



20th International Colloquium Tribology Industrial and Automotive Lubrication

12–14 January 2016

Stuttgart / Ostfildern, Germany

11 Jan. 2016: Pre-Seminar

15 Jan. 2016: Excursion

Programme at a Glance

Monday 11 Jan.	14:00 – 18:00 Pre-Seminar: Advanced Tribology and Lubrication of Engine Components (Peter M. Lee)							
Tuesday 12 Jan.	Hydraulic Oils/ Gear Oils	Base Oil Technology	Metal Working Fluids	Tribology of Engine Components	Machine Elements: Rolling Elements	Coatings/ Surface Textures	Computational Tribology	Tribology Testing
Wednesday 13 Jan.	Automotive Lubricants	Grease	Metal Working Fluids	Tribology of Engine Components	Machine Elements: Gears, EHL	Condition Monitoring	Nanotribology	Coatings/ Tribology Testing
Thursday 14 Jan.	Automotive Lubricants	Additives/ Nanoparticles	Ionic Liquids/ MWF Panel Discussion	Tribology of Engine Components	Machine Elements: Sealings, Bearings	Testing/ Machine Elements	Testing/ Fundamentals	Contact Mechanics/ Materials
Friday 15 Jan.	8:30 – 15:00 Excursion: Daimler Plant Tour							



Technische Akademie Esslingen e.V.

An der Akademie 5 • 73760 Ostfildern • Germany

Phone: +49 711 34008-52 • info@tae.de • www.tae.de



Tuesday		Tuesday, 12 January 2016						
P1 – Plenary		Chair: W. J. Bartz		Room 1				
9:00	Greetings of the Honorary Chairman W. J. Bartz: 40 Years of TAE Tribology Colloquium							
9:10	Welcome Address by H. P. Jost , President International Tribology Council							
9:15	Opening H. J. Mesenholl, A. Fatemi, Technische Akademie Esslingen e.V.							
9:30	L. Lindemann FUCHS PETROLUB SE, Germany Challenges in Lubricant development – Sustainability, Raw Materials and New Technologies							
10:00	M. Webster ExxonMobil Research & Engineering / President of STLE, USA Emerging Trends in Tribology and Lubrication Engineering							
10:30	Break Exhibition and Poster Session							
11:00	P. Vergne LaMCoS & CNRS, Villeurbanne, France Film Thickness and Friction in EHL: Contribution of the Lubricant Properties and Current Limitations							
11:30	E. Schulz Schaeffler Technologies AG & Co. KG, Germany Sustainable Reduction of CO2 and Friction in the Drive Train through Holistic Surface Technology							
12:00	M. Dienwiebel Karlsruhe Institute of Technology, Karlsruhe, Germany Understanding Nanoscale Phenomena in Applied Tribological Systems by Combining in-situ Tribometry and Atomistic Simulations							
12:30	Break Exhibition and Poster Session							
Chair:	A1 – Industrial Lubricants – Hydraulic Oils H. Spikes Room 1	A2 – Base Oil Technology (1) R. Luther Room 2	A3 – Metalworking Fluids (1) G. Gaule Room 5	A4 – Engines (1) Bearings V. Lagemann Room 6	A5 – Roller Bearings (1) E. Schulz Room 7	A6 – Surface Texturing J. Müllers Room 3	A7 – Computational Tribology (1) – Molecular Dynamics D. Dini Room 4	A8 – Tribology Testing (1) – Gear Oils Room 8 S. Beyer-Faiss
