



INFORMATION SESSIONS
Engines | Turbomachinery

FVV Autumn Conference

8–9 November 2021

Dorint Am Nürburgring Hocheifel


Planning Groups

2021 Overview

ENGINES

 System Dr Peter Riegger (Rolls-Royce Solutions)	1
 Combustion SI Dr André Casal Kulzer (Porsche)	2
 Combustion CI Dr Christian Weiskirch (TRATON)	3
 Strength & Tribology Dr Dieter Eppinger (SEG Automotive)	4
 Engine Dynamics & Acoustics Prof Dr Christoph Brands (Schaeffler Technologies)	5
 Emissions & Immissions Dr Volker Schmeißer (Daimler Truck)	6
 Fuel Cells Dr Volker Formanski (BMW)	7

TURBOMACHINERY

 Turbomachinery Dr Dirk Hilberg (Rolls-Royce)	T
---	---

Chairpersons of the FVV Scientific Advisory Committee

Dr Ekkehard Pott (Volkswagen) and
Dr Dirk Hilberg (Rolls-Royce)



Information Sessions

8 – 9 November 2021 | Schedule (CET)

ENGINES

MONDAY, 08.11.2021

12:00–17:00 Information Session of the Engine Planning Groups (1–3)

12:00–12:45 Lunch | 14:30–15:00 Break

Room: Melbourne-Sao Paulo-Monaco-Indianapolis

TUESDAY, 09.11.2021

09:00–12:00 | Information Session of the Engine Planning Groups (4–6)

10:30–11:00 Break | 12:00 - 13:00 Lunch

Room: Melbourne-Sao Paulo-Monaco-Indianapolis

Session Programme
Seite 4–7

TURBOMACHINERY

MONDAY, 08.11.2021

12:00–17:00 Information Session of the Turbomachinery Planning Group (T)

12:00–12:45 Lunch | 15:00–15:30 Break

Room: Magny-Sepang-Imola-Barcelona

TUESDAY, 09.11.2021

09:00–12:00 | Information Session of the Turbomachinery Planning Group (T)

10:30–11:00 Break | 12:00 - 13:00 Lunch

Room: Magny-Sepang-Imola-Barcelona

Session Programme
Seite 8–11

EVENING RECEPTION

MONDAY, 08.11.2021

19:00 | Evening reception for all participants in the FVV Autumn Conference

Venue: ring^owerk, Nürburgring Boulevard 1, 53520 Nürburg

Meetingpoint: at the venue (walking distance from the conference hotel in 4 minutes)

FVV Committee Meetings

9 November 2021 | Schedule (CET)

On Tuesday the FVV committee meetings will take place. FVV members will receive the related agendas and documents fifteen days prior to the meeting.

13:00–14:00 | Annual Meeting of Members

14:00–15:00 | Scientific Advisory Committeet

Session Programme

8 November 2021 | Engines (CET)

ENGINES | ROOM MELBOURNE-SAO PAULO-MONACO-INDIANAPOLIS

2

Combustion SI

Dr André Casal Kulzer
(Porsche)

12:00 Lunch

12:45 Welcome

13:00 » Thermodynamics Top Land Volume « | No 1260

Investigation and physical/chemical-based modeling in terms of energy balance of the effects of time varying portion of the unburned ground near the wall and the top land

PRESENTER: Prof Dr Michael Bargende (IFS, Uni Stuttgart)

RTD: Prof Dr Michael Bargende (IFS, Uni Stuttgart)

COORDINATION: Oliver Dingel (formerly IAV GmbH)

DURATION: 01/01/2017 – 30/04/2021 (Final report)

13:30 » Gas Pulsation and Turbochargers Interaction « | No 1311

Real-time capable investigation of pulsating turbine loading and compressor acceptance of a turbocharger under engine-like boundary conditions

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

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

COORDINATION: Marc Sens (IAV GmbH)

DURATION: 01/01/2018 – 30/06/2021 (Final report)

14:00 » Experimentally Validated LES Models for Wall Heat Transfer in Otto Engines « | No 1395

Laser diagnostics and validated LES models for wall heat transfer under several operating conditions of premixed charge Otto engines

