / AiF

18:00 End

09:30 Fill Factor Influence

Improving the efficiency of fast running journal bearings by targeted use of partially filled gap and pocket areas using radial journal bearings as an example

PROJECT	1424 · Development Tools · EG Turbo Machines · Final report
PRESENTERS	Alexander Engels (LPE, University of Bochum) Sören Wettmarshausen (ITR, TU Clausthal)
RTDs	Prof. Dr. Hubert Schwarze (ITR, TU Clausthal) Prof. Dr. Beate Bender (LPE, University of Bochum)
COORDINATION	Dr. Christoph Weißbacher (GTW Gleitlagertechnik Weißbacher GmbH)
SPONSOR	BMWK / AiF

10:00 Squeeze Film Dampers II

Improved transient simulation of the non-linear dynamics of squeeze-film damper-mounted rotor systems by taking into account flow and friction effects in the area of the oil feed and the anti-rotation devices

PROJECT	1437 · Development Tools · EG Turbo Machines · Final report
PRESENTER	Thomas Drapatow (IFME, University of Magdeburg)
RTD	Prof. Dr. Elmar Woschke (IFME, University of Magdeburg)
COORDINATION	Dr. Oliver Alber (MAN Energy Solutions SE)
SPONSOR	BMWK / AiF

10:30 Coffee Break

11:15 Brush Seals – Statistical Approach

Use of statistical methods to describe the rubbing and leakage behaviour of brush seals

PROJECT	1375 · Components · EG Turbo Machines · Final report
PRESENTER	Dr. Corina Schwitzke (ITS, KIT Karlsruhe)
RTD	Prof. Dr. Hans-Jörg Bauer (ITS, KIT Karlsruhe)
COORDINATION	Joris Versluis (MTU Aero Engines AG)
SPONSOR	FVV own funds

11:45 Modelling of Primary Atomisation Using SPH

Modelling of primary atomisation processes of liquid fuel using smoothed particle hydrodynamics (SPH) within complex industrial applications

PROJECT	1453 · Development Tools · EG Turbo Machines · Final report
PRESENTERS	Dr. Rainer Koch & Markus Wicker (ITS, KIT Karlsruhe)
RTD	Prof. Dr. Hans-Jörg Bauer (ITS, KIT Karlsruhe)
COORDINATION	Dr. Ruud L.G.M. Eggels (Rolls-Royce Deutschland Ltd & Co KG)
SPONSOR	FVV own funds

12:15 Aluminum High Temperature Fatigue

Analytical fatigue assessment of aluminum at highest service temperatures under consideration of influencing operation specific factors

PROJECT	1390 · Materials · EG Turbo Machines · Final report
PRESENTERS	Philipp von Hartrott & Jan Radners (Fraunhofer IWM)
RTDs	Prof. Dr. Birgit Skrotzki (BAM Berlin) Prof. Peter Gumbsch (Fraunhofer IWM)
COORDINATION	Dr. Reiner Bösch (Rolls-Royce Solutions GmbH)
SPONSOR	BMWK / AiF

12:45 Lunch Break

14:15 »Challenges and Opportunities of the Decarbonization of the Energy Sector«

Keynote lecture

PRESENTER	Dr. Benjamin Witzel (Siemens Energy)
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15:15 Centrifugal Compressor in Flexible Operation

Aerodynamic and acoustic investigations of the interaction between impeller, diffuser and volute casing at operating points remote from the design on a representative centrifugal compressor

PROJECT	1443 · Development Tools · EG Turbo Machines · Interim report
PRESENTER	Dr. Philipp Schwarz (IST, RWTH Aachen University)
RTD	Prof. Dr. Peter Jeschke (IST, RWTH Aachen University)
COORDINATION	Dr. Matthias Schleer (Howden Turbo GmbH)
SPONSOR	FVV own funds, BMWK / AiF

15:45 Fuel Cell Compressor Design

System efficiency optimal compressor design for PEM fuel cells in mobile applications

PROJECT	1439 · Development Tools · EG Turbo Machines · Interim report
PRESENTERS	Janik Rajh (IST, RWTH Aachen University) Julian Toussaint (tme, RWTH Aachen University)
RTDs	Prof. Dr. Stefan Pischinger (tme, RWTH Aachen University) Prof. Dr. Peter Jeschke (IST, RWTH Aachen University)
COORDINATION	Dr. Thomas Hildebrandt (NUMECA Ingenieurbüro)
SPONSOR	BMWK / AiF