14:00	M. Alibert Evonik Resource Efficiency GmbH, Germany The Contribution of Hydraulic Fluid Properties to Hydraulic System Efficiency	J. Bredsguard Biosynthetic Technologies, USA Estolides – Closing the Gap between Performance and Sustainability	S. Baumgärtel German Lubricant Manufacturers Association, Hamburg, Germany Availability of Lubricants and Additives in Light of Recent EU and US Legislation	M. C. Kayacan FEV GmbH, Germany EHD Bearing Analysis in Internal Combustion Engines at System Level	V. Strubel INSA Lyon, France SKF Aerospace Debris Entrapment in Hybrid Rolling Element Bearings	C. Greiner KIT, Germany Size Effects for Laser Surface Textures under Uniform and Transient Sliding Conditions	M. Moseler Fraunhofer IWM, Freiburg, Germany Atomistic Simulations of Tribo-induced Phase Transitions	G. Patzer Optimol Instruments Prüftechnik, Germany New Test Concept as a Screening Method for Gear Oils on the SRV®
14:30	T. Norrby Nynas AB, Sweden Group I Replacement Fluids – a Hydraulic Fluid Formulation and Compatibility Study	G. Stansfield Croda, Snaith, UK Liquid Amides – a New Group V Base Stock Technology	P. Brutto ANGUS Chemical Company, USA Meeting MWF Longevity Requirements without Boron, Formaldehyde Condensates and Sec. Amines	J. Fischer Daimler AG, Germany Surface Structuring on Journal Bearing Surfaces by Machine Hammer Peening	A. Stratmann RWTH Aachen, Germany Influence of Operating Conditions and Additive Concentration on the Formation of Anti-wear Layers in Roller Bearings	D. Bijani University of Twente / Bosch Transmission, The Netherlands The Influence of Surface Texturing on Film Thickness in Parallel Sliding Surfaces	J. Ewen Imperial College London, UK Force-Field Selection for Lubricant and Lubricant Additive Molecular Dynamics Simulations	M. Georgiou Falex Tribology NV, Belgium Parallel Wear Test – the Power of Statistics
15:00	F. Lauterwasser Evonik Industries AG, Darmstadt, Germany Formulation of Energy Efficient Hydraulic Fluids for Injection Moulding	S. Asadauskas Center for Physical Sciences and Technology, Vilnius, Lithuania Ester Basestock Vaporization from Thin Oil Films	K. Terveen Hermann Bantleon GmbH, Ulm, Germany Cooling Lubricant Technology 4.0 - along the Process Chain	C. Wolf Federal-Mogul Wiesbaden GmbH, Germany Tribology and Technology of Bearings for Crankshaft-Conrod-Systems	M. Grebe Mannheim University of Applied Sciences, Germany Damages at the Raceways of R. B. due to Vibrational Load or Small Pivoting Angles	M. Scaraggi Università del Salento, Italy Maximize Tribological Properties in (E)HD Contacts through the Mechanism of Local Flow Reconditioning	A. Jabbarzadeh The University of Sydney, Australia Nanotribology-Molecular Dynamic Simulations of Confined Molecular Systems	K. Topolovec Miklozic Powertrib Ltd, Oxford, UK Characterisation of Wind Turbine Gear Oils for Improved Reliability of Wind Turbines
15:30	Break Exhibition and Poster Session							

