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COLLOQUIUM

22nd International Colloquium Tribology

Industrial and Automotive Lubrication

Event No. 50019.00.006
28 – 30 January 2020
in Stuttgart/Ostfildern, Germany

STEERING COMMITTEE

A. Fatemi
M. Jungk
C. Wincierz

In cooperation with:
German Society of Tribology (GfT) and
German Lubricant Manufacturers Association (VSI)



22nd International Colloquium Tribology

The conference provides an international exchange forum for the industry and the academia. Leading university researchers present their latest findings, and representatives of the industry inspire scientists to develop new solutions. Discussions and cooperation enable attendees to meet current tribological challenges.

The leading themes of the 2020 conference, presented in special sessions, are Tribology of Electric and Hybrid Vehicles, its various aspects and its consequences for the lubrication and tribology community, diverse facets of Sustainable Lubrication and, last but not least, Machine Learning and Artificial Intelligence in lubrication and condition monitoring.

PLENARY SPEAKERS


Nicolas Argibay

Sandia National Lab, Materials Science and Engineering Center
Albuquerque, NM, USA


Michael Carus

Nova-Institut GmbH, Director
Hürth, Germany


Martin Dienwiebel

Karlsruhe Institute of Technology (KIT),
Mikrotribologie Centrum μ TC
Karlsruhe, Germany


Michael Duncan

STLE-President/Daubert Chemical Company,
EVP Technology
Chicago, IL, USA


Dr. Stefan Eder

AC2T research GmbH
Wiener Neustadt, Austria


Arup Gangopadhyay

Ford Motor Company, Research and Innovation Center
Dearborn, MI, USA


Jeff Hemphill

Schaeffler Group North America
Troy, MI, USA


Dr. Amir Kadiric

Tribology Group, Department of Mechanical Engineering, Imperial College
London, United Kingdom


Lutz Lindemann

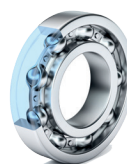
Executive Board Member (CTO) / R&D,
Supply Chain, Sustainability, FUCHS
PETROLUB SE
Mannheim, Germany


Anne Neville

University of Leeds, School of Mechanical Engineering
Leeds, United Kingdom


Philippe Vergne

LaMCoS & CNRS, INSA de Lyon, Université de Lyon
Villeurbanne, France



Tuesday		Tuesday, 28 January 2020									
	P1 – Plenary	Chair: C. Wincierz									
9:00	Opening	Werner Schollenberger, Technische Akademie Esslingen e.V., Germany									
9:30	Welcome Address by Christoph Bolay,	Lord Mayor of Ostfildern, Germany									
		Lutz Lindemann, FUCHS PETROLUB SE, Germany									
10:00	The Lubricants Industry in Light of the Macroeconomic Environment										
		Michael Duncan, STLE-President, Daubert Chemical Company, USA									
10:30	Emerging Issues and Trends in Tribology and Lubrication Engineering										
	Break	Exhibition									
11:00	Arup Gangopadhyay, Ford Motor Company, USA	DriveLine Fluid Opportunities for HEV/EV Vehicles									
11:30	Jeff Hemphill, Schaeffler Group North America, USA										
	Impact of Tribology on Vehicle Electrification										
12:00	Michael Carus, nova-Institut GmbH, Germany	Sustainability Analysis – from Brundtland to VDI									
12:30	Break	Exhibition									
	A1 – Base Oil Technology (1)	A2 – Testing (1)	A3 – Additives (1)	A4 – Greases (1)	A5 – Seals (1)	A6 – Sliding Bearings	A7 – Molecular Dynamics	A8 – Oil Analysis (1)	A9 – Gas Bearings		
Chair:	L. Lindemann	A. Pauschitz	C. Wincierz	M. Fatih-Najafi	N. Brunetière	M. Gaule	M. Moseler	R. Krethe	A. Vogt		
14:00	Thomas Norby Nynas AB, Sweden Ultra-Low Viscosity Naphthenic Base Oils for Industrial Lubricants	Fabio Alemanno Ducom Instruments Europe B.V., The Netherlands How to Relate Lubricants Failure to its Behavior at Microscale	Siegfried LUCAZEAU NUCYCO, France High Performance Anti-Oxidants for Synthetic Esters	Dirk Rettemeyer Idemitsu Lube Europe GmbH, Germany Nano Structure Urea Grease with New Performance Level	Noël Brunetière Institut Prime - UPR 3346, France Can we Predict the Behavior of Mechanical Seals?	Florian König RWTH Aachen, Germany Suitability of Wear Coefficients from Tribometer Testing for Wear Prediction in Sliding Bearings	Takuya Kuwahara Fraunhofer IWM, Germany Atomistic Simulations of Tetrahedral Amorphous Carbon in Boundary Lubrication	Thomas Fischer OELCHECK GmbH, Germany Monitoring of Nonferrous Metal Passivators – Proactive Copper Wear Detection in Wind Turbines Part 1	Yao Lu KU Leuven, Belgium Influence of Bearing-Film Shape Modification to Dynamic Properties of Air Bearings		
14:30	Claire Ward Croda Europe Ltd, United Kingdom Liquid Amides – Novel, High Performance Base Oils	Bernardo Tomos UNIVERSITAT POLITÈCNICA DE VALENCIA, Spain Long-Term Real World Test for Engine Oils	Jinxia Li Nynas AB, Sweden Anti-Oxidant Expression in Heavy Naphthenic Base Oils	Kirsten Schwörer BP Europa SE, Germany New Wind Turbine Bearing Grease Development	Gert Wahl Schunk Kohlenstoff-technik GmbH, Germany 3D-Printed Silicon Carbide Ceramics Open New Opportunities	Christian Stelzer CADFEM GmbH, Germany Designing a Heavily Loaded Journal Bearing by Usage of Multi-Parameter-Optimization	Gianpiero Moras Fraunhofer IWM, Germany Surface Termination in Dry Friction: Atomic-Scale Insights from Computer Simulations	Stefan Mitterer OELCHECK GmbH, Germany Monitoring of Nonferrous Metal Passivators – Proactive Copper Wear Detection in Wind Turbines Part 2	Federico Colombo Politecnico di Torino, Italy The Effect of the Supply Holes Disposition on the Performance of Aerostatic Pads		
15:00	Frank Rittig BASF SE, Germany Group V Basestocks on the Rise – Unconventional Base Stocks for more Sustainable Lubrication	Nicole Dörr AC2T research GmbH, Austria Impact of Engine Oil Degradation on Lubrication Performance Studied by the Lab-to-Field Approach	Jerome Desire Aliebakaa Kpan Coburg University of Applied Sciences, Germany Impact of Adsorbents on Oxidative Stability of Biodiesel and the Deterioration of Engine Oil	David Pimentel Gonçálves INEGI, Portugal Grease Influences on Mechanisms' Performance	Christoph Burkart TU Kaiserslautern, Germany Online Determination of Pumping Values of Radial Shaft Seals and their Tribological System	Achim Frick Institute of Polymer Science and Processing (IPSP), Hochschule Aalen, Germany Injection Molding Induced Tribological Behavior of Polyoxyethylene Copolymer	Stefan Eder AC2T research GmbH, Austria MD Simulations of FCC Alloys under Dry Sliding Yield a Mechanism Map for Near-Surface Microstructural Development	Lin Wang ExxonMobil, USA The Impacts of Solvent Dilution on Removing Antifoam Droplets for Automatic Particle Counting	Yao Lu KU Leuven, Belgium Application of Magnetic Damper to the Stabilization of Air Bearings		
15:30	Break	Exhibition									

