



Program



BEARING WORLD

by FVA

4th International FVA-Conference

The Expert Forum for Bearings – Rolling and Plain Bearings!

5-6 July, 2022 in Würzburg, Germany

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Presented by:

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Ladies and gentlemen,

We are looking forward to meeting in person at the **BEARING WORLD conference**,
5-6 July, 2022 in Würzburg, Germany.

We are excited to finally bring well-known experts from the world of bearings together again.
In the years since the last conference in 2020, both plain bearings and rolling bearings have continued to be
a current topic. Even more so, in fact, as we all strive to reduce harmful emissions.

This is for two reasons:

Low-friction bearings are the key to low losses and high efficiency, and therefore to reducing the energy
consumption of vehicles, machinery, and plants. At the same time, bearings are enablers for environmentally-friendly
technologies, such as renewable energy from wind and water.

See you in Würzburg, Germany!



Prof. Gerhard Poll, Head of BEARING WORLD Board



Program Committee

Dirk Arnold, Forschungsvereinigung Antriebstechnik e.V.

Dr. Viktor Aul, ZF Wind Power Antwerpen NV

Dr. Elmar Busche, Volkswagen AG

Prof. Brigitte Clausen, Leibniz-Institut IWT Bremen

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Andreas Weber, Vestas Nacelles Deutschland GmbH



Scientific Board

More than thirty renowned scientists from 11 countries from all over the world are gathered here.

They review and evaluate the conference presentations before they are published in the Bearing World Journal.

In addition, some of them will be available at the conference as moderators, speakers and discussion partners.

Tuesday, 5 July, 2022

Frankonia Saal



10:00 Opening

Prof. Gerhard Poll, Leibniz University Hannover,
Institute of Machine Design and Tribology (IMKT), Hannover, DE



Christian Kunze,
Forschungsvereinigung Antriebstechnik e.V., Frankfurt, DE

Keynotes

Session chair: Prof. Gerhard Poll, Leibniz University Hannover, Institute of Machine Design and Tribology (IMKT), DE
Prof. Bernd Sauer (MEGT), University of Kaiserslautern, DE



10:30

Path to net zero – Schaeffler innovative bearing solutions as key element!
Dr. Michael Pausch, Schaeffler Technologies AG & Co. KG, DE



11:00

Towards an Intelligent and Clean future
Andrew Bell, SKF Group, Schweden



11:30

Dr. Matthias Schweinsberg, FUCHS GROUP, DE

12:00 Lunch break

Expo

Exhibition

You will find all exhibitors at: <https://bearingworld.org/exhibition/>

Technical exhibition

Present your company in the accompanying technical exhibition at the conference 2022.

This provides your company with an excellent platform to:

- » Present your business to a technical audience of approximately 200 participants from research and industry.
- » Establish new contacts with decision makers and to strengthen existing ones.
- » Acquire the talents of well-trained young engineers, such as PhD and graduate students.

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Tuesday, 5 July, 2022

Frankonia Saal

Electrical phenomena in bearing operation

Session chair: Prof. Oliver Koch (MEGT), University of Kaiserslautern, Germany

- 13:00 A comparison of an analytical and a numerical approach to calculate the electrical capacitance of rolling element bearings
Anatoly Zaiat, TU Darmstadt, Institute for Product Development and Machine Elements, Darmstadt, DE
- 13:30 Electric properties of gears and bearings – from component to integrated system simulation
Dr. Andreas Meinel
Schaeffler Technologies AG&Co.KG, Herzogenaurach, DE
- 14:00 Transient Thermal Analysis of the Contact in Bearings Exposed to Electrical Currents
Omid Safdarzadeh, Technical University Darmstadt, Electrical Energy Conversion, Darmstadt, DE
- 14:30 Change in impedance as a result of surface mutations induced by parasitic current transfer
Josephine Klingebiel, flucon fluid control GmbH, Barbis, DE

15:00 Coffee break

Panorama Saal

Life and durability

Session chair: Prof. Sergei Glavatskih, KTH Royal Institute of Technology, Stockholm, Sweden

- Application of the Generalized Bearing Life Model for Especial Surface Heat Treatment of Rolling Bearings – Case of Wind Turbine Gearbox
Dr. Liang Guo, SKF, Houten, NL
- The Weibull Distribution and the Problem of Guaranteed Minimum Lifetimes
Josephine Kelley, Leibniz University Hannover, Institute of Machine Design and Tribology (IMKT), Hannover, DE
- A study of the four-parameter Rosemann's reliability model
Dr. Luc Houpert, Luc Houpert Consulting, Bearing and Tribology, Wettolsheim, FR
- Performance enhancement of hybrid bearings at grease lubrication
Daniel Merk,
Schaeffler Technologies AG&Co.KG, Schweinfurt, DE

Coffee break



Tuesday, 5 July 2022

Frankonia Saal

Rolling element bearing lubrication

Session chair: Prof. Rob Dwyer-Joyce, University of Sheffield, Great Britain

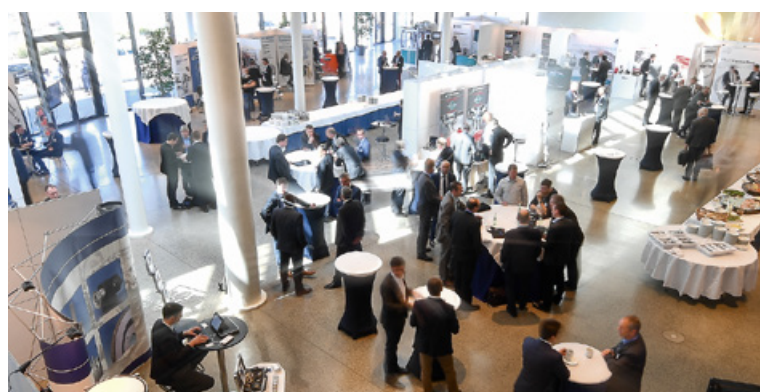
- 15:30** Investigation of the electrical properties of lubricating greases with a di-electrorheological measuring device
Thomas Litters, FUCHS LUBRICANTS GERMANY GmbH, Mannheim, DE
- 16:00** Grease Life in Electric Motor Ball Bearings
Dr. Nicola De Laurentis, SKF, Houten, NL
- 16:30** Optimizing the performance of dry-lubrication of high-precision ball bearings in space applications
Dr. Rahul Dahiwal, Gebr. Reinfurt GmbH & Co. KG, Rimpf, DE
Klaus Wölfel, Gebr. Reinfurt GmbH & Co. KG, Rimpf, DE
- 17:00** Graphite Lubrication in Axial Ball Bearings and a Description Approach for the Lubrication Mechanisms
Arn Joerger, Karlsruher Institut für Technologie (KIT), Institute of Product Engineering (IPEK), Karlsruhe, DE
- 17:30** End of presentation day 1
- 19:30** **Evening Event:**
Bürgerspital Weinstuben
Theaterstraße 19, 97070 Würzburg, Germany

Panorama Saal

Life and durability

Session chair: Prof. Brigitte Clausen, Leibniz Institute for Materials Oriented Technologies – IWT, Germany

- Interest of new rating life formulations for the understanding and prediction of hybrid tapered roller bearing lives and the introduction of innovative bearing materials
Dr. Christine Sidoroff-Coicaud, NTN-SNR Roulements, ANNECY, FR
- Finite Elements modeling of edge imperfections in ceramic rollers for assessing the risk of fatigue failure
Dr. Yuri Kadin, SKF, Houten, NL
- Investigations into the fatigue life behavior of cylindrical roller bearings under high and very high loads
Simon Dechant, Leibniz University Hannover, Institute of Machine Design and Tribology (IMKT), Hannover, DE
- Effect of Microstructure – Property Relationships in Rolling Contact Fatigue of Bearing Contacts
Steven Lorenz, Purdue University, West Lafayette, US
- End of presentation day 1



Wednesday, 6 July, 2022

Frankonia Saal

Hydrodynamic plain bearings

Session Chair: Jean Bouyer, CNRS Université de Poitiers, ENSMA, France

- 08:30 Geometric Tolerancing Assistant System for Hydrodynamic Cylindrical Journal Bearings
Marko Ebermann, Chemnitz University of Technology, Institute of Design Engineering and Drive Technology (IKAT), Chemnitz, DE
- 09:00 Assessment of the Wear Behavior of journal bearings within a planetary gear stage of a wind turbine transmission
Dr. Dirk Jaitner, AVL Deutschland GmbH, München, DE
- 09:30 Tribological behaviour of planetary sliding bearings for wind turbine application
Jonas Marheineke, RWTH Aachen University, Institute for Machine Elements and Systems Engineering (IMSE), Aachen, DE

10:00 Coffee break

Energy efficiency and lubrication

Session chair: Prof. Dirk Bartel, Otto von Guericke University Magdeburg, Germany

- 10:30 Rolling bearing design without flange to reduce friction losses – A new bearing geometry, its optimization and validation
Lukas RÜth, University of Kaiserslautern, Institute of Machine Elements; Gears and Transmissions (MEGT), Kaiserslautern, DE
- 11:00 An Experimental and Analytical Investigation of Cage Pocket Lubrication
Thomas Russell, Purdue University, Lebanon, US
- 11:30 Investigation on grease contribution to ball bearing torque by tribological and rheological tests and prediction of low torque performance
Dr. Christelle Vacher, NTN-SNR Roulements, Annecy, FR
Marc Paquien, NTN Europe, ANNECY, FR

Panorama Saal

Bearing damage mechanisms and detection

Session chair: Dr. Ralf Dinter, Flender GmbH, Germany

- White Etching Cracks and the contribution of the FVA 707 project series
Dr. Francisco Guzmán, RWTH Aachen University, Institute for Machine Elements and Systems Engineering (IMSE), Aachen, DE
- Differences between cathodic and energetic WEC fatigue
Dr. Joerg Loos, Schaeffler Technologies AG & Co. KG, Herzogenaurach, DE
- Detection of rolling bearing damage based on impedance measurement
Dr. Georg Martin, HCP Sense GmbH, Darmstadt, DE