Tuesday Afternoon								
Tuesday, 12 January 2016								
Chair:	B1 – Industrial Lubricants – Gear Oils Room 1 K. Topolovec Miklozic	B2 – Base Oil Technology (2) Room 2 L. Lindemann	B3 – Metalworking Fluids (2) Room 5 F. Passman	B4 – Engines (2) – Piston/Ring Pack Room 6 V. Lagemann	B5 – Roller Bearings (2) – White Etching Room 7 G. Jacobs	B6 – Coatings (1) Room 3 J. Vetter	B7 - Computational Tribology (2) – Advanced Methods Room 4 J. Müllers	B8 – Tribology Testing (2) Room 8 A. Pauschitz
16:00	C. Engelhardt Technische Universität München, FZG, Germany Influence of Water Contamination in Gear Lubricants on Wear and Micro-Pitting Performance of Case Carburized Gears	S. Reid-Peters ExxonMobil Chemical, USA Exploring the Enhanced Oxidative Stability of Metallocene Polyalphaolefin (mPAO) Base Stocks	C.-E. Hedoire Solvay, Aubervilliers, France Ultra-Stable Emulsifiers for Metal Working Fluids	J. Halbhuber Technische Universität München, Germany Experimental and Simulative Research Advances in the Piston Assembly of an Internal Combustion Engine	J. Franke Schaeffler Technologies AG, Germany ExxonMobil Research and Engineering, USA White Structure Flaking: Simulation of Bearing Rig and Bench Tests	M. Jungk Dow Corning GmbH, Wiesbaden, Germany Applications of Antifriktion Coatings based on Binder Systems	R. Larsson Luleå University of Technology, Sweden Computational Tribology – Predictive Tool for Design and Prognostics	E. Badisch AC²T research GmbH, Austria Lubricity by Corrosion Products under Sliding in CO2 Atmosphere
16:30	J. Guevremont Afton Chemical, Richmond, USA Low Temperature Rheology of Wind Turbine Oils	M. Greaves Dow Chemical, Horgen, Switzerland Oil Soluble Polyalkylene Glycols – A Versatile Component for Enabling the Formulation of Modern Gear Lubricants	L. Bastardo-Zambrano Nynas AB, Nynashamn, Sweden Effect of the Base Oil Selection on Additive Solution Stability in Neat Metalworking Formulations	R. S. Notay Millers Oils Ltd, Brighouse, UK Measurement of Piston Ring Pack Lubricant Residence Time in a Gasoline Engine using Laser Induced Fluorescence	J. Loos Schaeffler Technologies AG, Germany Influences on Generation of White Etching Crack Networks in Rolling Bearings	A. Gies Oerlikon Surface Solutions AG, Balzers, Liechtenstein Properties of Carbon-based Coatings in High Temperature Applications	D. Dini Imperial College London, UK A Multi-Scale and Multi-Physics Platform for Tribological Modelling	H. Buse Hochschule Mannheim, Germany Fretting Wear with Constrained Tangential Forces on Tribometers
17:00	H. Trivedi UES Inc, Dayton, USA Interaction of Anti-wear Additive TCP with Advanced Bearing Steels	S. Lucazeau NYCO, Paris, France New Insight into the Benefits of Synthetic Esters in Challenging Lubricating Applications	W. Rehbein Rhein Chemie Rheinland GmbH, Mannheim, Germany Influence of Lubricant Additives on Surface Quality and Material Removal Rate in a Lapping Process	C. Lenauer AC²T research GmbH, Wiener Neustadt, Austria Wear and Tribofilm Analysis for the Piston Ring-Cylinder Liner Tribosystem Lubricated by Artificially Aged Engine Oil	H. Yamada NSK Ltd., Fujisawa-shi, Kanagawa, Japan Long Life Technology against White Structure Flaking in Rolling Bearings	F. Nahif eifeler-Vacotec GmbH, Düsseldorf, Germany Tribological and Mechanical Potential of PVD Coatings in Forming Tool Applications	M. Scaraggi Università del Salento, Italy Computational Rough Contact Mechanics Based on Fourier Finite Element Formulation and Residuals Molecular Dynamics: An Application to Rubber Friction	A. Weinebeck RWTH Aachen, Germany Boundary Lubrication of Biofuels and Similar Molecules on Metallic and Ceramic Surfaces
17:30	T. Housel INOLEX Incorporated, Philadelphia, USA Food Grade Lubricants with Industrial Performance	C. Kranenberg Dow Corning GmbH, Wiesbaden, Germany New Silicone Copolymer Lubricants	R. Rakić Novi Sad, Serbia The Influence of Metalworking Fluids on Milling Machine Failures		J. Guevremont Afton Chemical, Richmond, USA Effect of Lubricants on White Etching Caused by High Surface Stress	M. Boretius Listemann Technology AG, Eschen, Liechtenstein Wear Protection Coatings Generated by Brazing, Sintering and Heat Treatment in Vacuum	F. Franek, AC²T research GmbH, Wiener Neustadt, Austria Studies of Tribological Contacts via Advanced Computational Methods	M. Rodriguez Ripoll AC²T research GmbH, Austria Synergistic Effects between MoS2 Nanotubes and ZDDP Tribofilms
18:00	Come Together with Snacks and Beverages							