Tuesday, 28 January 2020									
Tuesday Afternoon									
	B1 – Base Oils (2)	B2 – Testing (2)	B3 – Additives (2)	B4 – Greases (2)	B5 – Materials	B6 – Friction & Wear	B7 – Reliability/Lifetime	B8 – Condition Monitoring	B9 – Gas Bearings (2)
Chair:	M. Frauscher	A. Pauschitz	N. Dörr	M. Matzke	C. Greiner	J. Molter	J. Schöfer	R. Krethe	A. Vogt
16:00	Martin Greaves Dow, Schweiz Ultra-Low Viscosity Polyalkylene Glycols for Transportation Lubricants	Etienne Macron IREIS Institut de Recherche en Ingénierie des Surfaces, France Multiscale Approach for Tribological Testing Supporting Automotive Components Development	David Boudreau Vanderbilt Chemicals LLC, USA Hydroxylated Alkyl Phosphate Esters as Lubricant Additives	Igor Mass Hochschule Niederrhein, Germany Experimental Studies on the Fluid Flow of Greases in Hydrostatic Thrust Bearings	Aleks Vreck Luleå University of Technology, Sweden Tribological Characterisation of Potential Crankshaft Bearing Steels for Roller Bearing Engine	Robert Teichert TU Bergakademie Freiberg, Germany Friction Coefficient Control by Active Viscosity Mixing	Jörg Schöfer Robert Bosch GmbH, Germany Design for Reliability – a Methodical Approach for Tribological Systems	Rüdiger Krethe OilDoc GmbH, Germany A New Method for Oxidation Detection in Hydraulic and Lubricating Oils	Yao Lu KU Leuven, Belgium Stabilization of Air-Bearing System with Tuned Mass Damper Inside the Shaft
16:30	Dimitrios Karonis National Technical University of Athens, Greece Evaluation of Base Oils Prod. from Hydro-cracker Residue with Solvent Refining	Stephan Emmrich Otto von Guericke University Magdeburg, Germany Designing of a Thin-Film Transducer for Temperature Measurement in Mixed Lubrication	Benoît Thiebaut TOTAL MS, France Molybdenum Based Friction Modifier: Improving Tribochemical Process to Optimize Fuel Economy	Guillaume Notheaux SEQENS (ex PCAS), France Fully Customizable Calcium Sulfonate Greases for Optimum Performances	Romain Montelimaud HEF Groupe, France PVD Coatings on Sliding Finger Followers for Internal Combustion Engines	Rui Li Shanghai Jiao Tong University, China Analysis of the Critical Friction Pairs in Marine Diesel Engines Based on a Tribo-Dynamic Model	Guillermo E. Morales-Espejel SKF Research and Technology Development, The Netherlands Tribology Modelling of Lubricated Contacts for Electrification	John K. Duchowski HYDAC FluidCareCenter GmbH, Germany Oil Conductivity: An Early Indicator of Oil and Additive Degradation Processes	Yao Lu KU Leuven, Belgium Stabilization of Ultra-High-Speed Air Shunted Bearings with Piezoceramics
17:00		Jim Bai Cheng Institut für Verbundwerkstoffe GmbH, Germany In Situ Detection and Quantification of Transfer Films in Dry and Oil-Lubricated Sliding Tests	Aaron Thornley Institute of Functional Surfaces (IFS), United Kingdom Effect of Increasing the Amount of Friction Modifier Concentration in Low Viscosity Engine Oils	Kerstin-Evelyne Voigt Kinolt SA, Belgium Development of a Grease-Hardening Test – Falzoni-Voigt-Test	Deepak Kumar Indian Institute of Technology Delhi, India Nano Scale Tribological Behavior of AZ91 Alloy under Dry and Lubricated Conditions	Chengwei Wen Shanghai Jiao Tong University, China Measurement of Piston Assembly Friction with Wireless IMEP Method under Fired Conditions	Michael Gleiß Technische Akademie Esslingen, Germany Reliability Prediction of Concentrated Electrical and Tribological Contacts	Ameneh Schneider Optimal Instruments Prüftechnik GmbH, Germany Extending Lubricant Condition Monitoring by Tribotesting Results	
17:30		Oday Ibraheem Abdullah Hamburg University of Technology, Germany Elastohydrodynamic Lubrication Analysis of a Modified Cam with Fat Faced Follower	Ted McClure Sea-Land Chemical Company, USA Metalworking Lubricant Additive Response Comparisons on Al-Alloys Using Twist Compression (TCT) and Tapping Torque Tests	Mehdi Fathi-Najafi Nynas AB, Sweden The Impact of Viscosity of Naphthenic Oils on Different Type of Greases	Prashant Mittal IIT DELHI, India In Situ Nanoscale Study on ADC12 in Lubricated Contacts Containing ZDDP and MoDTC	Kansa Basit National University of Sciences and Technology, Pakistan Simulation of Wear Generated in a Conventional Tribometer	Amir Kadiric Imperial College London, United Kingdom Microplitting in Rolling-Sliding Contacts: Influencing Factors and Mechanisms of Their Action	Knut Wantzen Karlsruhe Institute of Technology (KIT) Method to Develop Condition Monitoring Systems Based on Acoustic Emission Measurement Technique	
18:00	Come Together with Snacks and Beverages								

