Engine 9th Cungress

Meeting Place for the Powertrain Community



22 and 23 February 2022 | Baden-Baden | Germany

with accompanying trade exhibition

Main topics

- Climate-friendly internal combustion engines from a global perspective
- Internal combustion engines and fuels as a complete system: CO₂ neutrality, emissions, electrification
- The use of hydrogen and synthetic fuels
- Cross-sector life cycle considerations

Panel discussion

The internal combustion engine in regenerative energy systems of the future

Top speakers



Dr. Norbert Alt, FEV Group GmbH | Dr. Joachim Damasky, German Association of the Automotive Industry (VDA) | Dr. Jörg Dehmel, Shell Deutschland GmbH | Prof. Dr. Thomas Garbe, Volkswagen AG | Dr. Thomas Hametner, Österreichischer Automobil-, Motorrad- und Touringclub (ÖAMTC), Austria | Mats Hultman, Neste Corporation, Sweden | Dr. Masaaki Kubo, Nissan Motor Co., Ltd., Japan | Björn Noack, Robert Bosch GmbH | Dr. Markus Schwaderlapp, DEUTZ AG | Dr. Frank-Steffen Walliser, Dr. Ing. h.c. F. Porsche AG | Ulrich Weiß, Liebherr Machines Bulle SA, Switzerland





ण Wissensforum

www.ATZlive.com



A WARM WELCOME TO ALL PARTICIPANTS

More than ever before, climate protection is at the center of the social, political, and industrial discussion in our economies. A major contribution must be made by abandoning fossil fuels, which are currently the world's dominant source of energy, as quickly as possible.

Hydrogen and synthetic fuels based on biomass and electricity offer excellent potential for quickly transferring the existing infrastructure, together with the billions of vehicles and machines that use internal combustion engines, to a defossilized world. In the mobility sector, the internal combustion engine running on non-fossil fuels is not in competition with all-electric drive systems.

With its unique concept, the International Engine Congress will once again in 2022 bring together the current state of technological knowledge of the overall system of non-fossil fuels and internal combustion engines and a holistic assessment of this system with regard to climate protection.

Stay abreast of current trends and benefit from a lead in knowledge!

- You can expect international speakers as well as top-level presentations and panel discussions
- The congress is a great opportunity to "network" the evening event for the engine community offers stimulating discussions in an informal atmosphere
- The trade exhibition, held in parallel, provides ample information about innovative products and services in the field of combustion engine development

We look forward to your participation.

On behalf of the program advisory boards

Prof. Dr. Refer Gutzmer Scientific Director of the Congress, Editor-in-Charge ATZ | MTZ Group

THE INTERNATIONAL ENGINE CONGRESS AS A HYBRID EVENT



You have the choice: attend the congress in person or take part via our live stream

The streaming package includes all keynote, impulse, and plenary presentations as well as the panel discussion and all presentations of the parallel sessions "passenger car engine technology", "commercial vehicle engine technology" and "sustainable fuels & energy".

The digital event platform with the live stream offers you Q&A functions, 1:1 video chats with participants, exhibitors, and speakers, as well as live opinion surveys, your personal program overview, a virtual exhibition, and other useful functions.

You can find detailed information on our website.



ENGINE COMMUNITY EVENING

As every year, ATZlive and VDI Wissensforum invite you to round off the first day of the International Engine Congress with a get-together in Baden-Baden. You can look forward to interesting conversations with colleagues over dinner and have the opportunity to expand your network

Tuesday, 22 February 2022, 19:00 h



SIMULTANEOUS INTERPRETING GERMAN \rightarrow ENGLISH







PARTICIPANTS

The event is primarily aimed at engineers and technicians in the industry or those involved in research and teaching, who are engaged in the optimization of the traditional developmental areas of the combustion engine or the advancement of procedures and systems to produce conventional or renewable fuels and lubricants. The lectures will be equally attractive for chemists and biologists who work in this industry. The focus will be on both diesel and spark-ignition engines (gasoline/gas) for passenger and commercial vehicles and offhighway applications.