You will find the detailed and up-to-date version of the programme with all co-authors at www.tae.de/tribology

Wednesday Morning		Wednesday, 13 January 2016						
P2 – Plenary		Chair: M. Wincierz		Room 1				
9:00	G. Poll Leibniz University Hannover, Germany Starvation Lubrication in Rolling Contacts – A Review							
9:30	A. Miyamoto Tohoku University, Japan Multiscale, Multiphysics Computational Chemistry Methods for Automotive Engine Tribology							
10:00	R. W. Carpick University of Pennsylvania, USA Tribological Processes Studied at the Atomic Scale by In Situ Approaches: New Insights into Wear and Tribo-Film Generation.							
10:30	Break Exhibition and Poster Session							
Chair:	C1 – Automotive Lubricants (1) – Fuel Efficiency	C2 – Environmentally Friendly Lubricants	C3 – Metalworking Fluids(3)	C4 – Engines (3) – Valve Train / Coatings (2)	C5 – Machine Elements – Fundamentals	C6 – Nano-Analytical Techniques (1)	C7 – Condition Monitoring (1)	C8 – Tribology Testing (3) – Lubricants Test
	F. Qureshi Room 1	G. Gaule Room 2	K. Terveen Room 5	M. Jungk Room 6	G. Poll Room 7	E. Gnecco Room 3	R. Krethe Room 4	M. Grebe Room 8
11:00	N. Nouvel Lubrizol, UK Comparing Fuel Economy Results on Different Drive Cycles: NEDC versus WLTP	S. Emadi Lulea University of Technology, Sweden Does your lubrication system conform to the concept of green chemistry?	F. Passman Biodeterioration Control Associates, Inc., USA Impact of Biocidal Products Regulations on Microbial Contamination Control in Metalworking Fluids	M. Ofune University of Leeds, UK Application of DLCs to Engine Valve Train Systems: Effects of Coating both the Cam and Follower	M. Scherge Fraunhofer IWM, Germany The Role of Lubricants During Running-in	E. Meyer University of Basel, Switzerland Nanotribology Experiments with Graphene and Polymer Chains	S. Lunt Parker Hannifin Manufacturing Ltd, UK Monitoring of Marine Cylinder Lubricating Oils	S. Beyer-Faiss Dr. Tillwisch GmbH Werner Stehr, Germany Prediction of Ageing Stability of Lubricants – Correlation of Laboratory Tests vs. Sinter Bearing Test Bench Runs
11:30	M. Seemann Evonik, Germany Formulation of Optimum Fuel Efficiency Engine Oils	R. Luther FUCHS Schmierstoffe GmbH, Germany European Activities Regarding Standardisation of Bio-Lubricants	U. Falk Lubrizol Deutschland GmbH, Germany Impact of BPR and Formaldehyde Releaser Classification on Metal Working Industry	M. B. Diew HEF Group, St Etienne, France Effect of DLC on Valvetrain Friction Reducing	A. Kadiric Imperial College London, UK Propagation of Surface Cracks under Rolling Contact Fatigue Conditions	R. Bennowitz INM Leibniz Institute for New Materials, Germany Microscopic Mechanisms in Lubrication Revealed by Force Microscopy	P. Martin Innosiris GmbH, Germany Online-Monitoring of Particles, Bubbles and Droplets in Lubricants of Engines and Gears	M. Frauscher AC²T research GmbH, Austria Oxidative Degradation Products of Fuel Components Identified by Mass Spectrometry and Isotope Labelling
12:00	T. Dasbach Institute of Materials, USA The Past and Present versus the Future in Engine Oils	M. Baitz thinkstep AG, Germany How to turn Sustainability Aspects of Bio-lubricants into Company Benefit	T. McClure Sea-Land Chemical Company, USA Optimization of Boundary Lubrication Properties of Metalworking Lubricants Combining Mixture Design of Experiments with Twist Compression Tests	C. Héau IREIS/HEF, France Friction Simulation of a Cam/Tappet Contact using a Ring on Flat Tribometer	A. Clarke Cardiff University, UK Running in and Micropitting Behaviour of Steel Surfaces under Mixed Lubrication Conditions	A. Schirmeisen Justus-Liebig-University Giessen, Germany Tribological Properties of Nanoparticles: From Superlubricity to Contact Ageing	V. Krasnik Technische Universität Hamburg-Harburg, Germany Characterizing the Wear Behavior of Lubricated Metal-Metal Pairings with an Optical Online Particle Detection System	M. Georgiou Falex Tribology NV, Belgium Friction Modifiers put to the Test. Can we influence Friction?
12:30	Break Exhibition and Poster Session							

