5th International FVA-Conference
The Expert Forum for Bearings – Rolling and Plain Bearings!
25 – 26 June, 2024 in Würzburg, Germany
Ladies and gentlemen,

We are looking forward to meeting you in person at the BEARING WORLD conference, 25–26 June, 2024 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 2022, both plain bearings and rolling bearings have continued to be hot topics. 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. Dr.-Ing. Gerhard Poll, Head of BEARING WORLD Board

Program Committee

Dirk Arnold, Research Association for Drive Technology (FVA e.V.)
Dr. Viktor Aul, ZF Group
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Prof. Dr.-Ing. Georg Jacobs, MSE,
RWTH Aachen University
Prof. Dr.-Ing. Eckhard Kirchner, pmd, TU Darmstadt

Prof. Dr.-Ing. Oliver Koch, MEGT,
University Kaiserslautern-Landau (RPTU)
Dr. Nadine Nagler, AB SKF
Prof. Dr.-Ing. Gerhard Poll, IMKT,
Leibniz University Hannover
Dr. Volker Rombach, NTN Wälzlager (Europa) GmbH
Prof. Dr.-Ing. Bernd Sauer, MEGT, University Kaiserslautern-Landau (RPTU)
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Prof. Dr.-Ing. Stephan Tremmel, CAD, University Bayreuth
Prof. Dr.-Ing. Sandro Wartzack, KTmfk,
University Erlangen-Nürnberg
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, 25 June, 2024

Frankonia Saal

10:00 Opening
Prof. Dr.-Ing. Gerhard Poll, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover, Hannover, DE

Prof. Dr.-Ing. Bernd Sauer, Chair of Machine Elements, Gears and Tribology (MEGT), University Kaiserslautern-Landau (RPTU), Kaiserslautern, DE

Christian Kunze, Research Association for Drive Technology (FVA e.V.), Frankfurt, DE

Keynotes

Session chair: Prof. Dr.-Ing. Gerhard Poll, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover, Hannover, DE and Prof. Dr.-Ing. Bernd Sauer, Chair of Machine Elements, Gears and Tribology (MEGT), University Kaiserslautern-Landau (RPTU), Kaiserslautern, DE

10:30
Let’s build the future. smarter. cleaner. safer.
Dr. Michael Pausch, Schaeffler Technologies AG & Co. KG, DE

11:00
Leading the Change: Innovating for Efficiency with Next-Generation Bearings, AI, Smart Materials and Embedded Sensing
Freddy Hernández, SKF Group, SE

11:30
MOVING YOUR WORLD by next generation bearing greases
Dennis Labisch, FUCHS LUBRICANTS GERMANY GmbH, DE

12:00 Lunch break
Tuesday, 25 June, 2024

Frankonia Saal

Smart bearings

Session chair: Dr. Jens Dörner,
NSK DEUTSCHLAND GMBH, Germany

13:00  Strain measurement on rolling bearings using sensors applied by aerosol-based deposition
Dr.-Ing. Marcel Bartz, Faculty of Engineering, Department of Mechanical Engineering (KTMFK), Friedrich-Alexander University Erlangen-Nürnberg, DE

13:30  Experimental investigation of a plain bearing integrated energy harvesting system for the operation of an autarkic, temperature-based condition monitoring system
Thao Baszenski, Institute for Machine Elements and System Engineering (MSE), RWTH Aachen University, DE

14:00  PVD Sputtered Thin-Film Sensors Integration in Rolling Bearings for Condition Monitoring
Dennis Konopka, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover, DE

14:30  Smart sensors for wind turbine sliding bearings
Dr. Gary Nicholas, The University of Sheffield, Department of Mechanical Engineering, GB

Panorama Saal

Electric effects

Session chair: Martin Correns,
Schaeffler Technologies AG & Co. KG, Germany

13:00  Influences of electrical stress and parasitic currents on rolling bearings within electrified environments
Marius Krewer, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover, DE

13:30  Conductive grease evaluation under electric field
Dr. Yuxin Zhou, SKF (Shanghai) Automotive Technologies Co. Ltd., CN

14:00  Improved capacitance calculation of thrust bearings by combining EHL- and electric field-simulation
Stefan Paulus, Chair of Machine Elements, Gears and Tribology (MEGT), University Kaiserslautern-Landau (RPTU), DE

14:30  Recent Advances in Impedance Modelling of Rolling Element Bearings
Steffen Puchtler, Institute for Product Development and Machine Elements (pmd), Technical University of Darmstadt, DE