Wednesday, 29 January 2020										
Wednesday Morning										
	P2 – Plenary									
	Chair: A. Fatemi									
9:00	Philippe Vergne, LaMCoS – CNRS – INSA Lyon, France Relationship between Film Forming Capability and Rheology of Lubricants with VI Improvers									
9:30	Amir Kadiric, Imperial College London, United Kingdom Rolling Contact Fatigue: Pits, Cracks and Spalls									
10:00	Nicolas Argibay, Sandia National Laboratories, USA New Insights into Alloy Design for Tribological Applications									
10:30	Break									
	Exhibition									
Chair:	C1 – Lubricants (1)	C2 – Engine Tribology (1)	C3 – Additives (3)	C4 – Lubrication Fundamentals (1)	C5 – Wear Mechanisms	C6 – Rolling Element Bearings (1)	C7 – Sustainable Lubricants (1)	C8 – Surface & Coatings (1)	C9 – i-Tribomat	
	M. Jungk	M. Priest	M. Fies	J. Müllers	N. Espallargas	G. Morales-Espejel	M. Matzke	Z. Khan	I. Toth	
11:00	Michael Blumenfeld EMRE, USA Sulfur Syndrome: Limiting Oil Drain Intervals in Wind Turbine Main Gearbox Lubricants	Paula Ussa Total, France Lubricant Impact on the Friction Reduction of Improved Mechanical Parts	Christelle Chretien Solvay, USA Introducing Polymeric Anti-Wear Technology for High-Performance Lubricants	Jonny Hansen Luleå University of Technology, Sweden Lubricant Film Formation in Rough EHL Contacts	Fernando López IK4-TEKNIKER, Spain White Etching Cracks in Wind Turbine Bearings: Main Drivers and Experimental Procedures	Tobias Hultqvist Luleå University of Technology, Sweden Analysis of Split Crankshaft Roller Bearings with Focus on Lubrication and Contact Stresses	Markus Matzke Robert Bosch GmbH, Germany Global Need for Sustainability – how Advanced Lubrication Can Contribute to a More Sustainable Future	Volker Wehnacht Fraunhofer IWS, Germany Superhard Carbon Coatings for Application in Low-Friction Gears	Franz Pirker AC2T research GmbH, Austria i-TRIBOMAT – Single-Entry Point (SEP) Concept	
11:30	Christoph Wincierz Evonik Resource Efficiency GmbH, Germany Influence Analysis of the Viscosity of Hydraulic Fluids on the Energy Consumption of Machine Tools	Bernardo Tormos UNIVERSITAT POLITÈCNICA DE VALÈNCIA, Spain Experimental Study on the Impact of the Engine Oil Reactivity on LSPI	Andrew Schwarz Infineum UK Ltd., United Kingdom Development of New Lubricant Additives	Dennis Fischer Institute for Machine Elements and Systems Engineering, Germany Thickener Type in Lubricating Greases on the Film Formation in EHD Contacts	Monika Ratoi University of Southampton, United Kingdom Lubricants for Prevention of Hydrogen Absorption in Steel	David Pimentel Gonçalves INEGI, Portugal Lubrication Regime and Friction in Rolling Bearings	Apu Gosalla FUCHS PETROLUB SE, Germany Lubricants & Beyond – How to Sustain Ability	Armando Salmerón Cano Repsol, Spain Friction Behavior in Hydraulic Shock-Absorbers: the Influence of Diverse Fluids and DLC Coatings	Alberto Alberdi TEKNIKER, Spain An Industrial Driven Service Catalogue	
12:00	George S. Dodos Eidon's S.A., Greece Varnish Potential Analysis of Turbine Oils	Eduardo Tomanik University of Sao Paulo, Brazil Effect of the Coated Bore Pores on the Piston Ring Tribology through Deterministic Simulation	Roland Larsson Luleå University of Technology, Sweden On the Effects of Two-Sided Roughness in Rolling-Sliding EHL Contacts	Jörg W.H. Franke Schaeffler Technologies AG & Co. KG, Germany Influence of Oil Formulation on White Etching Crack Formation Depending on WEC Main Mechanism	Rahul Dahiwal Technische Universität Kaiserslautern, Germany Lifetime Influence of Cage Wear during Transfer Lubrication of Solid-Lubricated Roller Bearings	Ivana Krkijus BASF SE, Germany Fact Based Sustainability for Lubricants: How to Assess the Portfolio and Products' Environmental Impacts	Andrzej Posmyk Silesian University of Technology, Poland Composite Coatings with Solid Lubricants for Aviation Transport Means	Alvaro Garcia TEKNIKER, Spain Design of a Scalable and Interoperable Platform for Tribo-Connection		
12:30	Break									
	Exhibition									