PROGRAM ADVISORY BOARDS

PASSENGER CAR ENGINE TECHNOLOGY



Prof. Dr. Peter Gutzmer Editor-in-Charge ATZ | MTZ Group

Prof. Dr. Helmut

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Eichlseder

Director of the

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Dr. Michael Elicker

Manager Heavy Duty

System Engineering,

Schaeffler Techno-

logies AG & Co. KG



Dr. Martin Berger Vice President Corporate Research and Advanced Engineering, MAHLE International GmbH



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Schünemann Director System Engineering Powertrain Subsystems, Robert Bosch GmbH



Center GmbH



Prof. Dr. **Christian Beidl** Director of the Institute, VKM,

TU Darmstadt



Dr. Andreas Broda Vice President Internal Combustion Engines & Exhaust Aftertreatment, MAN Truck & Bus SE



Jürgen Lehmann Head of R&D Engine & Aftertreatment Systems, Daimler Truck AG



Bernhard Raser Product Manager Commercial Vehicles On-Road, AVL List GmbH [A]



Philip Scarth General Manager, FPT Motorenforschung AG (CH)



Dr. Markus Schwaderlapp SVP Product Development, DEUTZ AG



Dieter van der Put Global Vice President Commercial Powertrains, FEV Group GmbH



SUSTAINABLE FUELS & ENERGY



Karl Dums Manager Politics and Governmental Affairs, Dr. Ing. h.c. F. Porsche AG



Dr. David Bothe Associate Director. Frontier Economics Ltd.





Dietmar Goericke Managing Director, Research Association for Combustion Engines (FVV e. V.)



Prof. Dr. Kurt Kirsten Head of Advanced Engineering and Innovation, APL Automobil-Prüftechnik Landau GmbH



Director of the Institute, IFKM, Karlsruhe Institute of Technology (KIT)



Dr. Wolfgang Warnecke Adviser Carbon Management, Shell Global Solutions (Deutschland) GmbH



Powertrain

Dr. Werner Willems Technical Specialist Combustion Systems, Ford Forschungszentrum Aachen GmbH

engine Cungress Program



12:45 Lunch 16:00 Coffee break

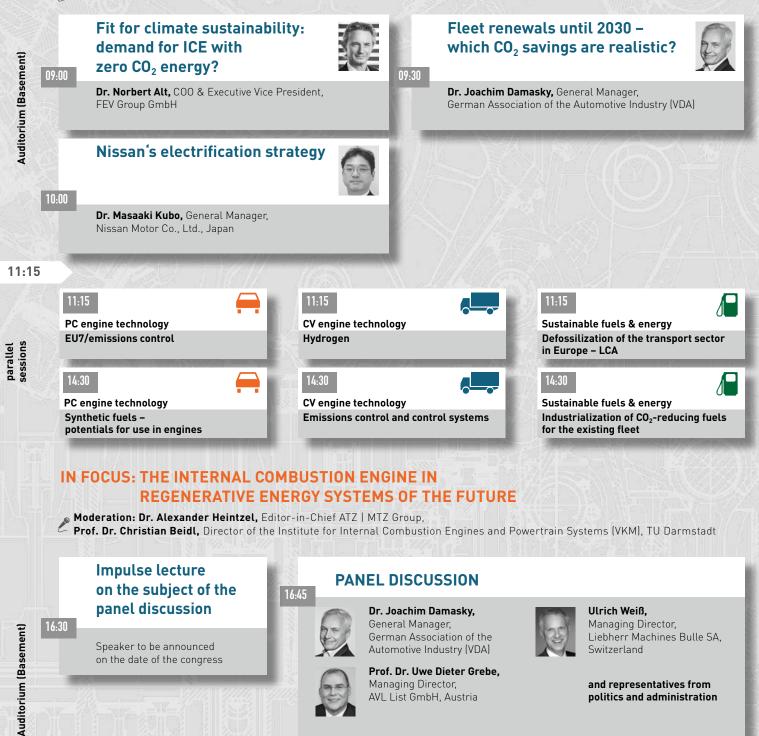


08:45

Welcome and opening of the congress as well as introduction to the program of lectures Prof. Dr. Peter Gutzmer, Scientific Director of the Congress