15:00  Coffee break

15:00  Coffee break
**Frankonia Saal**

**Materials engineering and manufacturing processes**

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

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Institution</th>
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<tbody>
<tr>
<td>15:30</td>
<td>Evaluation of welded Bearings by Tailored Forming</td>
<td>Felix Saure, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover</td>
<td>DE</td>
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<tr>
<td>16:00</td>
<td>Effect of manufacturing processes on structural fatigue strength and</td>
<td>Vo-Huu-Thuc Nguyen, NTN Europe</td>
<td>FR</td>
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<td>life prediction method of automobile wheel bearing</td>
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<td>16:30</td>
<td>Laser cladding as an efficient production technology to realize</td>
<td>Dr.-Ing. Hannes Freisse, Kugler Bimetal</td>
<td>CH</td>
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<td>bi-metal parts for plain bearings</td>
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<tr>
<td>17:00</td>
<td>The Influence of Bearing Steel Microstructure on Micropitting</td>
<td>Dr. Predrag Andric, SKF Group</td>
<td>NL</td>
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<td>Resistance: Theory and Experiments</td>
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<td>17:30</td>
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<td>19:00</td>
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**Panorama Saal**

**Model-based system engineering and efficiency**

**Session chair:** Prof. Dr.-Ing. Sandro Wartzack, Faculty of Engineering, Department of Mechanical Engineering (KTmfk), Friedrich-Alexander University Erlangen-Nürnberg, Germany

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<tr>
<td></td>
<td>Innovative Insulation and Grounding Solutions against electrical</td>
<td>Dr. Jens Dörner, NSK Deutschland GmbH</td>
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<td>Erosion</td>
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<td></td>
<td>Efficient Simulation Chains using Artificial Intelligence</td>
<td>Dr. Hannes Grillenberger, Schaeffler Technologies AG &amp; Co. KG</td>
<td>DE</td>
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<td></td>
<td>The influence of grease composition and properties on mechanical</td>
<td>Carolina Croceta Bombazar, WEG Electric Equipment SA.</td>
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<td>losses of deep groove ball bearings applied to electric motors</td>
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<td>Influence of lubrication on power losses in deep groove ball</td>
<td>Dr. Charlotte Fossier, NTN Europe and Dr. Luc Amar, Cetim Power Transmission</td>
<td>FR</td>
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<td>bearings with limited applied load</td>
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## Wednesday, 26 June, 2024

### Frankonia Saal

#### Rolling contact fatigue

**Session Chair:** Prof. Dr.-Ing. Brigitte Clausen, Leibniz Institute IWT Bremen, Germany

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<tr>
<th>Time</th>
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<tr>
<td>08:30</td>
<td>Influence of Edge Zone Characteristics on the Fatigue Life Behavior of Rolling Bearings</td>
<td>Simon Dechant, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover, DE</td>
</tr>
<tr>
<td>09:00</td>
<td>Investigating White Etching Cracks material robustness for industrial bearings</td>
<td>Ashish Soni, Schaeffler Technologies AG &amp; Co. KG, DE</td>
</tr>
<tr>
<td>09:30</td>
<td>Method development for the consideration of surface morphology in rolling bearing fatigue life calculation</td>
<td>Lukas Rüth, Chair of Machine Elements, Gears, and Tribology (MEGT), University Kaiserslautern-Landau (RPTU), DE</td>
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<td>10:00</td>
<td>Coffee break</td>
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#### Bearing damage

**Session chair:** Dr. Nadine Nagler, AB SKF, Sweden

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<tr>
<td>10:30</td>
<td>Approach towards the condition monitoring of journal bearings using surface acoustic wave technology</td>
<td>Thomas Decker, CWD – Center for Wind Power Drives, RWTH Aachen University, DE</td>
</tr>
<tr>
<td>11:00</td>
<td>Tool chain for wear prediction of journal bearings in planetary gears in wind turbines</td>
<td>Benjamin Lehmann, Institute for Machine Elements and Systems Engineering (MSE), RWTH Aachen University, DE</td>
</tr>
<tr>
<td>11:30</td>
<td>Surface-initiated Rolling Contact Fatigue on a dent: microstructural evolution and effects on the failure mechanism</td>
<td>Aurore Goigoux, NTN Europe, FR</td>
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### Panorama Saal

#### Wind turbine bearings

**Session chair:** Lutz Heuser, Vestas Nacelles Deutschland GmbH, Germany

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<tr>
<td>08:30</td>
<td>Modelling the loading and lubrication conditions of a tilting pad journal bearing as the main bearing in a wind turbine for use in material testing</td>
<td>Emily Priest, The University of Sheffield, GB</td>
</tr>
<tr>
<td>09:00</td>
<td>Simulation of hydrodynamic plain bearings for wind turbine gearboxes in Bearinx – analysis of influencing factors</td>
<td>Dr. Michael Plogmann and Matthias Schubert, Schaeffler Technologies AG &amp; Co. KG</td>
</tr>
<tr>
<td>09:30</td>
<td>Pitch bearings for multi-MW wind turbine applications – advanced multi-bearing calculation process and product developments trend regarding pitch bearing and hub modularization</td>
<td>Dr.-Ing. Daniel Becker, thyssenkrupp rothe erde Germany GmbH, DE</td>
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<td>10:00</td>
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#### Lubrication