Wednesday, 29 January 2020									
Wednesday Afternoon									
	D1 – Lubricants (2)	D2 – Engine Tribology (2)	D3 – Additives (4)	D4 – Lubrication Fundamentals (2)	D5 – Wear of Materials	D6 – Rolling Element Bearings (2)	D7 – Sustainable Lubricants (2)	D8 – Surface & Coatings (2)	D9 - i-Tribomat
Chair:	M. Jungk	E. Tomanik	S. Lucazeau	J. Müllers	M. Dienwiebel	G. Poll	M. Matzke	V. Wehnacht	F. Pagano
14:00	Phil Hutchinson Evonik Resource Efficiency GmbH, Germany Correlating Viscosity to Fuel Efficiency in the Daimler OM501 Heavy-Duty Diesel Engine Fuel Efficiency Test and the Influence of VII.	Hyunjung Oh Seoul National University, South Korea The Effect of Cylinder Liner Temperature on Piston Ring Friction Using Floating Liner Method	Matthias Fies BASF SE, Germany Non-Antagonistic Corrosion Inhibitors for Lubricant Applications	Fabrice Dassenoy Ecole Centrale de Lyon, France Mechanical Characterization of Diesel Soot Nanoparticles: In Situ Compression in the Transmission Electron Microscope and Simulations	Nicolas Argibay Sandia National Laboratories, USA Ultra Low Wear Materials	Petra Wiersch Flender GmbH, Germany A Contribution to the Discussion Regarding the Influence of Very Low Currents on Bearing Life	John Eastwood Croda Europe Ltd., United Kingdom Investigating Tribofilm Chemistry of Engines Oils Formulated with Organic and Inorganic Polymeric Friction Modifiers	Zulfiqar Khan Bournemouth University, United Kingdom Development of Novel Nano-Composite Coatings for Tribological Applications	Maria Koglia ANSYS GRANTA, United Kingdom Materials Information Management for Tribology
14:30	Angela Tortora Ducom Instruments Europe B.V., The Netherlands A System Engineering Approach to Reduce Soot Wear	Martin Priest University of Bradford, United Kingdom In-Bore Engine Component Tribology	Jennifer Honselmann Fraunhofer IWM MikroTribologie Centrum µTTC, Germany Vacuum Tribology with Gas Phase Deposited Lubricant Additives	Shreyas Jalilop AC2T research GmbH, Austria Fundamentals of Directional Spreading of Lubricants over Multi-Scale Textured Surfaces	Krunal Mehta Pandit Deendayal Petroleum University, India Evolution of Wear Behavior of Al6061-B4C Surface Composites with Normal Load and Sliding Speed	Marius Wolf Robert Bosch GmbH, Germany Simulation of Slip in Roller Element Bearing with Lubricant Rheological Models	Thilo Krapfl Evonik Resource Efficiency GmbH, Germany Presentation of a Life Cycle Analysis on the Example of an Efficient Hydraulic Fluid	Andreas Keller HS Mannheim, Germany Transfer Film Quality - An Underestimated Factor Concerning Plain Bearing Performance	Helena Ronkainen VTT Technical Research Centre of Finland, Finland Collaboration Interface
15:00	Ritwik Chakraborty Indian Jute Industries' Research Association, India Low Viscosity Friction Modifying Formulation for Jute Fibre Spinning	Boris Zhmud Applied Nano Surfaces Sweden AB, Sweden Optimizing the Piston/Bore Tribology: The Role of Surface Specifications, Ring Pack and Lubricant	Enrico Gnecco Friedrich Schiller University Jena, Germany The Role of Elastic Instabilities in Early Stages of Plastic and Abrasive Wear	Daniel Kümmel KIT Karlsruhe Institute of Technology, Germany Tribological Behavior of Ti6Al4V Surface Textured by Cutting Tools	Pedro Marques INEGI, Portugal An Improved Setup for Measurement of Rolling Bearing Torque Loss in a Modified Four-Ball Machine	Sebastian Dörr Lubtrading GmbH, Germany Sustainability – Between Responsibility, Marketing and Green Wash	Go Tatsumi University of Southampton, United Kingdom Effect of Friction Modifiers on the Lubrication of Polymeric Materials with Steel Counter Parts	Ichiro Minami Luleå University of Technology, Sweden Validation of Lab-to-Field Up-Scaling Protocol	
15:30	Break				Exhibition				