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Wednesday Afternoon		Wednesday, 13 January 2016							
	D1 – Automotive Lubricants (2) – Rheology Room 1 P. Vergne	D2 – Grease (1) Room 2 R. Westbroek	D3 – Metalworking Fluids (4) Room 5 B. Döbbeler	D4 – Engines (4) – Computational Room 6 D. Bartel	D5 – Mach. Elem. – Concentrated EHL Contacts Room 7 M. Scaraggi	D6 – Nano-Analytical Techniques (2) Room 3 M. Kalin	D7 – Condition Monitoring (2) By OilDoc Room 4 R. Krethe	D8 – Tribology Testing (4) – Composites Room 8 A. Albers	
Chair:									
14:00	P. Cusseau LaMCoS, France Total, France Physico-Chemistry and High Pressure Rheology of Polymer-Base Oil Solutions	P. Lugt SKF Engineering and Research Centre, The Netherlands Modern Advancements in Lubricating Grease Technology	V. R. Stoldt Heinrich Heine University of Duesseldorf, Germany Biomonitoring of MWF: Unit-specific Optimization of Antimicrobial Strategies	G. Knoll IST GmbH, Germany Reduction of Friction Losses in Journal Bearings of Valve Train Shaft by Application of Running-in Profile	J. H. Schmidt Karlsruhe Institute of Technology, Germany Robert Bosch GmbH, Germany Efficient Structural Dynamics Modeling in Concentrated Elasto-hydrodynamic Contacts	C. Grünzweig Paul Scherrer Institute, Switzerland Visualization of Lubricant Distributions behind Solid Metal Objects by Means of Neutron Imaging as a Non-Destructive Test Method	R. Krethe OilDoc GmbH, Germany Foaming and Air Release Characteristics of Industrial Gear Oils – Standardized Test Procedures and Practical Experiences in Wind Turbines	K. Wantzen Karlsruhe Institute of Technologie (KIT), Germany A New Tribological Test Bench for Light-weight Hydraulic Axial Piston Pumps	
14:30	J. Cui Infinite USA L.P., USA A Viscosity Modifier Solution to Reconcile Fuel Economy and Durability in Diesel Engines	D. Gonçalves INEGI, Portugal Film Thickness and Friction Behavior of Polymer Greases	L. Pedisic INA MAZIVA Ltd, Croatia Possibility of Bio-Emulsions Splitting by INA Method	P. Lyubarsky Otto-von-Guericke-University Magdeburg, Germany 2D CFD-Model of the Piston Assembly in a Diesel Engine for the Analysis of Piston Ring Dynamics, Mass Transport and Friction	J.-D. Wheeler INSA de Lyon, France, SKF Engineering and Research Center, The Netherlands Numerical and Experimental Contributions to the Flange-Roller End Contact Study	T. Lutz NMI Reutlingen, Germany Nano-Analytical Investigations of Tribologically Stressed Surfaces and Interfaces	S. Bots Oelcheck GmbH, Germany Particle Analysis and Evaluation for Consistent Lubricants	B.-C. Jim Institut für Verbundwerkstoffe, Kaiserslautern, Germany In-situ Flash Temperature Measurement in Polymer Compound-Steel Sliding Systems	
15:00	M. K. Patel Vanderbilt Chemicals LLC, USA Utilizing Optimize MoDTC Technology in Combination with Organic Friction Modifiers for Enhanced Fuel Efficiency Possibilities	C. Besser AC²T research GmbH, Austria Performance of Greases under Elevated Temperature Conditions	H. Dwuletzki Carl Bechem GmbH, Germany MQL versus Traditional Flood Application – A Breakthrough or only for Niche Applications?	J. Gerken TU-Clausthal, Clausthal-Zellerfeld, Germany The Influence of Modified Surface-Microstructures on Friction and Wear Intensity in the Cam-Tappet Tribosystem	D. Kostal Brno University of Technology, Czech Republic Relationship between Thickness of Entering Layer and Level of EHL Contact Starvation	B. Zhmud Applied Nano Surfaces, Sweden Use of Angle-Resolved Light Scattering, XRF Spectroscopy and Eddy Current Conductivity Measurements for Surface Condition Monitoring	T. Fischer Oelcheck GmbH, Germany ASTM D7946 – The New Standard i-pH Measurement		
15:30	Break Exhibition and Poster Session								

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Wednesday Afternoon		Wednesday, 13 January 2016						
	E1 – Automotive Lubricants (3) Room 1	E2 – Grease (2) Room 2	E3 – Metalworking Fluids (5) Room 5	E4 – Engines (5) – Energy Efficiency Room 6	E5 – Machine Elements – Gears Room 7	E6 – Nano-Analytical Techniques (3) Room 3	E7 – Condition Monitoring (3) Room 4	E8 – Coatings (3) – