

Head of Program Committee and Scientific Board, **Editor of Bearing World Journal** Prof. Gerhard Poll, IMKT Leibniz Universität Hannover

Conference Organisation

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Technical Sponsor

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See you in Hannover!

The BEARING WORLD Programme Committee



Program Committee

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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, 31 March 2020

Conference Room 1



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



Does mechatronics need bearings or bearings mechatronic? Benefit from symbiosis! Dr. Tomas Smetana (Schaeffler AG, JPN)



Beyond simulations - using AI on process data to predict performance Dr. Victoria Van Camp (SKF AB, SWE)



Fives Flexible Grinding Manufacturing Mark Stocker (Fives Landis Corp., Hagerstown, US)

Premature Rolling Element Bearing Failures

Session chair: to be announced

11:30 Influences on the Cathodic and Energetic WEC-Fatigue Dr. Joerg Loos (Schaeffler Technologies AG & Co. KG, Herzogenaurach, DE)

12:00 Lunch



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Technical exhibition

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➢ BEARING WORLD 2020

Tuesday, 31 March 2020

Confere	ence Room 1	Conference Room 2
	•••	
Premature Rolling Element Bearing Failures		NVH (noise, vibration, harshness)
Session chair: to be announced		Session chair: to be announced
13:00	White Etching Cracks in oil lubricated rolling/sliding contacts – Drivers and their effects Dr. Ralf Dinter (Flender GmbH, Bocholt, DE)	Investigation of the damping characteristics in the dry lubricated rolling element – cage contact of deep groove ball bearings M.Sc. Rahul Dahiwal (University of Kaiserslautern Institute of Machine Elements; Gears and Transmissions (MEGT), Kaiserslautern, DE)
13:30	The lubricant formulation: one driver for early dama- ge associated to WECs in thrust and radial bearings Dr. Arnaud Ruellan (SKF, Houten, NL)	Reconstructing shaft orbit using angle measurement to detect bearing faults PhD Guillaume Bruand (NTN-SNR Roulements, ANNECY, FR)
14:00	The influence of mechanical stresses on the diffusion and accumulation of hydrogen in a cylindrical roller thrust bearing Dr. Iyas Khader (Fraunhofer Institute for Mechanics of Materials (IWM), Freiburg, DE)	Bearing raceway waviness induced noise in applications Angelico Approsio (SKF Industrie S.p.A., Moncalieri (Turin), IT)
14:30	Investigations of ZDDP tribofilm formation regarding temperature influences Dennis Mallach (University of Münster WWU, Institute of Physics, Münster, DE)	Noise Calculation in BEARINX– dynamics in the kinematic regime Dr. Hannes Grillenberger (Schaeffler Technologies AG & Co. KG, Herzogenaurach, DE)
15:00	Calculation method to evaluate the Risk on WEC failure occurrence in Industrial Applications DiplIng. Dirk-Olaf Leimann (Edegem, BE)	Balls characteristics impact on bearing noise generation Sebastiano Rizzo(Tsubaki Nakashima Co., LTD, Pinerolo, IT)
15:30	Coffee break	Coffee break

Condition Monitoring and Sensors

An analytical approach for the Influence

of the Real Film Thickness Distribution on

Volker Schneider (Leibniz University Hannover, Institute of

Machine Design and Tribology (IMKT), Hannover, DE)

the Capacitance of an EHL Contact

Session chair: to be announced

Electric Drive Technology and Challenges to Bearings

Session chair: to be announced

Surface mutation of the bearing raceway during 16:00 electrical current passage in mixed friction operation M.Eng. Simon Graf (University of Kaiserslautern, Institute of Machine Elements; Gears and Transmissions (MEGT), Kaiserslautern, DE)