Wednesday, 29 January 2020										
Wednesday Afternoon										
	E1 – Bio-Lubricants (1)	E2 – Automotive Components	E3 – Additives (5)	E4 – Grease Condition Monitoring	E5 – Wear of Materials (2)	E6 – Rolling Element Bearings (3)	E7 – Sustainable Lubricants (3)	E8 – Surface & Coatings (3)	E9 – i-Tribomat	
Chair:	R. Luther	P. Marklund	A. Stratmann	K.-E. Voigt	M. Dienwiebel	G. Jacobs	M. Matzke	V. Wehnacht	E. Nyberg	
16:00	Marcella Frauscher AC2T research GmbH, Austria Correlation of Lubricant Degradation & Performance of a Biodegradable Hydraulic Fluid	Polychronis Dellis ASPETE, Greece Temperature Effect in Friction Force Measurements for a Simplified Piston-Cylinder Setup	Michael Heeran Nouryon, The Netherlands Understanding ZDDP-OFM Additive Interactions and their Impact on Performance	Richard Wurzbach MRG Labs, USA Small Volume Sampling and Analysis for New and In-Service Greases	Igor Velkavrh V-Research GmbH, Austria Residual Stresses in Nitrocarburised Layers Applied for Tribological Applications	Michiel van Breemen Quaker Chemical, The Netherlands Reducing the Risk for Glossy Wear Marks to Occur on Roller-Bearing Linear Guides	Michael Adler AC2T research GmbH, Austria Specification Procedure for Lubricants Applied in Oil and Gas Exploration Compressors	Johan Blomkvist Applied Nano Surfaces Sweden AB, Sweden The Properties of Solid Lubricant Films Generated by Reactive Quenching	Amaya Igartua Fundación TEKNIKER, Spain Building i-Tribomat Interconnections with Materials Ecosystem	
16:30	Frederik Kort Putzmeister Engineering GmbH, Germany Lifelong Environmentally Acceptable Oil Filling + Condition Monitoring – A Practical Approach	Mitulkumar Solanki Sardar Vallabhbhai National Institute of Technology, India Experimental Investigation between a Layered Cylindrical Hollow Roller and Flat Plate	Vlad Bogdan Niste Kyushu University, Japan NaNO2 as Lubricant Additives against Hydrogen Permeation in Rolling Contacts	Simon Eiden TECFUELS GmbH, Germany Investigations of Grease Thickener Degradation	Ronnie Woodward University of Strathclyde, United Kingdom Sliding Wear Assessment of Various Alloys for Pumping Applications: A Comparative Study	Daniel Strömbergsson Luleå University of Technology, Sweden Dynamic Simulation of Rolling Element Bearing Vibrations Using SKF BEAST and Test Rig Validation	John Burbank FUCHS SCHMIERSTOFFE GMBH, Germany New Approaches to Extreme Low-Friction Lubrication	Maryam Bahrami University of Freiburg, Germany Studies on the Lubrication of Surface-Attached Hydrogels	Ivana Tóth AC2T research GmbH, Austria Panel Discussion (i-TRIBOMAT Communication)	
17:15	Departure for Conference Dinner									
18:00	Conference Dinner									