PRESENTERS: Karri Keskinen (LAV, ETH Zürich), Marius Schmidt (RSM, TU Darmstadt)

RTDs: Prof Dr Konstantinos Boulouchos (LAV, ETH Zürich),
Prof Dr Andreas Dreizler (RSM, TU Darmstadt)

COORDINATION: Gabriel Dilmac (Porsche AG)

DURATION: 01/01/2020 – 31/03/2021 (Final report)

14:30 Break

Session Programme

8 November 2021 | Engines (CET)



ENGINES | ROOM MELBOURNE-SAO PAULO-MONACO-INDIANAPOLIS

15:00 » VVT for Diesel LNT Rich Purge « | No 1275
Variable valve trains for the regeneration of NOX storage catalysts on diesel engines

PRESENTER: Prof Dr Michael Bargende (IFS, Uni Stuttgart)

RTD: Prof Dr Michael Bargende (IFS, Uni Stuttgart)

COORDINATION: Christine Burkhardt (EnginOS GmbH)

DURATION: 01/04/2017 – 31/03/2021 (Final report)

3

Combustion CI

Dr Christian Weiskirch
(TRATON)

15:30 » Propeller Operation with Four-stroke Dual-fuel Engines II « | No 1280
Increase of the mean effective pressures of medium-speed four-stroke dual-fuel engines in gas mode at low engine-speeds

PRESENTERS: Prof Dr Friedrich Wirz (ASM, TU Hamburg), Prof Dr Peter Eilts (IVB, TU Braunschweig)

RTDs: Prof Dr Friedrich Wirz (ASM, TU Hamburg), Prof Dr Peter Eilts (IVB, TU Braunschweig)

COORDINATION: Dr Philipp Henschen (MAN Energy Solutions SE)

DURATION: 01/09/2017 – 28/02/2021 (Final report)

16:00 » Exhaust Gas Aftertreatment Before Turbine « | No 1305
Fundamentals of exhaust aftertreatment technologies upstream turbine systems

PRESENTER: Prof Dr Bernd Wiedemann (ILS, TU Berlin)

RTDs: Prof Dr Michael Bargende (IFS, Uni Stuttgart),
Prof Dr Bernd Wiedemann (ILS, TU Berlin)

COORDINATION: Dr Frank Bunar (IAV GmbH)

DURATION: 01/05/2018 – 30/06/2021 (Final report)

1

System

Dr Peter Riegger
(Rolls-Royce Solutions)

16:30 » Method Hybrid Testing « | No 1363
Methodology for testing hybrid electric powertrains under realistic loads by coupling an internal combustion engine test bench with an electric motor test bed

PRESENTER: Prof Dr Thomas Koch (IFKM, KIT Karlsruhe)

RTDs: Prof Dr Frank Gauterin (FAST, KIT Karlsruhe), Prof Dr Martin Doppelbauer (ETI, KIT Karlsruhe), Prof Dr Thomas Koch (IFKM, KIT Karlsruhe)

COORDINATION: Dr Marcus Gohl (APL GmbH)

DURATION: 01/07/2019 – 30/06/2021 (Final report)

17:00 End of the first day

Session Programme

9 November 2021 | Engines (CET)



ENGINES | ROOM MELBOURNE-SAO PAULO-MONACO-INDIANAPOLIS

09:00 » AICE - Technical Scenario for Carbon Neutral of ICE with Industry-Academia Collaboration « | Guest lecture

PRESENTER: Dr Taisuke Shiraishi (NISSAN Technical Centre Europe)

CO-AUTHORS: Hiromi Matsuura (Honda R&D Co.,Ltd.), Takashi Kikuchi (TOYOTA MOTOR CORPORATION), Takaaki Kitamura (Japan Automobile Research Institute (JARI))



AICE Session

Every two years, at our autumn meeting, we invite you to participate in a session of our Japanese partner association.