Tuesday, 31 March 2020

Conference Room 1

Electric Drive Technology and Challenges to Bearings			
Session o	Session chair: to be announced		
16:30	Low Temperature Test Methods for Electric Car Bearing Greases Thomas Litters (FUCHS SCHMIERSTOFFE GmbH, Mannheim, DE)		
17:00	Enhancement of the insulation properties of thermal sprayed ceramic bearing coatings M.Sc. Elisa Burbaum (RWTH Aachen University, Surface Engineering Institute (IOT), Aachen, DE)		
17:30	Experimental High Frequency Analysis of the Electric Impedance of Rolling Bearings M.Sc. Tobias Schirra (Technische Universität Darmstadt, Institute for product development and machine elements (PMD), Darmstadt, DE)		
18:00	End of presentation day 1		

Evening Event: 19:30 Restaurant XII Apostel, Pelikanplatz 2-4, 30177 Hannover



"Market trends for eMobility, autonomous driving, digitalization and robotics result into completely new requirements on system level and on component level. Bearing World offers ideal platform to challenge the current technical status quo and to discuss new development trends for bearings in team of experts from research and industry."

Dr. Tomas Smetana (Schaeffler AG)

Conference Room 2

Condition Monitoring and Sensors

Session chair: to be announced

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Monitoring load and lubrication in a wind turbine gearbox rolling bearing in the field

Ben Clarke (The University of Sheffield, The Leonardo Centre for Tribology, Department of Mechanical Engineering, Sheffield, GB)

An intelligent hybrid plain bearing as a smart machine component

Robin Kurth (Fraunhofer Institute for Machine Tools and Forming Technology (IWU), Chemnitz, DE)

Novel analytical and numerical calculations in truncated contact Dr. Luc Houpert

End of presentation day 1



Wednesday, 1 April 2020

Conference Room 1

Rolling Contact Fatigue and Materials I

Session chair: to be announced

- 8:30 Evaluation of the influence of non-metallic inclusions on the high and very high cycle fatigue life of inductive hardened bearing steel in multimegawatt wind turbines Felix Stern (TU Dortmund University, Department of Materials Test Engineering (WPT), Dortmund, DE)
- 9:00 Fracture Mechanical Assessment of Inclusions in Bearing Steel Dipl.-Ing. Jörg Binderszewsky (Schaeffler Technologies AG & Co. KG, Herzogenaurach, DE)
- 9:30 Effect of material anisotropy on the fatigue life of bearing steel under dry and lubricated point contact condition: a numerical study Binbin Zhang (University of Twente, Engineering Fluid Dynamics, Enschede, NL)
- 10:00 Fatigue damage development in bearing steel: modelling and measurement Dr. Ir. Erik Vegter (SKF, Houten, NL)

10:30 Coffee break

Conference Room 2

Bearing Selection and Design Session chair: to be announced

Cost efficient Design of Wind Turbine Main Bearing Systems Dr. Bernd Lüneburg (thyssenkrupp rothe erde GmbH, Lippstadt, DE)

Validation of a novel conical sliding bearing for the main shaft of wind turbines M.Sc. Tim Schröder (RWTH Aachen, Chair for Wind Power Drives, Aachen, DE)

If form deviation than correct – The utilization of production-related defects for improving operating properties of journal bearings Lars Friedrich (Chemnitz University of Technology, Institute of Design Engineering and Drive Technology (IKAT), Chemnitz, DE)

Bearing selection for high efficiency worm gear drives

Jun. Prof. Dr.-Ing. Manuel Oehler (University of Kaiserslautern, Institute of Machine Elements; Gears and Transmissions (MEGT), Kaiserslautern, DE)

Coffee break



Image Sources: FVA e.V., juergenmai.com, Daniel Pilar-Photography, Schaeffler Technologies AG & Co.KG, SKF GmbH

Wednesday, 1 April 2020

Conference Room 1

Rolling Contact Fatigue and Materials II Session chair: to be announced

- 11:00 Development of optimized nitrided bearing and transmission components for a better application performance: from process parameters to functional performance properties
 Dr. Christine Sidoroff-Coicaud (NTN-SNR Roulements, ANNECY, FR)
 Simon Thibault (SAFRAN, Magny les Hameaux, FR)
- Finite Element Analysis of Two-step Deep Rolling of Bearing Steel for Expansion and Equalization of Compressive Residual Stress Profiles
 Joshua Simon (University of Applied Science Würzburg-Schweinfurt, Faculty of Applied Natural Sciences and Humanities, DE)
- 12:00 Progression of rolling contact fatigue damage from artificial indents in hybrid and steel-to-steel bearing contact Yuri Kadin (SKF GmbH, DE)
- 12:30 Microstructural Analysis of Bearing Steels by a Statistical Nanoindentation Technique Prof., PhD; Docent (Hab.) Esteban Broitman (SKF, Houten, NL)