KEYNOTE LECTURES I

Moderation: Prof. Dr. Peter Gutzmer, ATZ | MTZ Group



18:15

19:00

End of the first day of the congress

Engine community evening

🗧 Breaks 🗙 09:30 Coffee break Wednesday, 23 February 2022 12:15 Lunch 14:30 Coffee break 08:30 08:30 08:30 08:30 parallel sessions PC engine technology CV engine technology Sustainable fuels & energy Concepts for a hydrogen Variable valve and crank trains Innovative system solutions internal combustion engine for fuels and combustion engines PLENARY LECTURES Moderation: Karl Dums, Dr. Ing. h.c. F. Porsche AG Renewable fuels and eFuels Future powertrains the mobile citizen's view take us closer to the climate goals Auditorium (Basement) 10:15 10:45 Mats Hultman, Head of OEM Partnerships, Dr. Thomas Hametner, Head of Technology, Test and Safety, Österreichischer Automobil-, Motorrad- und Touringclub Neste Corporation, Sweden, (ÖAMTC), Co-author: Dr. Jürgen Blassnegger, Technisches Co-author: Dr. Teemu Sarjovaara, Neste Corporation, Finland Büro Blassnegger, both Austria Challenges and solutions The future of the sports car – for fuels of today and eFuels and their application tomorrow for a chemical and 11:45 fuels production unit 11:15 Dr. Frank-Steffen Walliser, Vice President Dr. Jörg Dehmel, Transformation Manager, Product Lines 911/718, Co-author: Jan Feldmann, Shell Deutschland GmbH both Dr. Ing. h.c. F. Porsche AG 13:30 13:30 13:30 parallel sessions Sustainable fuels & energy PC engine technology CV engine technology The hybridized internal Outlook on CO₂ neutrality Technologies for combustion engine next-generation engines **KEYNOTE LECTURES II** Moderation: Prof. Dr. Peter Gutzmer, ATZ | MTZ Group Sustainable powertrains Measures to lever the CO₂ reduction potential for off-highway applications of renewable liquid fuels in the timeframe till 2030 Auditorium (Basement) 15:00 15:30 Prof. Dr. Thomas Garbe, Senior Manager Energy Carriers, Dr. Markus Schwaderlapp, SVP Product Development, Volkswagen AG, and Björn Noack, Project Director Co-authors: Dr. Georg Töpfer, Dr. Heiner Bülte, Sustainable Mobility Strategy, Robert Bosch GmbH all DEUTZ AG The off-highway sector in the field of tension of future During the breaks you have the powertrain concepts – What opportunity to visit the exhibition! chances does the internal combustion engine have in this industry? 16:00 Ulrich Weiß, Managing Director, Liebherr Machines Bulle SA, Switzerland to the parallel sessions **Outlook and concluding remarks**

16:30

Prof. Dr. Peter Gutzmer, Scientific Director of the Congress

engine Cungress

Presentations parallel sessions

Tuesday, 22 February 2022



PC engine technology

Kongress-Saal I (1st Floor)

	EU7/EMISSIONS CONTROL
•••	Moderation: Prof. Dr. Uwe Dieter Grebe, AVL List GmbH
11:15	EU7 challenge for electric system Gerald Teuschl, Product Manager, Co-authors: Dr. Paul Kapus, Dr. Raimund Ellinger, all AVL List GmbH, Austria
11:45	Reduction of air slip at overrun fuel cut-off as an alternative to torque neutral combustions
	Thomas Pausch, Engineer Research & Development, Mercedes-Benz AG and Institute of Land and Sea Transport Systems (ILS), TU Berlin
12:15	Turbo compressor for efficient high-pressure air supply in catalyst heaters Ahmet Çokşen, Aerodynamics & Product Manager, Co-authors: Philipp Handschuh, both ebm-papst Mulfingen GmbH & Co. KG, Mario Staiger, Jens Löffler, both ebm-papst St. Georgen GmbH & Co. KG
—	SYNTHETIC FUELS – POTENTIALS FOR USE IN ENGINES Moderation: Dr. Michael Elicker, Schaeffler Technologies AG & Co. KG
14:30	The fulfillment of fuel specifications and resulting challenges presented by reFuels Dr. Olaf Toedter, Head of New Technologies and Ignition Systems, KIT Campus Transfer GmbH (KCT), Co-author: Prof. Dr. Thomas Koch, both Institute for Piston Machines (IFKM), Karlsruhe Institute of Technology (KIT)
15:00	Drop-in renewable gasoline fuels for CO ₂ reduction: evaluation and demonstration of functional potentials Dr. Michael Storch, Development Engineer, Co-authors: Torsten Kunz, both Robert Bosch GmbH, Dr. Hanno Krämer, Markus Send, both AUDI AG
15:30	Synthetic fuel detection in production vehicles using machine learning Dr. André Bojahr, Technical Consultant for Data Science, Co-authors: Nils Paetsch, Hilko Janßen, Arne Kirchner, all IAV GmbH

CV engine technology

Forum (EG)



11:15

HYDROGEN Moderation: Bernhard Raser, AVL List GmbH

Why the combustion engine and fuel cell will both play a role in a future hydrogen society

Thomas Lüdiger, Principal, FEV Consulting GmbH

11:45 Experimental investigation of a hydrogen powered heavy-duty truck engine

Daniel Rieger, Project Manager, Co-authors: Florian Mayer, Fabian Weller, Dr. Simon Schneider, all MAHLE International GmbH

:15	Multi-dimension knocking control for lean
	operating H ₂ ICEs

Daniel Thomas Koch, Engine Software Development Unit Leader, Co-authors: Benedikt Judt, Alvaro Sousa, all KEYOU GmbH



EMISSIONS CONTROL AND CONTROL SYSTEMS

Moderation: Jürgen Lehmann, Daimler Truck AG

Comparison of DOC-based vs. NO_x storagebased aftertreatment architectures as related to pollutants conversion efficiency and GHG impact

Dr. Chiara Pozzi, Technology Area Leader, Co-authors: Giuseppe Previtero, Luisa Cusanno, all PUNCH Torino SpA, Italy, Dr. Rahul Mital, General Motors, USA

Investigations on the impact of urea-dosing on particulate number measurement for heavy-duty applications

Patrick Noone, Research Assistant, Institute for Internal Combustion Engines and Powertrain Systems (VKM), TU Darmstadt, Co-authors: Neil Kunder, AVL List GmbH, Austria, Henry Jahnke, NGK Europe GmbH, Dr. Andreas Geißelmann, Umicore AG & Co. KG

15:30

Integration of neural networks in GT-Suite and coupling with an RL agent for automation of control and regulation tasks on a commercial H₂ engine

Sebastian Bodza, Research Assistant, Co-authors: Prof. Dr. Michael Bargende, both Institute of Automotive Engineering Stuttgart (IFS), University of Stuttgart, Dr. Dominik Rether, Dr. Michael Grill, both Research Institute of Automotive Engineering and Vehicle Engines Stuttgart (FKFS)

Sustainable fuels & energy

Auditorium (Basement)



DEFOSSILIZATION OF THE TRANSPORT

SECTOR IN EUROPE – LCA Moderation: Dietmar Goericke, Research Association for Combustion Engines (FVV e. V.)



FVV Fuels Study IV – transformation of European mobility to GHG neutrality

Study design and assumptions

Dr. Ulrich Kramer, Technical Expert Future Fuels, Ford-Werke GmbH

Energy demand and societal costs

Dr. David Bothe, Director, Co-authors: Maximiliane Reger, Marion Lothmann, Dr. Christoph Gatzen, all Frontier Economics Ltd.

Environmental impacts and critical raw material demands

Frank Dünnebeil, Senior Scientist, Co-authors: Axel Liebich, Dr. Kirsten Biemann, Dr. Monika Dittrich, Sonja Limberger, Marian Rosental, all ifeu – Institut für Energie- und Umweltforschung Heidelberg gGmbH

INDUSTRIALIZATION OF CO₂-REDUCING FUELS FOR THE EXISTING FLEET Moderation: Dr. Wolfgang Warnecke, Shell Global Solutions (Deutschland) GmbH



eFuels – from vision to reality

Karl Dums, Senior Manager eFuels, Co-authors: Marcos Marques, Dietmar Schwarzenthal, Dr. Dietrich Bruhn, all Dr. Ing. h.c. F. Porsche AG



Impact of OME/diesel blends on a modern exhaust gas aftertreatment system and resulting emissions of a multi-cylinder and a single-cylinder research engine

Alexander Mokros, Research Assistant, Co-authors: Philipp Demel, Friedemar Knost, Prof. Dr. Christian Beidl, all Institute for Internal Combustion Engines and Powertrain Systems (VKM), TU Darmstadt

15:30

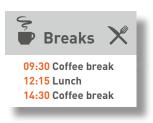
Renewable fuels from biomass and their contribution to sustainable mobility

Dr. Franziska Müller-Langer, Head of Department Biorefineries, DBFZ Deutsches Biomasseforschungszentrum gemeinnützige GmbH