Thursday Morning										Thursday, 30 Januar 2020										
P3 – Plenary										Chair: M. Jungk										
9:00	Martin Dienwiebel, Karlsruhe Institute of Technology (KIT), Germany In Situ Studies on the Competitive Adsorption of Lubricant Additives																			
9:30	Anne Neville, University of Leeds, United Kingdom (enquired) Tribiochemistry and Oil Formulation																			
10:00	Stefan Eder, AC2T research GmbH, Austria Effects of Heat, Load and Shear on Film Formation Deconvoluted by Reactive Molecular Dynamics																			
10:30	Break										Exhibition									
	F1 – Bio-Lubricants (2)	F2 – Automotive Components	F3 – Lubricant Condition Monitoring	F4 – E-Mobility (1)	F5 – Simulation (1)	F6 – Tribiochemistry	F7 – Wear Testing	F8 – Unconventional Lubricants (1)	F9 – Metal Working Fluids (1)											
Chair:	R. Luther	R. Larsson	C. Gachot	S. Meinhardt	J. Müllers	A. Neville	S. Beyer-Faiss	F. Gatti	F. Passman											
11:00	Martin Kingsley Argent Energy, United Kingdom The Use of Alternative Sources of Feedstocks as Renewable and Biodegradable Lubricants	Pär Marklund Luleå University of Technology, Sweden Influence of Wet Clutch Running- In on Friction, Pressure Distribution and Permeability	Norman Rohrwick OilDoc GmbH, Germany CM of Oil and Equipment Status by the Use of Online Oil Sensors and Multivariate Data Analysis	Ling Wang University of Southampton, United Kingdom A Study of Rolling Element Bearings under the Influence of Electrical Environment	Marcus Björling Luleå University of Technology, Sweden The Use of EHD Friction Measurements and an Optimization Routine to Obtain Lubricant Parameters	Nuria Espallargas Norwegian University NTNU, Norway Water Lubrication – Challenges and Opportunities	Valentin Wohlgut IPEK Institute of Product Engineering, Germany Development of a Method for an Efficient DoE Deduction Using the Example of Clutch Wear	Maria Dolores Aviles Universidad Politecnica de Cartagena, Spain Tribological Study of New Ionic Liquid Dispersions and Blends	Julien Hamy ANGUS Chemical Company, France Optimizing the Sustainability, Performance and Cost of your MWF											
11:30	Peter Lohmann Hermann Bantleon GmbH, Germany A Look Behind the Scenes of Biological Degradation of Lubricants	Pedro Marques INEGI, Portugal No-Load Losses in a Car Differential	Haris Trobradovic SDT International, Belgium Ultrasound Guided Condition Based Lubrication	Steffen Bots LUBEVISIO GmbH, Germany Silicone Fluids with Optimized Tribological Behaviour through Molecule Structure Enhancement – A Solution for EV Drivetrains	Marko Tosic Luleå University of Technology, Sweden CFD Analysis of EHL Films at High Loads	Tadashi Oshio Ecole Centrale de Lyon, France Tribiochemical Properties of Dialkyl Phosphono-acetic Acid in Synthetic Ester Base Fluid	Henrik Buse Slovak University of Technology, Slovak Republic and UAS Mannheim, Germany Fretting Wear Observation in Plane Metal to Metal Contacts	Sergei Glavatski KTH Royal Institute of Technology Sweden Lubrication of Heavily Loaded Rolling/Sliding Contacts: Lithium Complex vs Polypropylene Greases	Thomas Koch City University of Bremen, Germany Algae-Based Bio Lubricant Additives: Extraction, Application and Tech. Properties – from the Algae to the Technical Product											
12:00	Patrick Galda PANOLIN Production AG, Switzerland Quo vadis – Bio-Lubricants? An Update about the Latest Activities of CEN TC19 WG33	Rathesan Ravendran Aalborg University, Denmark Prediction of Lubricant Transport in Two-Stroke Marine Diesel Engines	Pawel Rycerz Imperial College London, United Kingdom Early Detection of Fatigue Damage in Rolling-Sliding Contacts	Amir Kadiric Imperial College London, United Kingdom A Model for Prediction of Gearbox Power Losses under Conditions Pertinent to EV Operation	Arn Joerger Karlsruhe Institute of Technology (KIT), Germany A Numerical Approach for the Determination of Archard's Wear Coefficient	Andreas Willecke Fuchs Schmierstoffe GmbH, Germany Atomistic Simulation of Sulfurized Additives in Lubricants	Kosta Simonovic Czech Technical University in Prague, Czech Republic Newly Developed Device for the Investigation of the Running-In Behaviour	Michael Gieß Technische Akademie Esslingen, Germany Tribological Investigation of Shelf-Sharpening and Innovative Lubrication Solutions	Frederick J. Passman Biodegradation Control Associates, Inc., USA Adenylate Energy Charge – New Tool for Determining MWF Microbial Population's Condition											
12:30	Break										Exhibition									