Coffee break

Bearings in wind turbines

Session chair: Prof. Georg Jacobs, RWTH Aachen University, Germany

- Wind Turbine Main Shaft Bearing for Uptower Replacement – Further Development of Spherical Roller Bearings
Andreas Bierlein, Schaeffler Technologies AG & Co. KG, Schweinfurt, DE
- Advanced design and qualification process of dual taper roller main bearing arrangements for multi-MW-wind turbines
Dr. Bernd Lüneburg, thyssenkrupp rothe erde GmbH, Lippstadt, DE
- Preload Adjustment and Creeping Mitigation for Large Size Tapered Roller Bearings
Lutz Heuser, VESTAS Nacelles Deutschland GmbH, Dortmund, DE

Wednesday, 6 July, 2022

Frankonia Saal

Energy efficiency and lubrication

Session chair: Prof. Dirk Bartel, Otto von Guericke University Magdeburg, Germany

12:00 Sustainability in the Bearing World through Digitalization
Philipp Rödel, Schaeffler Technologies AG & Co. KG, Schweinfurt, DE

12:30 Lunch break

Challenges in bearing applications and manufacturing

Session chair: Martin Correns, Schaeffler Technologies AG, Germany

13:30 New requirements for aeronautic bearings
Patrice Godiot, AIRBUS HELICOPTERS SAS, Marignane cedex, FR

14:00 Design and optimization of the bearing system of a high-speed 100 kW electric motor operating in a vacuum
Dr. Peter Haidl, Myonic GmbH, Graz, AT

14:30 Investigation of the influencing variables on the cage rattling of spindle roller bearings through modifications to the guiding skirt
Christiane Marianne Melzer, Technical University Darmstadt, Institute of Production Management, Technology and Machine Tools (PTW), Darmstadt, DE

15:00 Bearing towards the cutting edge: Grinding & honing simulation
Dr. Stefan Schmaltz, Schaeffler Technologies AG & Co. KG, Herzogenaurach, DE

15:30 End of conference

Panorama Saal

Bearings in wind turbines

Session chair: Prof. Georg Jacobs, RWTH Aachen University, Germany

Specific creeping phenomena of roller bearings used in lightweight constructions
Prof. Andreas Maiwald, Maiwald Engineering, Chemnitz, DE

Lunch break

Bearings in wind turbines

Session chair: Andreas Weber, Vestas Nacelles Deutschland GmbH, Germany

HAPT Project Recap
Dr. Matthias Stammer, Fraunhofer Institute for Wind Energy Systems (IWES), Hamburg, DE

Design and calculation process for large-sized multi-MW blade bearing application based on advanced multi-bearing FE-analyses
Daniel Becker, thyssenkrupp rothe erde Germany GmbH, Lippstadt, DE

Comparison of a Slicing Model for Elliptical Contacts in Wind Turbine Blade Bearings with Local Contact Stress by means of Finite Element Method
Max Buescher, CWD – Center for Wind Power Drives RWTH Aachen University, Aachen, DE
Volker Schneider, Leibniz University Hannover, Institute of Machine Design and Tribology (IMKT), Hannover, DE

In-Situ Measurement of Roller Skew Under Grease and Oil Lubrication
Will Gray, The University of Sheffield, Sheffield, GB

End of conference



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With innovative technologies, products, and services for electric mobility, CO₂-efficient drives, Industry 4.0, digitalization, and renewable energies, the company is a reliable partner for making motion and mobility more efficient, intelligent, and sustainable.

The technology company manufactures high-precision components and systems for powertrain and chassis applications as well as rolling and plain bearing solutions for a large number of industrial applications.

The Schaeffler Group generated sales of approximately EUR 13.9 billion in 2021. With around 83,000 employees, Schaeffler is one of the world's largest family companies. With more than 1,800 patent applications in 2021, Schaeffler is Germany's third most innovative company according to the DPMA (German Patent and Trademark Office).

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There are also others that move the world with their products. Who else can do it at the same time with linear and rotative solutions?

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It is about what we do, not just what we say.

SKF has, for many years, been working on the climate issue. We have a proven track record and we are confident that our operations will be decarbonized by 2030. And now we are setting ourselves a new, even more challenging, goal.

By 2050, our full supply chain, from materials to the delivery of our products and solutions, will be net zero.

Reaching this goal will require major focus and commitment from everyone, throughout the full value chain. We call for change and innovation at a scale and speed never seen before.

DECARBONIZING

IN PROGRESS



Read more at
skf.com/decarbonizing

Organisation

Head of BEARING WORLD Board and Scientific Board, Editor of Bearing World Journal

Prof. Gerhard Poll, Leibniz University Hannover, Institute
of Machine Design and Tribology (IMKT), Hannover, DE

Location

Congress Centrum Würzburg (MARITIM Hotel)
Pleichertorstraße 5, D-97070 Würzburg

Conference Organisation

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Technical Sponsor

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