

4th International Conference on Gear Production 2021

Key topics discussed:

- Increasing productivity in gear skiving
- Higher tool life for hard finishing processes
- Improved gear quality inspection
- Methods for designing and manufacturing face, bevel and worm gears
- Improved tribo system within the manufacturing process
- Enhanced simulation methods for improving the gear manufacturing process

Presidency:

Prof. Dr.-Ing. Thomas Bergs, WZL, RWTH Aachen University, Germany

Prof. Dr.-Ing. Christian Brecher, WZL, RWTH Aachen University, Germany

Prof. Dr.-Ing. Karsten Stahl, FZG, Technical University of Munich (TUM), Garching, Germany

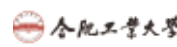
+ Parallel events

International Conference
on Gears 2021

International Conference
on High Performance
Plastic Gears 2021

+ Exhibition

With experts from:



Event organized by VDI Wissensforum GmbH
www.vdiconference.com/02TA411021
 Phone +49 211 6214-201 • Fax +49 211 6214-154
 #vdi_gears

September 15 - 17, 2021, Garching/Munich, Germany

1st Conference day
Wednesday, September 15th, 2021

08:15 Registration



Plenary lectures

09:45 Joint welcome and opening of

- International Conference on Gears 2021
- International Conference on High Performance Plastic Gears 2021
- International Conference on Gear Production 2021



by **Prof. Dr.-Ing. Karsten Stahl**, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

Every participant gets a voice – you will be involved via digital polls during the speeches

10:05 Welcome address by



Dr.-Ing. Burkhard Pinnekamp, Head of Central Technology, Renk GmbH, Augsburg; President, Research Association for Drive Technology (FVA), Frankfurt, Germany

10:15 **Keynote session:**
Innovation flashlights: What will be the next game-changing innovations and technologies?



Moderation: Prof. Dr.-Ing. Karsten Stahl, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

Demands in gear technology in structural change in the economy

- High performance in inflating the structure of the economy
- Motive force behind human activity is desire
- Necessary performance in sustainable structure of the economy



Prof. h.c. Dr.-Ing. Aizoh Kubo, General Manager, Research Institute for Applied Sciences, Kyoto, Japan

The innovator's DNA

- Exploration
- Acceleration
- Serendipity



Sonja Goris, M. Sc. Mech. Eng., IP & Innovation Manager, ZF Wind Power Antwerpen NV, Antwerpen-Berchem, Belgium

New ways to lubricate

- Sustainability requirements change in raw material landscape
- Sensor technologies – what's possible
- New basefluids – why not water



Dr. Lutz Lindemann, Member of the Executive Board (CTO), FUCHS PETROLUB SE, Mannheim, Germany

High performance plastic gears in future applications

- Intelligent plastics material design
- Processing and design freedom of plastic gears
- Evaluation of plastic gears for new mobility vehicles



Prof. Dr.-Ing. Karl Kuhmann, Head of Polymer Technology Development, High Performance Polymers, Evonik Operations GmbH, Marl, Germany

Roller pairings with lubricant-impregnated sintered material

- Lubrication of the contact by escaping lubricant
- Separation of the contact of the Roller pairings, without metallic contact
- Influence of the surface structure



Prof. i. R. Dr.-Ing. Bernd-Robert Höhn, TUM emeritus of excellence, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

12:00 **Time for working lunch** – meet & greet in the exhibition area, poster presentation area and GearArena



Opening of
4th International Conference on Gear Production 2021



Manufacturing of internal gears

Moderation: Prof. Dr.-Ing. Christian Brecher, Full Professor, Chair of Machine Tools, Laboratory for Machine Tools and Production Engineering (WZL), Faculty for Mechanical Engineering, RWTH Aachen University, Germany

13:30 **Modelling and prevention of meshing interference in the gear skiving of internal gears**

- Modelling of the distance between workpiece and tool along the clearance face
- Determination of maximum tool height
- Strategies for collision prevention in: process kinematics, cut distribution and tool design

