



**INFORMATION SESSIONS**  
Engines | Turbomachinery

# FVV Autumn Conference

## 27–28 September 2018

Maritim Hotel Würzburg



# Planning Groups

## 2018 Overview

### ENGINES

System Dr Peter Riegger (MTU Friedrichshafen)	1
Combustion SI Dr Bodo Durst (BMW)	2
Combustion CI Dr Christian Weiskirch (MAN Truck & Bus)	3
Strength & Tribology Dr Dieter Eppinger (SEG Automotive)	4
Engine Dynamics & Acoustics Prof Dr Christoph Brands (Schaeffler Technologies)	5
Emissions & Immissions Prof Dr Uwe Gärtner (Daimler)	6
Fuel Cells Dr Michael Bauer (BMW)	7

### TURBOMACHINERY

Turbomachinery Dr Dirk Hilberg (Rolls-Royce)	T
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### Chairmen of the FVV Scientific Advisory Committee

Dr Tobias Lösche-ter Horst (Volkswagen) and  
Dr Dirk Hilberg (Rolls-Royce)



# Information Sessions

## 27 September 2018 | Schedule (CEST)

### ENGINES

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**09:30–17:45** | Information Sessions of the Engine Planning Groups (1–7)  
**10:30–11:00** Coffee Break | **12:30–14:00** Lunch Break | **16:15–16:45** Coffee Break  
Venue: Maritim Hotel Würzburg | Saal Frankonia

Session Programme  
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**Poster Session** | During the breaks, the Research and Technology (RTD) performers will inform you on the progress of selected projects from our current engine research programme.

### TURBOMACHINERY

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**09:30–17:00** | Information Session of the Turbomachinery Planning Group (T)  
**11:00–11:30** Coffee Break | **12:30–14:00** Lunch Break | **15:15–15:30** Coffee Break  
Venue: Maritim Hotel Würzburg | Room 11+12

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**Start 19:00** | Evening reception for all participants in the FVV Autumn Conference  
Meet at the Lobby, Maritim Hotel Würzburg | Venue: Würzburger Hofbräukeller,  
Jägerstraße 17, 97082 Würzburg, Germany

# FVV Committee Meetings

## 28 September 2018 | Schedule (CEST)

The Friday sessions are exclusively reserved for internal FVV committee meetings. FVV members will receive the related agendas and documents fifteen days prior to the meeting.

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**09:00–09:45** | Annual Meeting of Members

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**09:45–10:45** | Scientific Advisory Committee

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**11:00–17:00** | Turbomachinery Planning Group (T)

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**11:00–16:00** | Engine Planning Groups (1-7)

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**16:00–18:00** | Engine Research Committee

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# Session Programme

27 September 2018 | Engines (CEST)



ENGINES | SAAL FRANKONIA

## 09:30 » Variable Cross Section Compressor « | No 1194

Active measures for the map expansion of a centrifugal compressor through cross section variation for turbo-charged gasoline engines

PRESENTERS: Prof Dr-Ing Jörg Seume (TFD | Leibniz Uni Hannover),  
Prof Dr-Ing Peter Eilts (IVB | TU Braunschweig)

RTDs: Prof Dr-Ing Jörg Seume (TFD | Leibniz Uni Hannover),  
Prof Dr-Ing Peter Eilts (IVB | TU Braunschweig)

CHAIRPERSON: Marc Sens (IAV)

DURATION: 01/06/2015 – 28/02/2018 (Final Report)

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### System

Dr Peter Riegger  
(MTU Friedrichshafen)

## 10:00 » Fuels for PHEV Vehicles « | No 1253

Investigation on interactions of fuels and components of the fuel supply systems in plug-in hybrid electric vehicles (PHEV)

PRESENTER: Sebastian Feldhoff (OWI Oel-Waerme-Institut)

RTDs: Dr-Ing Klaus Lucka (OWI Oel-Waerme-Institut),  
Dr Olaf Schröder (Technologietransferzentrum Automotive | HS Coburg)

CHAIRPERSON: Prof Dr Thomas Garbe (VOLKSWAGEN)

DURATION: 01/01/2017 – 28/02/2018 (Final Report)

10:30 Coffee Break

## 11:00 » Acoustic Transmission Loss in Turbochargers « | No 1214

Experimental determination and modelling of passive acoustic properties of turbochargers

PRESENTER: Hendrik Ruppert (VKA | RWTH Aachen)

RTD: Univ-Prof Dr-Ing Stefan Pischinger (VKA | RWTH Aachen)

CHAIRPERSON: Bernd Müller (Porsche)

DURATION: 01/02/2016 – 30/04/2018 (Final Report)

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### Engine Dynamics & Acoustics

Prof Dr Christoph Brands  
(Schaeffler Technologies)

## 11:40 » Cathode Air Quality Requirements for LT-PEM Fuel Cells « | No 1295

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

PRESENTER: Dr Joachim Scholta (ZSW | Baden-Württemberg)

RTD: Prof Dr Werner Tillmetz (ZSW | Baden Württemberg)

CHAIRPERSON: Dr Michael Harenbrock (MANN+HUMMEL)

DURATION: 15/01/2018 – 14/08/2020 (Interim Report)

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### Fuel Cells

Dr Michael Bauer (BMW)

# Session Programme

## 27 September 2018 | Engines (CEST)

ENGINES | SAAL FRANKONIA

### 12:10 » Cooling Fuel Cells « | No 1296

Development of a fuel cell stack emulator for testing and evaluation of components, materials, and fluids for use in cooling systems of fuel cells

PRESENTER: Rüdiger Reitz (IfW | TU Darmstadt)

RTD: Prof Dr-Ing Matthias Oechsner (IfW | TU Darmstadt)

CHAIRPERSON: Dr-Ing Markus Kaiser (TheSys)

DURATION: 01/01/2018 – 31/03/2019 (Interim Report)

### 12:40 Lunch Break

### 14:00 » Hans Dinger Award 2018 «

Announcement of the award winner and two runners up Laudatory speech on the academic work of the award winner

PRESENTER: Dr Tobias Lösche-ter Horst (Chairman of the FVV Scientific Advisory Committee)



7th Presentation of the FVV Young Researchers Award

### 14:45 » Climate-neutral Driving in 2050 «

Options and requirements for a carbon-neutral transportation sector: Energy pathways for the road traffic of the future (electric vehicles, hydrogen fuel cell vehicles, electricity-based fuels) - investments and costs - climate protection and market acceptance – research perspectives

PRESENTER: Dr-Ing Ulrich Kramer (Ford)



Future fuels

### 15:15 » Downsizing with Variabilities in the Airpath of a Commercial Vehicle Engine II « | No 1199

Downsizing with variabilities in the airpath of a commercial vehicle engine – definition of the necessary variabilities in the airpath of a commercial vehicle engine to improve specific power with experiments and thermodynamic analysis in respect to rising peak cylinder pressures, alternative fuels and new combustion processes

PRESENTER: Prof Dr-Ing Peter Eilts (IVB | TU Braunschweig)

RTD: Prof Dr-Ing Peter Eilts (IVB | TU Braunschweig)

CHAIRPERSON: Dr-Ing Christian Weiskirch (Volkswagen Truck & Bus)

DURATION: 01/07/2015 – 30/06/2018 (Final Report)



Combustion CI

Dr Christian Weiskirch  
(Volkswagen Truck & Bus)

# Session Programme

## 27 September 2018 | Engines (CEST)

ENGINES | SAAL FRANKONIA

**15:45 » BIOPTIC 3 - LIF in Multicomponent Fuels in Engines « | No 1203**  
Development of laser-based imaging for visualizing the effects of preferential evaporation of multicomponent fuels in IC engines

PRESENTER: Prof Dr-Ing Sebastian Kaiser (IVG | Uni Duisburg-Essen)

RTD: Prof Christof Schulz und Prof Dr Sebastian Kaiser, (IVG | Uni Duisburg-Essen)

CHAIRPERSON: Dr-Ing Hendrik Thering (VOLKSWAGEN)

DURATION: 01/09/2015 – 30/04/2018 (Final Report)

16:15 Coffee Break

**16:45 » Fatigue in Corrosive Fuels « | No 1168**  
Development and experimental verification of a fatigue assessment method for highly loaded engine components in corrosive fuels

PRESENTER: Sven Käfer (SAM | TU Darmstadt), Tom Engler (IfW | TU Darmstadt)

RTDs: Prof Dr-Ing Matthias Oechsner (IfW | TU Darmstadt),  
Prof Dr-Ing Tobias Melz (SAM | TU Darmstadt)

CHAIRPERSON: Hendrik Lindel (Robert Bosch)

DURATION: 01/07/2014 – 30/06/2018 (Final Report)

### 4 Strength & Tribology

Dr Dieter Eppinger  
(SEG Automotive)

**17:15 » Degradation of Lubes by new Fuels « | No 1228**  
Effects of new gasoline fuels on the ageing of lubricants and resulting effects on tribology of engine components

PRESENTER: Sascha Prehn (LKV | Uni Rostock)

RTD: Prof Dr-Ing Bert Buchholz (LKV | Uni Rostock)

CHAIRPERSON: Dr-Ing Peter Berlet (IAVF Antriebstechnik)

DURATION: 01/07/2016 – 30/09/2018 (Final Report)

17:45 Close

# Session Programme

27 September 2018 | Turbomachinery (CEST)

TURBOMACHINERY | ROOM 11+12

**09:30 » Thermally Extended Rotordynamic of Turbochargers « | No 1258**  
 Extended thermal modeling for transient, hydrodynamically coupled simulation of nonlinear rotordynamics of turbochargers

PRESENTER: Cornelius Irmscher und Christian Ziese (IFME | OVGU Magdeburg)

RTDs: Prof Dr-Ing habil Jens Strackeljan and Jun-Prof Dr-Ing Elmar Woschke (IFME | OVGU Magdeburg)

CHAIRPERSON: Thomas Klimpel (ABB Turbo Systems)

DURATION: 01/01/2017 – 30/06/2019 (Interim Report)

**10:00 » Turbosteel « | No 1176**  
 High-strength materials and material finishing systems for applications in turbo transmissions for maximum demands on power densit

PRESENTER: Fabian Goergen (WZL | RWTH Aachen)

RTDs: Univ-Prof Dr-Ing Christian Brecher (WZL RWTH Aachen), Prof Dr-Ing Hans-Werner Zoch (IWT | Leibniz-Institut Bremen)

CHAIRPERSON: Karl Schreiber (Rolls-Royce)

DURATION: 01/05/2014 – 30/04/2018 (Final Report)

**10:30 » Bi-layer Thermal Barrier Coating Systems II « | No 1195**  
 Development of a mechanism-based lifetime model for bi-layer thermal barrier coating systems II - from microstructure to component

PRESENTER: Marcel Adam (IfW | TU Darmstadt)

RTDs: Prof Dr-Ing Michael Schütze (DFI | DECHEMA-Forschungsinstitut), Prof Matthias Oechsner (IfW | TU Darmstadt), Prof Dr-Ing Robert Vaßen (Forschungszentrum Jülich)

CHAIRPERSON: Dr-Ing Werner Stamm (Siemens)

DURATION: 01/07/2015 – 31/03/2018 (Final Report)

**11:00** Coffee Break

**11:30 » Probabilistic Methods - Creep Fatigue « | No 1181**  
 Probabilistic lifetime assessment of high temperature components under creep-fatigue loading

PRESENTER: Felix Kölzow (IfW | TU Darmstadt)

RTD: Prof Dr-Ing Matthias Oechsner (IfW | TU Darmstadt)

CHAIRPERSON: Henning Almstedt (Siemens)

DURATION: 01/05/2015 – 30/06/2018 (Final Report)

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Turbomachinery

Dr Dirk Hilberg  
 (Rolls Royce)

# Session Programme

## 27 September 2018 | Turbomachinery (CEST)



TURBOMACHINERY | ROOM 11+12

### 12:00 » Wheel-space Sealing « | No 1240

Development of a calculation strategy for the improvement of sealing systems for wheel-spaces in turbomachinery

PRESENTER: Prof-Ing Wolfgang Schröder (AIA | RWTH Aachen)

RTD: Prof-Ing Wolfgang Schröder (AIA | RWTH Aachen)

CHAIRPERSON: Dr-Ing Karsten Kusterer (B&B-AGEMA)

DURATION: 01/10/2016 – 31/03/2019 (Interim Report)

T

Turbomachinery

Dr Dirk Hilberg  
(Rolls Royce)

12:30 Lunch Break

### 14:00 » Hans Dinger Award 2018 «

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PRESENTER: Dr Tobias Lösche-ter Horst (Chairman of the FVV Scientific Advisory Committee)



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Saal Frankonia

### 14:45 » Climate-neutral Driving in 2050 «

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PRESENTER: Dr-Ing Ulrich Kramer (Ford)



Future fuels

Saal Frankonia

15:15 Coffee Break

### 15:30 » Emission Modelling II « | No 1239

Modelling of emissions in gasturbines

PRESENTER: Konstantin Kleinheinz (ITV | RWTH Aachen)

RTD: Prof Dr-Ing Heinz Pitsch (ITV | RWTH Aachen)

CHAIRPERSON: Dr Ruud L.G.M. Eggels (Rolls-Royce)

DURATION: 01/08/2016 – 31/07/2018 (Final Report)

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Turbomachinery

Dr Dirk Hilberg  
(Rolls Royce)



# Session Programme

## 27 September 2018 | Turbomachinery (CEST)



TURBOMACHINERY | ROOM 11+12

**16:00 » 3D-DynRoCo Excitation and Vibration Analysis of Rotating Structures «**  
No 1220 | Development of a combined numerical and experimental approach  
for the 3D dynamic analysis of rotating components

**PRESENTER:** Tino Wollmann (ILK | TU Dresden)

**RTDs:** Prof Dr-Ing Nils Modler (ILK | TU Dresden),  
Prof Dr Norbert Hoffmann (Imperial College London)

**CHAIRPERSON:** Thorsten Lang (Rolls-Royce)

**DURATION:** 01/01/2016 – 31/03/2018 (Final Report)

**16:30 » Flexible Radial Compressor « | No 1196**  
Detailed examination of the part-load performance of centrifugal compressors  
for flexible power plant operation

**PRESENTER:** Martin Enneking (IST | RWTH Aachen)

**RTD:** Prof Dr-Ing Peter Jeschke (IST | RWTH Aachen)

**CHAIRPERSON:** Dr Matthias Schleer (Howden Turbo)

**DURATION:** 01/06/2015 – 31/05/2018 (Final Report)

**17:00** Close

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Turbomachinery

Dr Dirk Hilberg  
(Rolls Royce)

# Information

## Registration | Accommodation | Contact

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### Date and venue

27–28 September 2018

Maritim Hotel Würzburg | Pleichertorstraße 5,  
97070 Würzburg, Germany | [www.maritim.de](http://www.maritim.de)

Evening reception: Würzburger Hofbräukeller  
Jägerstraße 17, 97082 Würzburg, Germany  
[www.wuerzburger-hofbraeukeller.de](http://www.wuerzburger-hofbraeukeller.de)

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### Participant fee

Conference registration fee: 350.00 € (plus 19% VAT)  
Participants with FVV members discount: 250.00 €  
(plus 19% VAT)

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 27 September 2018.

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

Due to the increased number of participants, accompanying persons may participate only in exceptional cases in the evening reception. They must be registered and pay a fee of 60.00 € (including VAT).

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### General terms and conditions

You may register online through the [registration tool](#). The closing date for registrations is **Friday 14 September 2018**.

Participation can be cancelled free of charge until **Thursday 20 September 2018**. 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.

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### Hotel reservations

We have arranged for a roomblock at »Maritim Hotel Würzburg« from 26–28 September 2018 at a preferential rate of 117.00 € (Classic incl breakfast), 127.00 € (Comfort incl breakfast), 147.00 € (Superior incl breakfast).

The closing date is **Wednesday 8 August 2018**. The reservation code is »FVV«. Early booking is recommended.

T +49 931 3053-0 | [reservierung.wur@maritim.de](mailto:reservierung.wur@maritim.de)

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**Maschinenbau-Institut GmbH**  
ein Unternehmen des VDMA




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### Organisers

**The event is organised by**  
Maschinenbau-Institut GmbH  
Lyoner Strasse 18 | 60528 Frankfurt/M., Germany  
[www.maschinenbau-institut.de](http://www.maschinenbau-institut.de)

**On behalf of**  
FVV | The Research Association on Combustion Engines eV  
Lyoner Strasse 18 | 60528 Frankfurt/M., Germany  
[www.fvv-net.de](http://www.fvv-net.de)

For information please contact:  
Daniela Abdalla | T +49 69 6603 1345  
[abdalla@fvv-net.de](mailto:abdalla@fvv-net.de)

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### Save the date

Please note the dates for 2019:  
FVV Spring Conference: 28–29 March 2019 | Würzburg  
FVV Autumn Conference: 19–20 September 2019 | Würzburg



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für Wirtschaft  
und Energie



**FUNDING ORGANISATIONS**

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