



Science for a  
moving society

PROGRAMME · SPRING 2024

The FVV  
Transfer + Networking  
Event

13–15 March 2024

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

## 14 March 2024

Session 1  
**SYSTEMS, COMPONENTS**  
09:15 – 18:00

4–7

Session 2  
**TURBOMACHINERY**  
09:45 – 18:00

8–10

11:00 – 11:45 / 10:45 – 11:30 Coffee Break · 13:00 – 14:30 Lunch Break · 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

# FVV Committee Meetings

## 13 + 15 March 2024

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

- |          |               |  |
|----------|---------------|--|
| 13 March | 12:00 – 15:00 | Expert Group Electric Motors   |
|          | 14:00 – 16:00 | Steering Group Dynamics and Acoustics  |
|          | 16:00 – 18:00 | Research Committee   |
| 15 March | 09:30 – 16:00 | Expert Groups Sustainable Powertrain Systems, Engines, Fuel Cells,<br>Turbo Machines, Zero-impact Emissions, Materials Science and Recycling |
|          | 16:00 – 18:00 | Research Committee   |

**MAKE IT NEW: MAKING PROJECTS WORK**

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**REGISTRATION & CONTACT**

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### 09:15 Benchmark Platform for Scale Resolving Simulations

A combined experimental-numerical benchmark platform for scale-resolved simulations with a focus on ignition and early flame propagation

<b>PROJECT</b>	1387 · Development Tools · EG Engines · Final report
<b>PRESENTERS</b>	Dr. Benjamin Böhm (TU Darmstadt, RSM) Prof. Dr. Christian Hasse (TU Darmstadt, STFS)
<b>RTDs</b>	Prof. Dr. Andreas Dreizler (TU Darmstadt, RSM) Prof. Dr. Christian Hasse (TU Darmstadt, STFS)
<b>COORDINATION</b>	Kathrin Giefer (Ford-Werke GmbH) Dr. Frank Krämer (Ford-Werke GmbH)
<b>SPONSOR</b>	BMWK/IGF

### 09:45 Heuristic Search and Deep Learning

Application of artificial intelligence (AI) techniques, especially reinforcement learning, deep learning and heuristic search, in the field of engine development

<b>PROJECT</b>	1426 · Artificial intelligence (AI) · EG Engines · Final report
<b>PRESENTERS</b>	Sasa Milojevic (Uni Stuttgart, IFS) Tobias Brinkmann (RWTH Aachen, MMP)
<b>RTDs</b>	Prof. Dr. André Casal Kulzer (Uni Stuttgart, IFS) Prof. Dr. Jakob Andert (RWTH Aachen, MMP)
<b>COORDINATION</b>	Simone Mirco (TOYOTA GAZOO Racing Europe GmbH)
<b>SPONSOR</b>	BMWK/IGF

### 10:15 DIH2jet (DI Hydrogen Combustion Process)

High-efficiency combustion process for hydrogen-based fuels

<b>PROJECT</b>	1446 · Fuels Efficiency · EG Engines · Final report
<b>PRESENTERS</b>	Anne Beyer (Uni Stuttgart, IFS) Michelangelo Balmelli (Empa)
<b>RTDs</b>	Prof. Dr. André Casal Kulzer (Uni Stuttgart, IFS) Christian Bach (Empa)
<b>COORDINATION</b>	Dr. Stephan Liebsch (IAV GmbH)
<b>SPONSOR</b>	FVV own funds, CORNET/BMWK/IGF

### 11:00 Coffee Break

### 11:45 **Modelling Approaches of Vehicle Induced PN/PM and Emission Reduction Strategies**

PN/PM tailpipe simulation, evaluation of modelling approaches for brake and tyre induced particles and development of advanced control strategies

<b>PROJECT</b>	1499 · Emissions · EG Zero-impact Emissions · Interim report
<b>PRESENTER</b>	Ferris Herkenrath (RWTH Aachen, tme)
<b>RTD</b>	Prof. Dr. (USA) Stefan Pischinger (RWTH Aachen, tme)
<b>COORDINATION</b>	Dr. Frank Bunar (IAV GmbH)
<b>SPONSOR</b>	FVV own funds

### 12:15 **TWC Reaction under High-frequency Lambda Switching**

TWC reaction mechanism identification under high-frequency lambda switching condition (dithering)

<b>PROJECT</b>	1482 · Emissions · EG Zero-impact Emissions · Final report
<b>PRESENTERS</b>	Prof. Dr. Olaf Deutschmann (KIT Karlsruhe, ITCP) Prof. Jin Kusaka (Waseda University)
<b>RTDs</b>	Dr. Patrick Lott (KIT Karlsruhe, Abgaszentrum) Prof. Dr. Olaf Deutschmann (KIT Karlsruhe, ITCP) Prof. Jin Kusaka (Waseda University) Prof. Dr. Thomas Koch (KIT Karlsruhe, IFKM)
<b>COORDINATION</b>	Toshihiro Mori (Toyota Motor Corporation)
<b>SPONSOR</b>	CORNET/BMWK/IGF

### 13:00 **Lunch Break**

### 14:30 Pass-by Noise Simulation

Simulation of noise emission during accelerated pass-by according to ISO 362

<b>PROJECT</b>	1489 · Emissions · EG Sustainable Powertrain Systems · Final report
<b>PRESENTER</b>	Simon Böld (RWTH Aachen, tme)
<b>RTD</b>	Prof. Dr. (USA) Stefan Pischinger (RWTH Aachen, tme)
<b>COORDINATION</b>	Dr. Stefan Heuer (MAN Truck & Bus SE)
<b>SPONSOR</b>	FVV own funds

### 15:00 Real Driving Data for Automotive Application

Real Driving Data and Use Cases for Automotive Powertrain Development

<b>PROJECT</b>	1488 · Hybrids · EG Sustainable Powertrain Systems · Interim report
<b>PRESENTERS</b>	Ulf Kühne (TU Braunschweig, ivb) Marcel Sander (TU Braunschweig, IfF)
<b>RTDs</b>	Prof. Dr. Roman Henze (TU Braunschweig, IfF) Prof. Dr. Peter Eilts (TU Braunschweig, ivb)
<b>COORDINATION</b>	Stefan Gottlieb (Robert Bosch GmbH)
<b>SPONSOR</b>	FVV own funds

### 15:30 On-board Emission Conformity Monitoring (OBECOM)

Emission monitoring in automobiles with on-board measurement

<b>PROJECT</b>	1460 · Emissions · EG Sustainable Powertrain Systems · Final report
<b>PRESENTERS</b>	Prof. Dr. Thomas Koch (KIT Karlsruhe, IFKM) Prof. Dr. Frank Atzler (TU Dresden, LVM) Prof. Dr. Jose Ignacio Huertas (Tecnológico de Monterrey)
<b>RTDs</b>	Prof. Dr. Thomas Koch (KIT Karlsruhe, IFKM) Prof. Dr. Frank Atzler (TU Dresden, LVM) Prof. Dr. Jose Ignacio Huertas (Tecnológico de Monterrey)
<b>COORDINATION</b>	Dr. Heike Többen (Purem GmbH)
<b>SPONSOR</b>	FVV own funds, CORNET / BMWK / IGF

### 16:15 Coffee Break

**17:00 CFD Simulation of Droplet Separators**

Development and implementation of an experimentally validated 3D-CFD model for the simulation of the separation efficiency of droplet separators for fuel cell systems

<b>PROJECT</b>	1455 · Development tools · EG Fuel Cells · Interim report
<b>PRESENTER</b>	Dr. Digvijay Singh (Helmholtz-Zentrum Dresden-Rossendorf)
<b>RTD</b>	Dr. Dirk Lucas (Helmholtz-Zentrum Dresden-Rossendorf)
<b>COORDINATION</b>	Dr. Michael Harenbrock (MANN+HUMMEL GmbH)
<b>SPONSOR</b>	FVV own funds

**17:30 Lifetime Model Winding Insulation**

The development of a holistic lifetime model for winding insulations of electrical machines on the basis of the acting damage mechanisms and their different characteristics

<b>PROJECT</b>	1441 · Materials · EG Materials Science & Recycling · Final report
<b>PRESENTERS</b>	Chuxuan He (Uni Stuttgart, IEH) Philipp Mell (Uni Stuttgart, IMA)
<b>RTDs</b>	Prof. Andreas Nicola (Uni Stuttgart, IMA) Prof. Dr. Stefan Tenbohlen (Uni Stuttgart, IEH)
<b>COORDINATION</b>	Dr. Zeljana Beslic (SEG Automotive Germany GmbH)
<b>SPONSOR</b>	BMWK/IGF

**18:00 End**

### 09:45 Tilting Pad Bearing Elastokinetics

Improvement of dynamic modeling and determination of pad stability criteria of tilting pad journal bearings considering elastic pad deformation and lubricant film inertial forces

PROJECT	1469 · Development Tools · EG Turbo Machines · Interim report
PRESENTER	Dr. Daniel Vetter (TU Clausthal, ITR)
RTD	Prof. Dr. Hubert Schwarze (TU Clausthal, ITR)
COORDINATION	Dr. Tobias Wiedemann (MAN Energy Solutions SE)
SPONSOR	BMWK/IGF

### 10:15 Cooling Flow Measurements Using MRI

Experimental investigation of impingement and film cooling flows using magnetic resonance imaging (MRI) to validate numerical methods

PROJECT	1465 · Development Tools · EG Turbo Machines · Interim report
PRESENTER	Dr. Martin Bruschewski (Uni Rostock, LSM)
RTD	Prof. Dr. Sven Grundmann (Uni Rostock, LSM)
COORDINATION	Dr. Robert Krewinkel (MAN Energy Solutions SE)
SPONSOR	BMWK/IGF

### 10:45 Coffee Break

### 11:30 Inverse Dynamic Analysis

Development of a methodology for the simultaneous evaluation of parameter ranges for the non-linear dynamic design of bladings based on inverse optimization

PROJECT	1485 · Development Tools · EG Turbo Machines · Interim report
PRESENTER	Dr. Sebastian Tatzko (Leibniz Uni Hannover, IDS)
RTD	Prof. Dr. Jörg Wallaschek (Leibniz Uni Hannover, IDS)
COORDINATION	Dr. Andreas Hartung (MTU Aero Engines AG)
SPONSOR	FVV own funds, DFG

### 12:00 Optimization with Frequency Domain Based Methods

Application of frequency domain based flow solvers for the optimization of turbomachinery components based on the example of a turbine stage with end-wall contouring and purge flow influence

PROJECT	1462 · Development Tools · EG Turbo Machines · Interim report
PRESENTERS	Robin Brüggemann (RWTH Aachen, IST) Dr. Yingjie Zhang (RWTH Aachen, IST)
RTD	Prof. Dr. Peter Jeschke (RWTH Aachen, IST)
COORDINATION	Dr. Stephan Behre (MTU Aero Enginges AG)
SPONSOR	FVV own funds, BMWK/PtJ



**12:30 Unsteady Tandem Flow**

Unsteady flow phenomena in tandem blade multi-stage axial compressors

<b>PROJECT</b>	1360 · Development Tools · EG Turbo Machines · Final report
<b>PRESENTER</b>	Daniel Jäger (TU München, LTF)
<b>RTD</b>	Prof. Dr. Volker Gümmer (TU München, LTF)
<b>COORDINATION</b>	Dr. Henner Schrapp (Rolls-Royce Deutschland Ltd & Co KG)
<b>SPONSOR</b>	FVW own funds, DFG

**13:00 Lunch Break**
**14:30 »Physics-based Thermoacoustic Modelling«**

Keynote lecture: Progress and Challenges of Physics-based Thermoacoustic Modelling

<b>PRESENTER</b>	Prof. Dr. Kilian Oberleithner (TU Berlin, ISTA)
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**15:15 Flexible HP-Turbines**

Aerothermal interaction mechanisms at the outer casing region of modern high pressure turbines

<b>PROJECT</b>	1447 · Development Tools · EG Turbo Machines · Interim report
<b>PRESENTERS</b>	Dominik Ade (TU Darmstadt, GLR) Marius Linne (TU Darmstadt, GLR)
<b>RTD</b>	Prof. Dr. Heinz-Peter Schiffer (TU Darmstadt, GLR)
<b>COORDINATION</b>	Christoph Lyko (Rolls-Royce Deutschland Ltd & Co KG)
<b>SPONSOR</b>	FVW own funds, DFG

**15:45 Dynamic of Swirl and Jet Flames II**

Prediction of the flame transfer functions of swirl and jet flames

<b>PROJECT</b>	1421 · Development Tools · EG Turbo Machines · Final report
<b>PRESENTER</b>	Prof. Dr. Kilian Oberleithner (TU Berlin, ISTA)
<b>RTDs</b>	Prof. Dr. Kilian Oberleithner (TU Berlin, ISTA) Prof. Dr. Wolfgang Polifke (TU München, TFD)
<b>COORDINATION</b>	Dr. Lukasz Panek (Siemens Energy Global GmbH & Co. KG)
<b>SPONSOR</b>	FVW own funds, DFG

**16:15 Coffee Break**
**17:00 Constraint Effect in Component Design**

**17:00 Constraint Effect in Component Design**

Allowance for the crack-tip constraint in the design against ductile failure

<b>PROJECT</b>	1440 · Components · EG Turbo Machines · Final report
<b>PRESENTER</b>	Dr. Igor Varfolomeev (Fraunhofer-IWM)
<b>RTDs</b>	Prof. Dr. Björn Kiefer (TU Bergakademie Freiberg, IMFD) Prof. Dr. Meinhard Kuna (TU Bergakademie Freiberg, IMFD) Prof. Dr. Peter Gumbsch (Fraunhofer-IWM)
<b>COORDINATION</b>	Dr. Christian Amann (Siemens Energy Global GmbH & Co. KG)
<b>SPONSOR</b>	BMWK/IGF

**17:30 Creep-fatigue Crack Behavior of Welded Joints II**

Assessment of flaws in welded joints in power plants under flexible operation II

<b>PROJECT</b>	1458 · Materials · EG Turbo Machines · Interim report
<b>PRESENTER</b>	Dr. Falk Mueller (TU Darmstadt, MPA-IfW)
<b>RTDs</b>	Prof. Dr. Stefan Weihe (Uni Stuttgart, IMWF) Prof. Dr. Matthias Oechsner (TU Darmstadt, MPA-IfW)
<b>COORDINATION</b>	Dr. Shilun Sheng (Siemens Energy Global GmbH & Co. KG)
<b>SPONSOR</b>	AVIF

**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**

NN

→ **Turbo Machines**

Heinz Knittel · MTU Aero Engines

→ **Zero-impact Emissions**

Dr. Frank Bunarl · IAV

**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

13–15 March 2024 Würzburg · Germany

### DATE AND VENUE

13–15 March 2024

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 14 March 2024.

**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, 1 March 2024**.

Participation can be cancelled free of charge until **Friday, 8 March 2024**. 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 13–15 March 2024 at a preferential rate of 136 € (Classic incl. breakfast), 146 € (Comfort incl. breakfast).

The closing date is **Wednesday, 31 January 2024**. The reservation code is ›FVV‹. Early booking is recommended.

**+49 931 3053 830**  
[reservierung.wur@maritim.de](mailto:reservierung.wur@maritim.de)

### ORGANISERS

The event is organised by  
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60528 Frankfurt/M., Germany  
[www.maschinenbau-institut.de](http://www.maschinenbau-institut.de)

On behalf of  
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Innovative and sustainable research cooperations need a stable funding framework. Our projects are funded through contributions from member companies, cooperations and from public research funds.

**We would like to thank all of our sponsors and research partners for their fantastic support!**

[www.fvv-net.de](http://www.fvv-net.de)