16:15 Coffee Break

17:00 Blade Forces and System Damping

Investigation of the resonant excitation of turbomachinery rotors and of the influence of the total system damping on the resulting blade vibration amplitude

PROJECT	1388 · Development Tools · EG Turbo Machines · Final report
PRESENTERS	Prof. Dr. Damian Vogt (ITSM, University of Stuttgart) Prof. Dr. Manfred Wirsum (IKDG, RWTH Aachen University)
RTDs	Prof. Dr. Damian Vogt (ITSM, University of Stuttgart) Prof. Dr. Manfred Wirsum (IKDG, RWTH Aachen University) Prof. Dr. Bernd Beirow (SMF, BTU Cottbus)
COORDINATION	Dr. Thomas Hildebrandt (NUMECA Ingenieurbüro)
SPONSOR	BMWK / AiF

17:30 Intentional Mistuning

Forced response limitation of radial turbines by means of intentional mistuning

PROJECT	1389 · Development Tools · EG Turbo Machines · Final report
PRESENTER	Prof. Dr. Bernd Beirow (SMF, BTU Cottbus)
RTDs	Prof. Dr. Damian Vogt (ITSM, University of Stuttgart) Prof. Dr. Manfred Wirsum (IKDG, RWTH Aachen University) Prof. Dr. Bernd Beirow (SMF, BTU Cottbus)
COORDINATION	Thomas Winter (MAN Energy Solutions SE)
SPONSOR	BMWK / AiF

18:00 End

MAKE IT NEW: MAKING PROJECTS WORK

TOGETHER WE DEVELOP IDEAS FOR THE FUTURE

The second day of the transfer + networking event belongs to the FVV committees and the planning of future research.

For this purpose, specialists from the member companies meet in expert groups to identify common research needs and to design projects accordingly.

SYSTEM

Energy Infrastructure and Storage

NN

Sustainable Powertrain Systems

Thorsten Oberpenning · Rolls-Royce Solutions

SUBSYSTEMS

Energy Conversion Systems

→ **Engines**

Dr. Christian Weiskirch · MAN Truck & Bus

→ **Electric Motors**

Carsten Weber · Ford-Werke

→ **Fuel Cells**

Dr. Volker Formanski · BMW Group

→ **Turbo Machines**

Dr. Dirk Hilberg · Rolls-Royce Germany

→ **Zero-impact Emissions**

Dr. Volker Schmeißer · Daimler Truck

COMPONENTS

Materials Science and Recycling

Dr. Dieter Eppinger · SEG Automotive Germany

KNOWLEDGE TRANSFER



To learn how we make projects work, please note the information on our research priorities and work structure in the Terms of Reference (ToR) document: **MAKE IT NEW – Science for a moving society.**



FVV Transfer + Networking Event

REGISTRATION & CONTACT

4–6 October 2023 Würzburg · Germany

DATE AND VENUE

4–6 October 2023

Maritim Hotel Würzburg
Pleichertorstrasse 5
97070 Würzburg, Germany
www.maritim.de

PARTICIPANT FEE

Conference registration fee
350 € (plus 19% VAT)

Participants with FVV members discount
250 € (plus 19% VAT)

Research institutions
can participate in the event free of charge with up to 5 persons (incl. lecturer). From the 6th person onwards, costs of 150 € (plus 19% VAT) will be incurred.

The registration fee includes participation in the technical information sessions including conference documents and proceedings, lunch, coffee and snacks during breaks and access to the evening reception on 5 October 2023.

Conference languages
The conference language is German. All sessions are translated into English. Headsets are available for free.

GENERAL TERMS AND CONDITIONS

You may register online through the → [registration tool](#). The closing date for registrations is **Friday, 22 September 2023**.

Participation can be cancelled free of charge until **Friday, 29 September 2023**. In case of cancellation after the deadline or unannounced non-participation the full participant fee will be charged.

Cancellations are to be made in writing (by e-mail, fax or standard mail). By registering you accept the general → [terms and conditions](#). All participants will receive an electronic confirmation after the registration deadline. The invoice will be issued after the event and sent by standard mail.

HOTEL RESERVATIONS

We have arranged for a roomblock at ›Maritim Hotel Würzburg‹ from 4–6 October 2023 at a preferential rate of 132 € (Classic incl. breakfast), 142 € (Comfort incl. breakfast).

The closing date is **Thursday, 17 August 2023**. The reservation code is ›FVV‹. Early booking is recommended.

+49 931 3053 830
reservierung.wur@maritim.de

ORGANISERS

The event is organised by
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Lyoner Strasse 18
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We would like to thank all of our sponsors and research partners for their fantastic support!

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