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Presentations parallel sessions

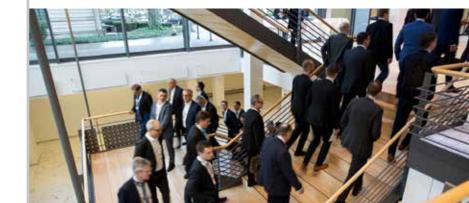
Wednesday, 23 February 2022



PC engine technology

Kongress-Saal I (1st Floor)





CV engine technology

Forum (Ground Floor)

VARIABLE VALVE AND CRANK TRAINS Moderation: Dieter van der Put, FEV Group GmbH Application of dynamic cylinder deactivation 08:30 for NO_x and CO₂ emissions reduction on a HD diesel truck Dr. Hans-Josef Schiffgens, Business Development Executive, Co-authors: Robert Wang, Vijay Srinivasan, all Tula Technology Inc., USA Variable compression ratio system for next-generation large bore engines latest development results Stefano Ghetti, Director Diesel Base Engine and Powertrain Development, Co-authors: Christopher Marten, Dr. Werner Bick, all FEV Europe GmbH, Dieter van der Put, FEV Group GmbH **TECHNOLOGIES FOR NEXT-GENERATION ENGINES** Moderation: Prof. Dr. Christian Beidl, TU Darmstadt Spark ignition searching for the optimal spark profile Dr. Jakob Ängeby, Director Research, SEM AB, Sweden, Co-authors: Anupam Saha, Ola Björnsson, Prof. Marcus Lundgren, all Department of Energy Sciences, Combustion Engines, Lund University of Technology, Sweden

14:00

50 % BTE on a hydrogen internal combustion engine

Rolf Heinrich Dreisbach, Executive Vice President, Co-authors: Anton Arnberger, Martin Wieser, Bernhard Raser, all AVL List GmbH, Austria Sustainable fuels & energy

Auditorium (Basement)

	INNOVATIVE SYSTEM SOLUTIONS FOR FUELS AND COMBUSTION ENGINES Moderation: Dr. Werner Willems, Ford Forschungszentrum Aachen GmbH
08:30	Sustainable heavy-duty transport from
	a future energy-system perspective Dr. Karsten Wilbrand, Senior Principal Scientist, Co-authors: Dr. Andreas Kolbeck, Dr. Andreas Janssen, Jörg Adolf, all Shell Global Solutions (Deutschland) GmbH
09:00	Closed Carbon Cycle Mobility – assessment of synthetic fuels from renewable methanol
	Benedikt Heuser, Senior Project Manager, Co-authors: Dr. Thorsten Schnorbus, Dr. Martin Müther, all FEV Europe GmbH
	OUTLOOK ON CO ₂ NEUTRALITY Moderation: Karl Dums, Dr. Ing. h.c. F. Porsche AG
13:30	OUTLOOK ON CO ₂ NEUTRALITY

Roadmap for CO₂ reduction by upscaling the production of alternative fuels

Prof. Dr. Manfred Aigner, Director of the Institute, Co-authors: Dr. Christoph Arndt, both Institute of Combustion Technology, German Aerospace Center (DLR), Dr. Ulf Neuling, Hamburg University of Technology (TUHH), Uwe Gaudig, Griesemann Gruppe





EXHIBITION AND SPONSORSHIP

GOLD SPONSOR 2022



EXHIBITORS ALREADY REGISTERED FOR 2022

- ebm-papst St. Georgen GmbH & Co. KG
- KST-Motorenversuch GmbH & Co. KG
- Nagel Maschinen- und Werkzeugfabrik GmbH
- SEM AB

POSTER PRESENTATIONS 2022

• BASF SE

• Evolve Lubricants, Inc.

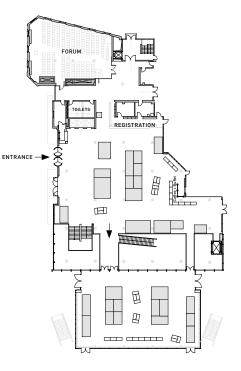
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ACCOMPANYING EXHIBITION

The exhibition provides the ideal presentation platform for companies that supply components for internal combustion engines or that develop and optimize engines and engine parts. These include suppliers of components, systems, and modules for diesel and gasoline engines, companies that produce measuring and testing equipment, and development service providers.