	Thursday Afternoon									Thursday, 30 January 2020								
	G1 – Bio-Lubricants (3)	G2 – Materials Characterisation	G3 – Artificial Intelligence in Tribology	G4 – E-Mobility (2)	G5 – Simulation (2) – Soft Contacts	G6 – Lubrication Fundamentals	G7 – Test Methods	G8 – Unconventional Lubricants (2)	G9 – Metal Working Fluids (2)									
Chair:	R. Luther	M. Dienwiebel	A. Vogt	S. Bots	J. Müllers	J. Seabra	M. Grebe	A. Gosalia	F. Passman									
14:00	Yiyuan Tian KTH Royal Institute of Technology, Sweden Additive Expression and Tribology of Novel Hybrid Base Fluids	Christian Greiner Karlsruhe Institute of Technology, Germany Sliding Velocity Time Affect Tribologically-Induced Oxidation in Copper	Baher Azzam Center for Wind Power Drives, Germany Anomaly Detection in Time-Series Data of White Etching Crack Bearing Failure in Wind Turbines	Sven Meinhardt ExxonMobil Chemical Central Europe GmbH, Germany Synthetic Base Oil Solutions for EV Driveline Fluids Applications	Enzo Maier Gear Research Centre (FZG), Germany A Study on Thermal Elastohydrodynamic Lubrication of Coated Polymers	Volker Diegelmann VDEH-Betriebsforschungsinstitut GmbH, Germany Application of Single-Phase Oil-Free Lubricants in Cold and Hot Rolling	Susanne Beyer-Faiss Dr. Tiliwisch GmbH Werner Slehre, Germany Mod. Accelerated Ageing Test for Life Time Evaluation of Lubricants and Additives	Felix Gatti Fraunhofer Institute for Mechanics of Materials IWM, Germany Programmable Friction	Theresa Jähnig Technische Universität Dresden, Germany Lubricant-Free Metal Forming - Friction Reduction by Laser Structuring Ta-C Coated Forming Tools									
14:30	Wilhelm Huber Peter Greven GmbH & Co. KG, Germany Estolides – A New Category of High-Performance Esters	Haomiao Yuan Ostwestfalen-Lippe University of Applied Sciences and Arts, Germany Lubrication and Thermal Aging on the Fretting Behavior of Electrical Contacts	Florian König RWTH Aachen University, Germany Machine Learning Based Anomaly Detection for Wear Lifetime Prediction of Journal Bearing Systems	Keiichi Narita Idemitsu Kosan Co. Ltd. Japan Study of Motor Cooling Performance of Lubricants with Application to Transaxles in HEVs and EVs	Fabian Kaiser Freudenberg Technology Innovation SE & Co. KG, Germany Simulation of Rubber Friction: Comparison to Pin-On-Disc Measurement Results	Carlos Fernandes INEGI, Portugal Influence of Run-In Load and Temperature on Gear Efficiency and Micropitting	Thomas Witt Dr. Tiliwisch GmbH Werner Slehre, Germany Determination of Flow Point of Soft Lubricating Greases Using the Test Method of Inclining Rod	Raimondas Kreivaitis Vytautas Magnus University Agricultural Academy, Lithuania Protic Ionic Liquids Demonstrating Superior Lubrication Properties	Mayank Kumar Atlas Copco Industrial Technique AB, Sweden Does a Cutting Fluid Influence the Reliability of a Threaded Fastener Joint?									
15:00	Tarek Lutz University of Tübingen, Germany Nano- and Micro Analytical Approach for Understanding the Early State of Bearing Failure	Tarek Lutz University of Tübingen, Germany Nano- and Micro Analytical Approach for Understanding the Early State of Bearing Failure	Harald Steiner Danube University Krems, Austria Machine Learning Algorithms for Health Monitoring of Sliding Bearings	Sirui Chen IPEK Institute of Product Engineering, Germany Tribol. Performance Descriptions of Friction System in Synchronization for E-Powertrain	Michele Scaraggi Università del Salento, Italy Surface Roughness Anisotropy in Soft Contacts: From Microbot Locomotion to Seals Applications	Mustafa Yilmaz Technical University of Munich, Germany On-Demand Gearbox Lubrication: a Study from Dip to Minimum Quantity Lubrication	Markus Matzke Robert Bosch GmbH, Germany Study of Thermooxidative Ageing and Proposal of a Test Method Standard	Roman Nevshupa IETCC-CSIC, Spain In Operando Study of Tribochemical Processes through Analysis of Triboemission of Gases	Peter Kuenzi Blaser Swisslube AG, Switzerland A Closer Look at Microbiology in Metalworking Fluids									
15:30	Maximilian Volkan Baloglu FAU Erlangen-Nürnberg, Germany Identification of Material Parameters for Sheet-Layered Lamination Stacks	Barbara Monse Bureau Veritas Commodities, Germany Artificial Intelligence Transforms Oil Analysis	Alexander Elter Robert Bosch GmbH, Germany Elastohydrodynamic Simulation of Reinforced Plastic Materials in Conformal Contacts	Alberto Porras-Vazquez INSA de Lyon, France Experimental Approach for the Study of Oil Starvation in Point Contacts	Erik Nyberg Luleå University of Technology, Sweden Silicate-Forming Ionic Liquid Triboimprovers for Multiply Alkylated Cyclopentanes	Harish Potnis ANGUS CHEMICAL COMPANY, India Aluminum Machining: Do It with Ease & Efficiency												
16:00	Short Break																	
	P4 – Concluding Plenary Session																	
	Chair: M. Gleß																	
16:15	N.N., Porsche AG, Germany (enquired) CO2-reduced Production																	
16:45	Mirjam Bäse, Magna Powertrain GmbH & Co KG, Austria GfT Young Tribologists: How Tribology Grows Further and Further																	
17:00	Farewell Party																	