Andreas Hilligardt, M. Sc., Research Associate, Jan Klose, M. Sc., Team Leader Gearing Technology, Prof. Dr.-Ing. habil. Volker Schulze, Director of Manufacturing and Materials Technology, wbk Institute of Production Science, Karlsruhe Institute of Technology (KIT), Germany

14:00 **Practical analysis of productivity of grinding tools in the process of internal generating gear grinding**

- Tool life and gear quality analysis of various high-performance corundum grinding tools using internal generating gear grinding
- Benchmarking against CBN grinding tools and evaluation of productivity and economic performance
- Showing the method of improving corundum wheel performance closer to that of CBN-wheels

Dr.-Ing. Alexander Spatzig, Head of Machine Tool Business Development Europe, Engineering Development Department, Noritaka Fujimura, M. Sc., Engineering Manager, Mitsubishi Heavy Industries Machine Tool Co., Ltd., Ritto, Japan; Patricia de Oliveira Teixeira, M. Sc., Research Assistant, Gear Hard Machining, Gear Department, Laboratory for Machine Tools and Production Engineering (WZL), Faculty for Mechanical Engineering, RWTH Aachen University, Germany

14:30 **Tool wear development in gear skiving process of quenched and tempered internal gears**

- Machining high strength material from the massive blank
- Comparing the wear of dry and wet process
- Tool wear phenomena and workpiece surface quality

Tassilo Arndt, M. Sc., Research Associate, Dr.-Ing. Michael Gerstenmeyer, Chief Engineer, Prof. Dr.-Ing. habil. Volker Schulze, Director of Manufacturing and Materials Technology, wbk Institute of Production Science, Karlsruhe Institute of Technology (KIT), Germany



15:00 **Coffee break** – meet & greet in the exhibition area, poster presentation area and GearArena



Innovative manufacturing processes

Moderation: Dr.-Ing. Jens Brimmers, M. Sc., Chief Engineer Gear Department, Chair of Machine Tools, Laboratory for Machine Tools and Production Engineering (WZL), Faculty for Mechanical Engineering, RWTH Aachen University, Germany

16:00 **Increasing the safety against the scuffing of additively manufactured gear wheels by internal cooling channels**

- Performance optimization: scuffing, lubrication, splashing losses
- Additive manufacturing of metal powder with laser powder bed fusion (LPBF)
- 30CrNiMo8 steel for quenching and tempering

Dr.-Ing. Hans-Jörg Dennig, Senior lecturer, School of Engineering, Livia Zumofen, M. Sc., Scientific Employee, Centre for Product and Process development, Zurich University of Applied Sciences, Dipl. Masch.-Ing. ETH Daniel Stierli, Team Leader Gear Technology Renk-Maag GmbH, Winterthur, Switzerland

16:30 Tribological design of sintered gears through mechanochemical surface finishing

- Mechanochemical surface finishing: roughness, waviness, densification, compressive stress
- Efficiency and NHV optimisation of gears: EHD simulations, FVA efficiency tests
- FZG test results: scuffing load, friction, wear, micropitting

Boris Zhmud, Ph. D., Assoc. Prof., FRSC, Chief Technology Officer, Martin Bengtsson, M. Sc. Development Engineer, Linus Everlid, M. Sc. Development Engineer, Applied Nano Surfaces Sweden AB, Uppsala, Sweden

17:00 Analysis of friction of bowl-shaped surface structures resulting from alternative gear manufacturing processes

- Evaluation of electrical discharge machining (EDM) process in regard to gear applications
- Analysis of friction EDM and hammered surface structures in comparison with a ground reference

Dieter Mevissen, M. Sc., Research Assistant, Dr.-Ing. Jens Brimmers, M. Sc., Chief Engineer Gear Department, Prof. Dr.-Ing. Thomas Bergs, Full Professor, Laboratory for Machine Tools and Production Engineering (WZL), Chair of Manufacturing Technology, Faculty for Mechanical Engineering, RWTH Aachen University, Germany

17:30 End of the first conference day

18:00 Organized bus transfer to the evening reception



Get-together

At the end of the first conference day we cordially invite you to our evening reception.

You are invited!