**Session chair:** Dr. Luc Houpert, Luc Houpert Consulting, Bearing and Tribology, France

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<tr>
<td>10:30</td>
<td>Fluid models for grease-lubricated rolling contacts: Formation of thickener-rich layer, oil bleeding and starvation</td>
<td>Shuo Zhang, Institute for Machine Elements and Systems Engineering (MSE), RWTH Aachen University, DE</td>
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<td>11:00</td>
<td>Simultaneous measurement of pressure and temperature in rolling contacts with mixed friction and comparison with calculation results</td>
<td>Stephan Emmrich, Chair of Machine Elements and Tribology (IMK), Otto von Guericke University Magdeburg, DE</td>
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<tr>
<td>11:30</td>
<td>Lubrication in oscillating grease-lubricated rolling bearings for different contact lengths</td>
<td>Gernot Bayer, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover, DE</td>
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**Wednesday, 26 June, 2024**

**Frankonia Saal**

**Bearing damage**

**Session chair:** Dr. Nadine Nagler, AB SKF, Sweden

12:00  Evaluation on the Influence of Raceway Indentation on Bearing Performance  
Dr. Rose Yan, SKF Group, NL

12:30  Lunch break

**Rolling bearing creep and test rig development**

**Session chair:** Prof. Dr.-Ing. Stephan Tremmel, Faculty of Engineering Science, Engineering Design and CAD, University Bayreuth, DE

13:30  Bearing creep by runout  
Jean-René Koch, Timken Company, FR

14:00  Influence of Housing Connection Design on Rolling Bearing Creep  
Loc Le Duc, Institute of Design Engineering and Drive Technology (IKAT), Chemnitz University of Technology, DE

14:30  Enhancing Gear Unit Performance through Advanced Bearing Calculations  
Ermalt Lamaj, SEW-EURODRIVE GmbH & Co KG, DE

15:00  Development of a hydrodynamic bearing test bench for combined radial and axial loads  
Lars Friedrich, Institute of Design Engineering and Drive Technology (IKAT), Chemnitz University of Technology, DE

15:30  End of conference

**Panorama Saal**

**Lubrication**

**Session chair:** Dr. Luc Houpert, Luc Houpert Consulting, Bearing and Tribology, France

Flows in Oil-Bath lubricated tapered roller bearings: CFP simulations validated via PIV  
Prof. Dr. Franco Concli, Free University of Bolzano, Faculty of Engineering, IT

12:30  Lunch break

**Efficiency**

**Session chair:** Prof. Dr.-Ing. Oliver Koch, Chair of Machine Elements, Gears and Tribology (MEGT), University Kaiserslautern-Landau (RPTU), Germany

Comparison of power losses generated by a deep groove ball bearing and an angular contact one, for oil-jet lubrication and limited applied load  
Lionel Darul, Institut National des Sciences Appliquées (INSA), Lyon, FR

13:30  Low-Friction Surface Engineering for Railway Wheel-End Bearings  
Dr. Victor Brizmer, SKF Group, NL

14:00  Quasi-Static Modeling of Roller Element Bearing Internal Loads and Friction Torque at High Speeds  
Volker Schneider, Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover, DE

14:30  BearinX makes railway bearings even more efficient  
Alexander Käbe, Schaeffler Technologies AG & Co. KG, DE

15:00  End of conference
We accept nothing less than perfection, so excellence is a vitally important part of the production process. Our 75 factories around the world set the very highest standards of quality in every area of their operations, and we use the same quality management system worldwide. For example, our ball bearings achieve increasingly high standards of precision - even when we make them by the billion.
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Some do precision, some do mass production. We do both.

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Exhibitors Institutes

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Institute of Machine Design and Tribology (IMKT), Leibniz University Hannover
Mannheim Tribology Competence Center (KTM)
Technical University of Applied Sciences Würzburg-Schweinfurt (THWS)
Faculty of Engineering, Department of Mechanical Engineering (KTmfk), Friedrich-Alexander University Erlangen-Nürnberg

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Seminar contents are taken from the knowledge pool of the Research Association for Drive Technology (FVA e.V.).

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Organisation

Head of BEARING WORLD Board and Scientific Board, Editor of Bearing World Journal
Prof. Dr.-Ing. Gerhard Poll, Leibniz University Hannover, Institute of Machine Design and Tribology (IMKT), Hannover, DE

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dirk.arnold@vdma.org  michelle.broller@fva-service.de

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

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Lyoner Strasse 18, D-60528 Frankfurt
More information at fva-net.de

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More information at fva-service.de

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