STEERING COMMITTEE

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CONFERENCE DINNER

Wednesday, 29 January 2020

Join the traditional conference dinner at Osterfeldhalle above the Neckar valley and Esslingen. Relax, socialize and enjoy our Swabian buffet, regional wine and music. Reconnect with old friends while making new ones.



© Martin Eisele

Be enchanted by the magical performance of our special guest Martin Eisele, Worldchampion of Micro Magic. His magic is close-up, right under the eyes of the spectators. With very visual and strong effects he fascinates and thrills his audience. His performance is not only magical, it is also very entertaining and humorous.

Buses will take you from the Academy to the conference location in Esslingen-Berkheim and back to your hotel or the Academy.

Please note that you should register for the Conference Dinner separately. The fee is 65 EUR (plus V.A.T.). Attending is not covered by TAE insurance.

TOUR TO MERCEDES-BENZ-MUSEUM

Friday, 31 January 2020

On Friday morning you have the opportunity to visit Mercedes-Benz-Museum.

Experience the fascinating world of the automobile at Mercedes-Benz-Museum: 160 vehicles and another 1,500 exhibits are presented in the museum with 16,500 square meters and nine levels.

Not only the cars are worth a visit. The building itself impresses with its exceptional architecture. It combines an elegant appearance with a unique structure based on a double helix.



© Daimler AG



© Daimler AG

A bus shuttle will take us from TAE to Stuttgart-Bad Cannstatt and back. The guided tour is about 1.5 hours.

The tour includes a lunch buffet after return to TAE.

Please note that you should register for this tour separately. The fee is 40 EUR (free of V.A.T.).

We wish you a lot of fun and many interesting impressions!

PLEASE
REGISTER:
www.tae.de/go/tribology

INFORMATION

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REGISTRATION AND ACCOMMODATION SERVICE

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Phone +49 711 340 08-23



VENUE

Technische Akademie Esslingen e.V.
An der Akademie 5
73760 Ostfildern

Hotels in the area are specially pre-allocated for TAE.



REGISTRATION FEE

Participants 1,090.00 EUR
Speakers 150.00 EUR
(free of V.A.T)
Payable after receipt of invoice
Payment by Bank Transfer, Credit Card (except diners club) or cash.



THIS FEE INCLUDES

- > Colloquium proceedings
- > snacks and beverages during breaks
- > Buffet on Tuesday and Thursday evening
- > Bus Service from some hotels to the academy (in the mornings) and back (in the evenings)

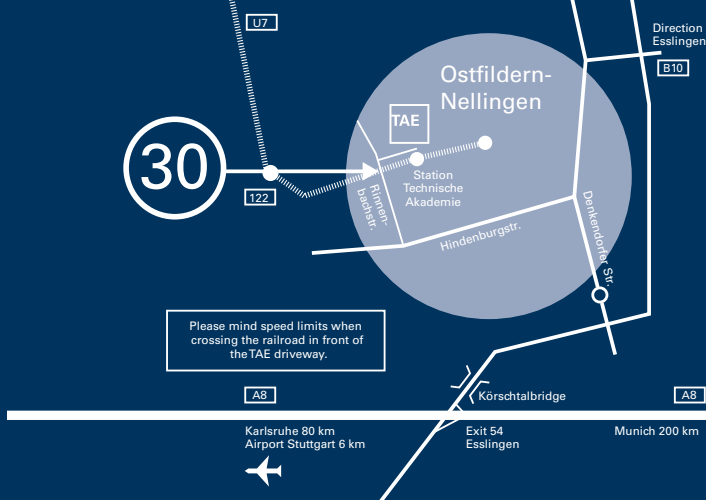


EXHIBITION

There will be an accompanying exhibition. Please make your reservation in time. More information at www.tae.de/go/tribology.



Contact:
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Phone +49 711 34008-58
E-Mail susan.ferront@tae.de



HOW TO GET TO THE TECHNISCHE AKADEMIE ESSLINGEN

BY CAR

Motorway A8 exit 54 „Esslingen“. Ostfildern-Nellingen is the first town on the road to Esslingen.

BY TRAIN

Stuttgart Central Station, Stadtbahn (tram) U7 to Ostfildern, stop „Technische Akademie“.

BY PLANE

Stuttgart Airport, taxi to Ostfildern-Nellingen or Bus 122.

GENERAL TERMS AND CONDITIONS

We refer to the general terms and conditions of the Technische Akademie Esslingen e.V., available on www.tae.de.

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