If you would like to make contact with prominent congress participants and present your products and services effectively to a selected specialist audience, then you should become involved in the congress as an exhibitor or sponsor. This industry meeting place gives you the ideal opportunity to take part in technical discussions with the participants and to make new contacts within the industry. In addition to each exhibition package, every exhibitor will be given a virtual stand in our digital event platform. This will enable you not only to upload documents and to chat, but also to hold 1:1 video calls with all participants. We will also be happy to design individual sponsoring and exhibition packages for you in accordance with your specific wishes and requirements. Take your pick from a variety of options.







We are happy to inform you about the various presentation opportunities available: www.motorenkongress.de/en

REGISTRATION FEE

Participation on site

Keynote, impulse, and plenary presentations, panel discussion as well as passenger car engine technology, commercial vehicle engine technology or sustainable fuels & energy € 1,595.– plus VAT € 1,495.– plus VAT for VDI members

Participation via live stream

Keynote, impulse, and plenary presentations, panel discussion as well as passenger car engine technology, commercial vehicle engine technology and sustainable fuels & energy € 995.– plus VAT € 895.– plus VAT for VDI members

Both participant packages include all submitted conference documents and the use of the digital event platform. If you are attending the conference in person, the conference fee also includes catering during the coffee and lunch breaks and the evening event.

Mode of payment

By bank transfer after receipt of an invoice or by credit card (MasterCard, Visa).

Participants with a billing address outside Germany, Austria and Switzerland are requested to pay by credit card.

DATE

22 and 23 February 2022

LANGUAGES USED IN THE PRESENTATIONS

On site: German and English with simultaneous interpreting (German – English / English – German) Virtually via live stream: English

INFORMATION ON CORONAVIRUS SAFETY



If you are prevented from attending the conference in person for health reasons or due to travel restrictions, you have the opportunity Online Registration and Further Information:



www.enginecongress.com

VENUE

Kongresshaus Baden-Baden Augustaplatz 10 76530 Baden-Baden | Germany Phone +49 7221 304-0 www.kongresshaus.de

HOTELS

Various hotels in Baden-Baden – all centrally located – have room blocks at reduced rates for participants.

The complete list of hotels can be found on the event website: www.ATZlive.com. Conference participants may book rooms either online or directly at Baden-Baden Kur & Tourismus GmbH.

Your contact person at Baden-Baden Kur & Tourismus GmbH is: Conventions & Events Team Phone +49 7221 275-271 sales@baden-baden.com

Please make your reservation by 20 January 2022 at the latest.

this year to participate in the conference virtually via our live stream. The digital event platform offers you Q&A functions, 1:1 video chats with participants, exhibitors, and speakers, live opinion surveys, your personal program overview, a virtual exhibition, and other useful functions.



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Participants – service and registration

Hannah Klusmann Event Manager ATZlive Phone +49 611 7878-321 hannah.klusmann@springernature.com

ATZ live

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Engine ress

Meeting Place for the Powertrain Community



Further Information and Online Registration:



www.enginecongress.com

9th International Engine Congress 2022 22 and 23 February 2022 | Baden-Baden | Germany or virtually via live stream

THE ORGANIZERS

ATZlive

// Spotlight on Powertrain and Vehicle Engineering //

ATZlive organizes its high-caliber conferences for vehicle and engine specialists together with key representatives from research and industry to ensure that they are tailor-made to the needs of the participants and address the very latest issues. Our close collaboration with the editorial teams of our specialist magazines ATZ and MTZ keeps us fully up-to-date on the latest topics and trends on the market.

Springer, with its automotive technology brands of the ATZ and MTZ Group, is part of Springer Nature, one of the world's leading publishing groups for scientific, educational, and specialist literature.



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Our passion: sharing knowledge and skills covering almost all technological disciplines. Your added value: a diverse and comprehensive range of further education options. We draw on the extensive expertise of the VDI (Association of German Engineers) and a comprehensive network of experts. At our events, we put the emphasis on practical relevance. Other qualifications, such as management and leadership knowledge, social skills, business administration and law, round off our range of further education programs. Dedicated staff with extensive experience and expertise ensure that the events are staged successfully. About 20 members of our staff are themselves engineers and can provide a high level of technological knowledge.



www.vdi-wissensforum.de/en