19:00 Evening reception at the Hofbräuhaus in Munich

You can look forward to a special evening event. We cordially invite you to our evening reception at the Hofbräuhaus and to enjoy tradition. The Hofbräuhaus is the cradle of Bavarian tavern culture – the origin of tradition, "Gemütlichkeit" and hospitality. Enhance your personal network and use the informal atmosphere for deeper-going discussions.



Source: @ Hofbräuhaus München

Dinner speech



"Mobility is not only an essential feature of freedom – without it, living nature is unimaginable. The key to mobility of humankind and its communities has always been innovation, shaped by our engineers, coming full circle back to living freedom."

Prof. Dr. Dr. h. c. mult. Wolfgang A. Herrmann, President Emeritus, Technical University of Munich (TUM), Garching & Chairman of the Founding Board, Deutsches Zentrum Mobilität der Zukunft (DZM), Munich, Germany

2nd Conference day

Thursday, September 16th, 2021

Gear soft machining



Moderation: Prof. Dr.-Ing. Thomas Bergs, Full Professor, Laboratory for Machine Tools and Production Engineering (WZL), Chair of Manufacturing Technology, Faculty for Mechanical Engineering, RWTH Aachen University, Germany

08:30 Tooth deburring and chamfering: a general approach for 5-axis CnC manufacturing

- Generalization of the chamfering and deburring processes
- Application of the chamfering process to 5-axis CnC machines
- Variety of tools that can be used for chamfering

Claude Gosselin, P. Eng., Ph. D., Managing Director/CEO, Involute Simulation Softwares Inc., Quebec, Canada; Bastian Leitz, B. Eng., Gear Engineer, Gear engineering and manufacturing support, Neugart GmbH, Kippenheim in Germany

09:00 Design of an analogy trial to capture the influence of surface zone characteristics on tool wear in pre-forged bevel gear machining

- New process chain for the manufacturing of bevel gears
- Research about the machinability of the outer surface layer
- Novel analogy trial for the face milling of bevel gears

Dr.-Ing. Jannik Henser, Managing Director, Powertrain Manufacturing for Heavy Vehicles Application Lab, KTH Royal Institute of Technology, Stockholm; Håkan Thoors, M. Sc., Researcher, Machinability and tribology, Ulrika Brohede, Ph. D., Senior Researcher Machining, Production Technology, Swerim AB, Stockholm, Sweden

09:30 New chamfer cutting solutions for cylindrical gears: gaining productivity and flexibility

- Chamfer hobbing for medium- and high-volume production
- Fly cutter chamfering for high flexibility: programmable auto path chamfering with carbide inserts
- Comparison of new chamfer hobbing and fly cutter chamfering with well-known chamfer rolling

Dipl.-Ing. Gottfried Klein, Director Product Management, Hobbing, Shaving, Chamfering, Rack Solutions, Gleason Corporation, Munich, Germany



10:00 Coffee break – meet & greet in the exhibition area, poster presentation area and GearArena

New concepts for machine and manufacturing processes



Moderation: Prof. Dr.-Ing. Thomas Bergs, Full Professor, Laboratory for Machine Tools and Production Engineering (WZL), Chair of Manufacturing Technology, Faculty for Mechanical Engineering, RWTH Aachen University, Germany

11:00 Design of manufacturing cells in the light of improvements in manufacturing technology and automation

- Creation of manufacturing cells with regard to technological improvements
- Influence of new automation systems on the planning of a new plant for gears
- Solutions for the automation of the material flow

Dipl.-Ing. Bernhard Winter, Department Manager Production-Systems, SEW-Eurodrive GmbH & Co. KG, Graben-Neudorf, Germany

11:30 High speed machining with magnetically geared driven tools on rotary milling units

- Design of magnetically driven tool: eddy currents, magnet losses, rotor topology
- Simulation and fabrication of magnetic transmission
- Transmission with 60000 rpm: measurements and applications

Dr.-Ing. Stefan Vonderschmidt, Managing Partner, Dipl.-Psych. Andreas Vonderschmidt, B. Sc., Managing Partner, Annika Ott, M. Eng., R&D engineer, Georgii Kobold GmbH & Co. KG, Horb, Germany

12:00 Quality improvement of an aluminum gearbox housing by implementing additive manufacturing

- Additiv manufacturing: selective laser melting, tool steel, no supporting structure
- Quality improvement: gas porosity, shrinkage holes, mechanical properties
- Integrated cooling system: cooling behavior, controlled coolin down, homogeneous temperature distribution

Dr.-Ing. Pablo Barreiro, Materials Technologist, Development Gear Units, Materials Technology, SEW-Eurodrive GmbH & Co. KG, Bruchsal, Germany

12:30 Time for working lunch – meet & greet in the exhibition area, poster presentation area and GearArena



Advances in special gearings

Moderation: Dr.-Ing. Joachim Thomas, Managing Director, ZG Hypoid GmbH, Aschheim, Germany

14:00 Direct flank geometry calculation for face gears

- New face gear geometry calculation method without numerical post-processing
- Comparison with gear geometry calculation software
- Comparison with manufactured face gears

Jonas-Frederick Hochrein, M. Sc., Research Associate, Dr.-Ing. Michael Otto, Head of department Calculation and Verification of Transmission Systems, Prof. Dr.-Ing. Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

14:30 Improved design and manufacturing of face gears

- Overview of current manufacturing methods for face gears
- New manufacturing strategies for 5-axis machines
- Analysis of face gears in the same way as bevel gears

Dipl.-Ing. Jürg Fürst, Managing Director/CEO, Balance Drive AG, Schmitten, Switzerland; **Dr.-Ing. Joachim Thomas**, Managing Director, ZG Hypoid GmbH, Aschheim, Germany, **Claude Gosselin, CEO, P. Eng., Ph. D.**, Involute Simulation Softwares Inc., Quebec, Canada

15:00 Challenges for lead-free brass alloys in worm gears

- Reduction of lead in brass due to REACH
- New lead-free special brass with comparable performance
- Investigation into new high-strength alloy

Dr.-Ing. Björn Reetz, Senior Expert Material Development, Product and Process development, Otto Fuchs Dülken GmbH & Co. KG, Viersen, Germany

15:30 Coffee break – meet & greet in the exhibition area, poster presentation area and GearArena



Modeling in gear production

Moderation: Dr.-Ing. Franz Völkel, Sr. Vice President R&D, Business Division Transmission Systems, Schaeffler Technologies AG & Co. KG, Herzogenaurach, Germany

16:30 Approach for multiscale modeling the thermomechanical tool load in gear hobbing

- Derivation of load functions from orthogonal cut simulations
- Coupling of the load functions with penetration calculation
- Evaluation of tool load based on multiscale model

Nico Troß, M. Eng., Team Leader Gear Soft Machining, Gear Department, Dr.-Ing. Jens Brimmers, M. Sc., Chief Engineer Gear Department, Prof. Dr.-Ing. Thomas Bergs, Full Professor, Laboratory for Machine Tools and Production Engineering (WZL), Chair of Manufacturing Technology, Faculty for Mechanical Engineering, RWTH Aachen University, Germany

17:00 Development of a digital ecosystem for a servo planetary gear unit system to provide design automation opportunities

- Making routine design tasks robust and fast by use of APIs
- Automation of CAD assembly, 3D CAD model and 2D CAD drawing creation
- A brief walk-through example of a planetary gear wheel

Philipp Abele, M. Sc., Calculation Engineer, Development Gear Units, Dr.-Ing. Jörg Hermes, Managing Director, Innovation Mechanics, Dr.-Ing. Markus Wöppermann, Head of Precision Gear Units, SEW-Eurodrive GmbH & Co. KG, Bruchsal, Germany

17:30 Method for taking tool topography into consideration in the modeling of the generating gear grinding process

- Simulation model for generating gear grinding
- Micro-interaction characteristics such as grain cross-section area and cutting depth along the contact length
- Influence of tool topography, in terms of grains protuberance and distribution

Patricia de Oliveira Teixeira, M. Sc., Research Assistant, Gear Hard Machining, Gear Department, Dr.-Ing. Jens Brimmers, M. Sc., Chief Engineer Gear Department, Chair of Machine Tools, Prof. Dr.-Ing. Thomas Bergs, Full Professor, Laboratory for Machine Tools and Production Engineering (WZL), Chair of Manufacturing Technology, Faculty for Mechanical Engineering, RWTH Aachen University, Germany

18:00 Evening reception at the conference venue



Source: Uli Benz/TUM

You are invited!