13:00 Lunch

Bearing Durability and Dimensioning Session chair: to be announced

14:00 Application-dependent bearing preload in planetary gear units – application, design and assembly Ermalt Lamaj (SEW-Eurodrive GmbH & Co. KG, Bruchsal, DE)

Conference Room 2

Tribology and Fluid Dynamics

Session chair: to be announced

3D CFD modelling of textured hydrodynamic journal bearings M.Sc. Patrick Wieckhorst (Otto-von-Guericke-University Magdeburg, Chair of Machine Elements and Tribology, Magdeburg, DE)

Smearing in full complement roller bearings Dr. Nadine Nagler Bosch Rexroth AG

Extension of a Reynolds equation based solver to calculate axially-flown journal bearings of pumpsM.Sc. Vincent Hoffmann (Otto-von-Guericke-University Magde-burg, Institute for Machine Construction, Magdeburg, DE)

Frictional properties of grease additivated by graphene platelets in angular contact ball bearingsDr. Florian Pape (Leibniz University Hannover, Institute of Machine Design and Tribology (IMKT), Hannover, DE)

Lunch

Bearing Mechanics

Session chair: to be announced

Investigations on the rolling bearing cage dynamics with regard to different operating conditions and cage properties

M.Sc. **Sebastian Schwarz** (Friedrich-Alexander-University Erlangen-Nürnberg, Department of Mechanical Engineering, Engineering Design (FAU), Erlangen, DE)

Wednesday, 1 April 2020

Conference Room 1

Bearing Durability and Dimensioning

Session chair: to be announced

14:30 Investigation of Wind Turbine Planetary Bearing Outer Ring Creep on a Component Test Bench M.Sc. Felix M. Schlüter (RWTH Aachen University, Center for Wind Power Drives, Aachen, DE)

15:00 Investigation of the load distribution on a planetary carrier bearing of a wind turbine gearbox to identify trigger for ring creep Jonas Gnauert (RWTH Aachen University, Chair for Wind Power Drives, Aachen, DE)

15:30 A Fatigue Life Model for Roller Bearings in **Oscillatory Applications** Georg Breslau (Technical University Dresden, Institute of Machine Elements and Machine (IMM), Dresden, DE)

16:00 End of conference

Conference Room 2

Bearing Mechanics

Session chair: to be announced

Measuring the kinematic behavior of spindle bearing rolling elements under radial loads

M.Sc. Hans-Martin Eckel (RWTH Aachen University, Laboratory for Machine Tools and Production Engineering (WZL), Aachen, DE)

Development of a methodology for tolerancing radial journal bearing systems

Marko Ebermann (Chemnitz University of Technology, Institute of Design Engineering and Drive Technology (IKAT), Chemnitz, DE)

A New Approach for Rapid Determination of Roller-Flange Contact in Roller Element Bearings Marius Wolf (Robert Bosch GmbH, Renningen, DE)

End of conference







"Climate change is real, and we in the bearing industry are in a prime position to take the lead in design for circular economy. Technologies like AI, new materials and IOT make it possible.

I look forward to Bearing World 2020 where we have the chance to set the path forward."

Dr. Victoria Van Camp (CTO SKF AB)



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and other solutions. Smart components and digital services are becoming increasingly important. At the same time, Schaeffler is also working to increase the energy efficiency of bearing technology for industrial applications. The broad range of products and services includes



components and systems for automobile drive trains and products for high-speed trains through to rolling bearings for solar power plants and innovative solutions for aviation and aerospace applications. A worldwide network of sales engineers is available to provide advice to customers from all branches of industry directly on site - whether in agriculture or wind power, whether in the bicycle or steel industry.

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