09:30 » Firing Friction Measurement Methodology « | No 1309 Methodology development of measurement of journal friction affected by in-cylinder pressure curve

PRESENTER: Prof Dr Adrian Rienäcker (IAF, Uni Kassel)

RTDs: Prof Dr Adrian Rienäcker (IAF, Uni Kassel), Prof Dr Michael Bargende (IFS, Uni Stuttgart)

COORDINATION: Tai Ono (SUBARU Corporation)

DURATION: 01/04/2018 – 31/03/2021 (Final report)

4

Strength & Tribology

Dr Dieter Eppinger
(SEG Automotive)

10:00 » High-pressure Components made of Ultra-high-strength Steels « | No 1289 High-pressure components made of ultra-high-strength steels - basics, potential and dimensioning methods

PRESENTER: Prof Dr Michael Vormwald (IFSW, TU Darmstadt)

RTDs: Prof Dr Michael Vormwald (IFSW, TU Darmstadt), Prof Dr Carsten Könke (MFPA, Bauhaus-Uni Weimar)

COORDINATION: Dr Wolfgang Scheibe (formerly Heinzmann GmbH & Co. KG)

DURATION: 01/11/2017 – 30/04/2021 (Final report)

10:30 Break

11:00 » Interior Noise Hybrid Powertrains « | No 1340 Simulation of the interior noise of hybrid powertrains

PRESENTER: Jan Troge (Fraunhofer IWU Dresden)

RTD: Prof Dr Welf-G. Drossel (Fraunhofer IWU Dresden)

COORDINATION: Rainer Weber (Vitesco Technologies GmbH)

DURATION: 01/01/2019 – 30/06/2021 (Final report)

5

Engine Dynamics & Acoustics

Prof Dr Christoph Brands
(Schaeffler Technologies)



Session Programme

9 November 2021 | Engines (CET)

ENGINES | ROOM MELBOURNE-SAO PAULO-MONACO-INDIANAPOLIS

11:30 »Ash Behaviour in Wall-flow Filters« | No 1292

Investigation of the ash storage and migration in wall-flow filters

PRESENTERS: Prof Dr Peter Eilts (IVB, TU Braunschweig),
Kamil Braschke (LSM, Bergische Uni Wuppertal)

RTDs: Prof Dr Peter Eilts (IVB, TU Braunschweig), Prof Dr Uwe Janoske
(LSM, Bergische Uni Wuppertal), Prof Dr Eberhard Schmidt (UWS, Bergische Uni Wuppertal)

COORDINATION: Dr Bernhard Lüers (FEV Europe GmbH)

DURATION: 01/12/2017 – 30/11/2020 (Final report)

6

Emissions & Immissions

Dr Volker Schmeißer
(Daimler Truck)

12:00 End of the second day & Lunch

Session Programme

8 November 2021 | Turbomachinery (CET)

TURBOMACHINERY | ROOM MAGNY-SEPANG-IMOLA-BARCELONA

12:00 Lunch

12:45 Welcome

13:00 »Thick-walled Castings II « | No 1259

Life assessment and damage mechanism at variable operation of thick-wall casings of modern steel casts

PRESENTER: Dirk Jobski (MPA-IfW, TU Darmstadt)

RTDs: Prof Dr Matthias Oechsner (MPA-IfW, TU Darmstadt),
Prof Dr Stefan Weihe (MPA, Uni Stuttgart)

COORDINATION: Dr Martin Reigl (GE Power)

DURATION: 01/01/2017 – 31/12/2020 (Final report)

13:30 »Robust Fracture Deformation Parameters « | No 1371

Robust evaluation of fracture deformation parameters to use the creep ductility within advanced lifetime assessment concepts

PRESENTER: Volker Knauthe (GRIS, TU Darmstadt)

RTDs: Prof Dr Matthias Oechsner (MPA-IfW, TU Darmstadt),
Prof Dr Arjan Kuijper (GRIS, TU Darmstadt), Prof Dr Stefan Weihe (MPA, Uni Stuttgart)

COORDINATION: Dr Torsten-Ulf Kern (Siemens Energy Global GmbH & Co. KG)

DURATION: 01/07/2019 – 30/06/2022 (Interim report)

14:00 »Lifing Methods, Multiaxial and Anisothermal (LEBEMAN) « | No 1288

Lifing methods for multiaxial and anisothermal high temperature fatigue

PRESENTERS: Dr Mario Raddatz (TEA, TU Dresden), Marco Böcker (IWT, TU Bergakademie Freiberg)