We are pleased to invite you to our evening reception at the end of the second conference day. Enhance your personal network and use the relaxed and informal atmosphere for deepening talks with other participants and speakers.

Dinner speech



"Despite all digitalization in the world, also in future real forces will have to be transmitted. Thus, developing and manufacturing transmission systems which aim at the best efficiency factor as well as the lowest possible lifetime costs will always be a challenge for all people involved."

Prof. Dr.-Ing. Sebastian Bauer, President, German Federation of Industrial Research Associations "Otto von Guericke" e. V. (AiF), Cologne & Managing Director (Research and Development), BAUER Maschinen GmbH, Schrobenhausen, Germany

Reasons why you should visit the conference:

- Get insights into recent developments in gear research
- Unique platform for the international community of gear manufacturing experts
- Discuss current challenges in gear production e. g. need for finishing internal gears
- High-quality presentations on the latest trends in gear manufacturing
- Valuable insights into best practices for gear manufacturing in industry
- Outlook and discussion of future gear manufacturing challenges

3rd Conference day

Friday, September 17th, 2021



Measurement technology

Moderation: Prof. Dr.-Ing. Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

08:30 Validation of evaluation algorithms for cylindrical involute gears measured on coordinate measuring machines – new challenges according to standardization

- Software test: profile, helix and pitch deviations including common modifications
- Gear data exchange format: container for simulated points and evaluated results
- Traceability for computation-intensive metrology – TraCIM

Dr.-Ing. Karsten Lübke, Software development special geometries, Hexagon Metrology GmbH, Wetzlar, Dr. rer. nat. Martin Stein, Dr.-Ing. Shan Lin, Working Group 5.33 "Gears and Threads", Physikalisch-Technische Bundesanstalt, Braunschweig, Germany

09:00 Gear calibration in scanning mode on CMMs

- High accuracy measurement strategy in scanning mode
- Gear calibration from medium size up to large gears
- Analyzing measurement results using single-point and scanning mode

Dipl.-Ing. (FH) Achim Wedmann, Technical Engineer, Dr. rer. nat. Martin Stein, Head, Working Group "Gears and Treads", Dr.-Ing. Karin Kniel, Head, Department "Coordinate Metrology", Physikalisch-Technische Bundesanstalt Braunschweig, Germany

09:30 High speed measurement of hardness distribution with X-ray diffraction

- Converting method from measured FWHM of X-ray diffraction to hardness distribution for all kind of ferric material
- Easy and highspeed contact free measurement of hardness distribution and examples of the measurement for machine parts

Prof. h. c. Dr.-Ing. Aizoh Kubo, General Manager, Dr.-Ing Masahiro Nagae, Research Member, Institute for Applied Sciences, Kyoto, Japan

10:00 Coffee break – meet & greet in the exhibition area, poster presentation area and GearArena



Gear hard machining

Moderation: Dr.-Ing. Jens Brimmers, M. Sc., Chief Engineer Gear Department, Chair of Machine Tools, Laboratory for Machine Tools and Production Engineering (WZL), Faculty for Mechanical Engineering, RWTH Aachen University, Germany

11:00 Potential and challenges of profile gear grinding with vitrified bonded CBN grinding wheels

- Tool performance and gear properties
- Economic efficiency analysis
- Analysis of the grinding-in behavior and tool topography

Babette Schalley, M. Sc., Research Assistant, Dr.-Ing. Jens Brimmers, M. Sc., Chief Engineer Gear Department, Prof. Dr.-Ing. Thomas Bergs, Full Professor, Laboratory for Machine Tools and Production Engineering (WZL), Chair of Manufacturing Technology, Faculty for Mechanical Engineering, RWTH Aachen University, Germany