RTDs: Prof Dr Uwe Gampe (TEA, TU Dresden),
Prof Dr Horst Biermann (IWT, TU Bergakademie Freiberg)

COORDINATION: Dr Hartmut Schlums (Rolls-Royce Deutschland Ltd & Co KG)

DURATION: 01/09/2017 – 31/05/2021 (Final report)

14:30 »TMF Crack Path Calculation for Turbocharger Hot Parts « | No 1351

Numerical simulation and evaluation of crack propagation in time and space of exhaust turbocharger hot parts under thermomechanical fatigue loading with finite element programs

PRESENTER: Dr Bernard Fedelich (BAM Berlin)

RTDs: Prof Dr Meinhard Kuna (IMFD, TU Bergakademie Freiberg),
Prof Birgit Skrotzki (BAM Berlin)

COORDINATION: Dr Andreas Koch (Rolls-Royce Solutions GmbH)

DURATION: 01/02/2019 – 30/09/2022 (Interim report)

T

Turbomachinery

Dr Dirk Hilberg
(Rolls-Royce)

Session Programme

8 November 2021 | Turbomachinery (CET)



TURBOMACHINERY | ROOM MAGNY-SEPANG-IMOLA-BARCELONA

15:00 Break

T

Turbomachinery

Dr Dirk Hilberg
(Rolls-Royce)

15:30 » Rotordynamic Casing Models and Model Update « | No 1376
Development of nonlinear casing models and multi-step model updating strategies for improved rotordynamic models

PRESENTERS: Prof Dr Jörg Seume (TFD, Leibniz Uni Hannover),
Prof Dr Jörg Wallaschek (IDS, Leibniz Uni Hannover)

RTDs: Prof Dr Jörg Seume (TFD, Leibniz Uni Hannover),
Prof Dr Jörg Wallaschek (IDS, Leibniz Uni Hannover)

COORDINATION: Dr Joachim Schmied (Delta JS AG)

DURATION: 01/11/2019 – 30/04/2022 (Interim report)

16:00 » Dynamics of TC Rotors with Coupled Bearings « | No 1373
Transient simulation of the non-linear dynamics of exhaust gas turbocharger rotors, taking into account the interactions of journal and thrust bearings via the oil supply system

PRESENTERS: Christian Ziese (IFME, Otto-von-Guericke-Uni Magdeburg),
Cornelius Irmischer (IFME-FSK, Otto-von-Guericke-Uni Magdeburg)

RTDs: Prof Dr Jens Strackeljan (IFME, Otto-von-Guericke-Uni Magdeburg),
Jun-Prof Dr Elmar Woschke (IFME-FSK, Otto-von-Guericke-Uni Magdeburg)

COORDINATION: Thomas Klimpel (ABB Schweiz AG, Turbocharging Ltd)

DURATION: 01/10/2019 – 31/03/2022 (Interim report)

16:30 » Tilting Pad Bearing Dynamics « | No 1356
Modelling and identification of non-speed-synchronous dynamic tilting pad bearing properties to improve the stability analysis of rotor-bearing systems with special consideration of structural elasticities

PRESENTER: Phillipp Zemella (ITR, TU Clausthal)

RTD: Prof Dr Hubert Schwarze (ITR, TU Clausthal)

COORDINATION: Klaus Steff (Siemens Energy AG)

DURATION: 01/03/2019 – 31/08/2021 (Final report)

17:00 End of the first day

Session Programme

9 November 2021 | Turbomachinery (CET)

TURBOMACHINERY | ROOM MAGNY-SEPANG-IMOLA-BARCELONA

09:00 » Aerodynamics of Tandem Stators II « | No 1261

Investigation of the aerodynamics of compressor blades in a tandem stator cascade including 3D wall interaction with hub clearance

PRESENTER: Liesbeth Konrath (ILR, TU Berlin)

RTD: Prof Dr Dieter Peitsch (ILR, TU Berlin)

COORDINATION: Dr Henner Schrapp (Rolls-Royce Deutschland Ltd & Co KG)

DURATION: 01/01/2017 – 30/06/2021 (Final report)

09:30 » Aeroelastic Cascade DELTA « | No 1331

Experimental investigations on the aeroelastic stability of compressor blades by changing bending and torsion modeshapes