11:30 Gear hard finishing with 100 % inline quality inspection

- High productive threaded-wheel grinding: double spindle machine, short idle and fast setup times
- Gear measurement using laser technology: 100 % inline gear inspection, replacing SPC control, noise analysis
- Closed loop sorrection: automatic correction of measured gear parameters

Dr.-Ing. Antoine Türich, Director Product Management, Hard Finishing Solutions, Gleason Corporation, Munich, Germany

12:00 A topological flank modification method considering contact trace in continuous generating grinding

- Topological flank modification of tooth flank
- Anti-twist gear flank based on sensitivity matrix
- Correction of flank deviation by additional axes movement

Dan Li, School of Mechanical Engineering, Hefei University of Technology, China

12:30 Closing remarks



12:45 Awarding of the best presentation for junior engineers by the conference president

Prof. Dr.-Ing. Karsten Stahl, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

Awarding of the best paper by

Dr.-Ing. Franz Völkel, Sr. Vice President R&D, Business Division Transmission Systems, Schaeffler Technologies AG & Co. KG, Herzogenaurach, Germany



+ Lunchtime snack



14:15 End of the conference

+ 5-minute talks

Extract from poster exhibition

Material database for the mechanical design of components made of powder metallurgy material

Miao Jiacheng, M. Sc., State Key Laboratory of Mechanical Transmission, Chongqing University, China

Thermal deformation characteristic of gear hobbing based on multivariable integrated model

Zheyu Li, B. Eng., State Key Laboratory of Mechanical Transmission, Chongqing University, China

Quality inspection of common step gearings – overview of different types and their assessment

Dr.-Ing. Karsten Lübke, Software development special geometries, Hexagon Metrology GmbH, Wetzlar, Germany

Light in the Black Box: identifying unknown mechanisms of action with AI software and solving acoustic/NVH problems of gears – practical example of the car power train

Dipl.-Ing. (FH) Frank Thurner, Managing Director, Management, Lean Six Sigma Master Black Belt, mts Consulting & Engineering GmbH, Fürstenfeldbruck, Germany

Advanced method of cutting spiroid, worm and bevel gearwheel teeth by running cutter head double-stage gearboxes for pipeline valves

Evgeniy Trubachev, D. Sc., Professor, Institute of Mechanics, Kalashnikov Izhevsk State Technical University, & Head, Small Innovative Enterprise "Mechanic" Ltd, Izhevsk, Russia

Design method for global properties of point-contact tooth surface based on envelope-approximation theory

Prof. Kaihong Zhou, Ph. D., Professor, Engineering Mechanics, Mechanical transmission, Robot and CNC Manufacture Technology for Sculptured Surface, College of Mechanical and Control Engineering, Guilin University of Technology, China

Research on tooth flank twist compensation of continuous generating grinding gear based on flexible electronic gearbox

Lei Zhou, Research Center, School of Mechanical Engineering, Hefei University of Technology, Hefei, China

Presidency



Prof. Dr.-Ing. Thomas Bergs, Full Professor, Laboratory for Machine Tools and Production Engineering (WZL), Chair of Manufacturing Technology, Faculty for Mechanical Engineering, RWTH Aachen University, Germany



Prof. Dr.-Ing. Christian Brecher, Full Professor, Chair of Machine Tools, Laboratory for Machine Tools and Production Engineering (WZL), Faculty for Mechanical Engineering, RWTH Aachen University, Germany



Prof. Dr.-Ing. Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

Scientific support:

VDI Society Product and Process Design

The VDI SOCIETY PRODUCT AND PROCESS DESIGN (VDI-GPP) and its technical divisions provide all sectors with verified knowledge on the design of products and processes and their optimization in terms of quality and the time- and cost-benefit ratio.

www.vdi.eu

Exhibition & sponsorship

As an exhibitor or sponsor you can position your company with a clearly perceptible presence within a selected circle of participants. Get in contact with top-class attendees at this conference and present your products and services to a specialist audience in your market without any coverage waste. We would gladly provide you with an individual offer.



Your contact person:

Vanessa Ulbrich
Project Consultant Exhibition & Sponsorship
Phone: +49 211 6214-918
Fax: +49 211 6214-97918
Email: ulbrich@vdi.de

List of exhibitors

- ELTRO Gesellschaft
- Evonik Operations GmbH
- FRENCO GmbH
- GEORGII KOBOLD GmbH & Co. KG
- IMS Gear SE & Co. KGaA
- KISSsoft AG
- Metal Improvement Company Inc.
- SMT
- Telemetrie Elektronik GmbH

(May 2021)

Gears interactive – new ideas, more added value for your business



GearArena

Gather hands-on experience in the transmission world!

Take a look at individual gear components, gain an insight into how the different components interact and compare design and workmanship! You will find an on-site contact person from the exhibitor to answer all your questions.



Speakers meet up

Do you still have unresolved questions?

You can address your questions to the speakers right after the lecture during the coffee break. Take the chance to say hello to your favorite speakers and to connect with them. They will be available for at least 15 minutes after their session.



Two gear community nights

Your networking hotspot for the international gear community!

Enjoy the evening reception at the Hofbräuhaus as well as another social event on the second conference day at the university. The Hofbräuhaus is the cradle of Bavarian tavern culture – the origin of tradition, "Gemütlichkeit" and hospitality. Both – the get-together at the FZG and the brewery visit – offer you an excellent opportunity to network with your peers and catch up on trends.



FZG lab tours

Get the chance to visit innovative laboratory facilities!

Seize the opportunity and visit the nearby test and laboratory facilities at the Gear Research Centre (FZG). Several guided tours with different core topics offer opportunities of gaining deeper insights into a variety of innovative gear test rigs and laboratory equipment. For registration meet at the FZG information desk during the conference.



Poster exhibition with impulse talks

The poster exhibition is combined with a 5-minute talk.

The compact style of presentation called the '5-minute rapid' presentation, will provide you with all information in a clear, succinct manner. Poster presentations are scheduled during the coffee breaks. Presentation times will be announced on-site.



Parallel conferences

Visit for free!

International Conference on Gears 2021

September 15 - 17, 2021, Garching/Munich, Germany



Source: © NORD DRIVESYSTEMS Group

Key topics:

- Improved simulation methods
- Lubrication for enhanced efficiency
- Condition monitoring with smart gear systems
- Multi-body simulation and NVH prediction
- Improved calculation methods for strength and efficiency

Presidency:

Prof. Dr.-Ing. Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

Dr.-Ing. Bernhard Bouché, Director of Research and Development Mechanics, Getriebebau NORD GmbH & Co. KG, Bargteheide, Germany

Prof. i. R. Dr.-Ing. Bernd-Robert Höhn, TUM emeritus of excellence, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

Dr.-Ing. Burkhard Pinnekamp, Head of Central Technology, Renk GmbH, Augsburg; President, Research Association for Drive Technology (FVA), Frankfurt, Germany

With experts from:

AKGears | AVL Deutschland | AVL List | Envision COE | dive solutions | Idemitsu Kosan | Jatco | KISSsoft | Nissan Motor | OTEC Präzisions-finish | Ovako | Robert Bosch | Schaeffler Technologies | SEW-Eurodrive | Siemens Industry Software | Small Innovative Enterprise "Mechanic" | Transmission Dynamics | WEBER | ZG Hypoid

Further details and the final program can be found here:

www.vdi-gears.eu



Parallel conferences

4th International Conference on High Performance Plastic Gears 2021

September 15 - 17, 2021, Garching/Munich, Germany



Source: © Firmenarchiv Scholz-HTIK

Key topics:

- Latest developments for enhanced performance of plastic gears
- Status and future of standardized plastic gear strength calculation
- High performance plastic gear applications
- Potential of composite gears with fiber reinforcement
- Lubrication and tribology of plastic gears

Presidency:

Prof. Dr.-Ing. Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany

Conference Board:

Dr.-Ing. Marco Baccalaro, Chassis Systems Control, Gear Development and Test Conception/Realization, Robert Bosch GmbH, Heilbronn, Germany

Dipl.-Ing. Klemens Humm, Manager Gear Development, Corporate Research and Development, ZF Friedrichshafen AG, Friedrichshafen, Germany

Dr.-Ing. Ulrich Kissling, President, KISSsoft AG, Bubikon, Switzerland

Dr.-Ing. Andreas Langheinrich, Development Drive Technology, Horst Scholz GmbH & Co. KG, Kronach, Germany

With experts from:

DSM Engineering Materials | Evonik Operations | Gear Transmission Solutions | IMS Gear | KISSsoft AG | KURARAY | Leibniz-Institut für Verbundwerkstoffe | Longato Riccardo | Podkrižnik | Robert Bosch | ZF Friedrichshafen

Further details and the final program can be found here:

www.vdicongference.com/02TA409021

Venue:



Source: Scharger, Albert/TUM

VDI Wissensforum GmbH | VDI-Platz 1 | 40468 Duesseldorf | Germany

You need help?
Please contact us!

VDI Wissensforum GmbH
P.O. Box 10 11 39
40002 Duesseldorf, Germany
Phone: +49 211 6214-201
Fax: +49 211 6214-154
Email: wissensforum@vdi.de
www.vdiconference.com/02TA411021

Ticket includes entrance to the parallel conferences:
• Gears 2021
• High Performance Plastic Gears 2021

✓ Please register for (price per person plus VAT):

4th International Conference on Gear Production 2021	
September 15 - 17, 2021, Garching near Munich, Germany (02TA401121)	
<input type="checkbox"/> Early bird price until July 1st, 2021 EUR 1,490.-	<input type="checkbox"/> From July 2nd, 2021 EUR 1,590.-

1111

Participation fee for personal VDI members and members of associated organisations of the International Conference on Gears 2021 **save EUR 50,- each conference day** VDI membership no.*: _____

* For this price category, please state your VDI membership number or the name of the associated organisation (outlined at the homepage www.vdi-gears.eu)

I'm interested in sponsoring and/or the exhibition

First Name _____	Last Name (Family Name) _____
Title _____	VAT-ID _____
Company/Institute _____	Job Title _____
Street _____	Department _____
ZIP Code, City, Country _____	
Phone _____	Email _____
	Fax _____
Deviating bill address _____	

Participants with an invoice address outside of Austria, Germany and Switzerland are kindly requested to pay by credit card. Please don't send your credit card details via email, fax or post. Please book your ticket at www.vdiconference.com/02TA411021. Transferring your credit card details via our website ensures your details are encrypted and security of your data is guaranteed.

General terms and conditions of VDI Wissensforum can be found online at: www.vdi-wissensforum.de/en/terms-and-conditions/

Venue: Technische Universität München (Technical University of Munich), Institute of Machine Elements, Gear Research Centre (FZG), Boltzmannstr. 15, 85748 Garching, Germany, www.mw.tum.de/en/fzg/home
Hotel Reservation: A limited number of rooms have been reserved for conference participants. For booking please visit www.vdi-gears.eu where you will find a link for special room rates.

More hotels close to the conference venue may be found via our HRS service, www.vdi-wissensforum.de/hrs

Information: The price includes conference documents (e-book), coffee breaks and beverages during breaks, lunches and two evening receptions.

Exclusive offer: All participants at this event are entitled to a free three-month trial VDI membership. (Offer applies exclusively to new members.)

Data protection: VDI Wissensforum GmbH uses the email address you have provided to regularly inform you about similar VDI Wissensforum GmbH events. If you would no longer like to receive any information or offers, you can object to your data being used for this purpose at any time. To do so, use the following email address wissensforum@vdi.de or one of the other contact possibilities mentioned above.

We would like to make you aware of general information about the usage of your data here: <https://www.vdi-wissensforum.de/en/privacy-policy/>

I hereby agree to VDI's terms and conditions and confirm that the data I have provided to register above is correct. Your contact data was obtained based on article 6, paragraph, sentence 1 lit. f) DSGVO (legitimate interest). Our legitimate interest is to select a precise selection of possible interested parties for our events. You can get more information about the source and usage of your data here: www.vdi-wissensforum.de/en/source-of-address/