PRESENTER: Julian Gambel (ILR, TU Berlin), Harry Hill (Imperial College London)

RTDs: Prof Dr Dieter Peitsch (ILR, TU Berlin), Prof Mike Lowe (Imperial College London)

COORDINATION: Dr Sabine Schneider (Rolls-Royce Deutschland Ltd & Co KG)

DURATION: 01/06/2018 – 30/04/2021 (Final report)

10:00 » Unsteady Tandem Flow « | No 1360

Investigation of unsteady flow in compressor tandem blading

PRESENTER: Daniel Jäger (LTF, TU München)

RTD: Prof Dr Volker Gümmer (LTF, TU München)

COORDINATION: Dr Henner Schrapp (Rolls-Royce Deutschland Ltd & Co KG)

DURATION: 01/10/2019 – 30/09/2021 (Final report)

10:30 Break

11:00 » Design and Implementation of the FVV Industrial Compressor « | No 1279

Design and implementation of the FVV industrial compressor with a variable inlet guide vane for the investigation of flow instabilities that limit the usable map width

PRESENTERS: Julian Stemmermann & Loic Reymond (IST, RWTH Aachen)

RTD: Univ-Prof Dr Peter Jeschke (IST, RWTH Aachen)

COORDINATION: Dr Matthias Schleer (Howden Turbo GmbH)

DURATION: 01/07/2017 – 30/06/2021 (Final report)

T

Turbomachinery

Dr Dirk Hilberg
(Rolls-Royce)

Session Programme

9 November 2021 | Turbomachinery (CET)

TURBOMACHINERY | ROOM MAGNY-SEPANG-IMOLA-BARCELONA

11:30 » Hot Gas Ingestion into Wheel Cavities in Gas Turbines - Test Turbine «
No 1345 | Investigation of hot gas ingestion through turbine rim seals into
wheel cavities of axial turbines - Test rig Installation

PRESENTER: Prof Dr Manfred Wirsum (IKDG, RWTH Aachen)

RTD: Prof Dr Manfred Wirsum (IKDG, RWTH Aachen)

COORDINATION: Dr Marco Konle (MTU Aero Engines AG)

DURATION: 01/02/2019 – 31/10/2021 (Final report)

T

Turbomachinery

Dr Dirk Hilberg
(Rolls-Royce)

12:00 End of the second day & Lunch



Information

Registration | Accomodation| Contact

Date and venue

8–9 November 2021

Dorint Am Nürburgring Hocheifel, Grand-Prix-Strecke,
53520 Nürburg, Germany | www.dorint.de

Evening reception: ring°werk, Nürburgring Boulevard 1,
53520 Nürburg, Germany | www.nuerburgring.de

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 8 November 2021.

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 **Monday 25 October 2021**.

Participation can be cancelled free of charge until **Monday
1 November 2021**. In case of cancellation after the dead-
line 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 »Dorint Am Nürbur-
gring Hocheifel« from 8 - 9 November 2021 at a preferen-
tial rate of 95,00 € (incl breakfast) .

The closing date is **Monday 13 September 2021**. The re-
servation code is »FVV«. Early booking is recommended.

T +49 2691 309-592 | reservierung.nuerburgring@dorint.com

A further roomblock has been reserved at the»Nürbur-
gring Congress Hotel« rom 8 - 9 November 2021 at a
preferential rate of 123,00 € (incl breakfast).

The closing date is **Monday 13 September 2021**. The re-
servation code is »FVV«. Early booking is recommended.

T +49 2691 3025655 | reservierung.nuerburgring@lindner.de

Maschinenbau-Institut GmbH
ein Unternehmen des VDMA



Organisers

The event is organised by

Maschinenbau-Institut GmbH
Lyoner Strasse 18 | 60528 Frankfurt/M., Germany
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

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

Save the date

Please note the dates for 2022:

FVV Spring Conference: 31 March – 1 April 2022 | Würzburg

FVV Autumn Conference: 6–7 October 2022 | Würzburg



FUNDING ORGANISATIONS

Federal Ministry for Economic Affairs and Energy
Federation of Industrial Research Associations

PARTNER ASSOCIATIONS

Mechanical Engineering Research Federation
Mechanical Engineering Industry Association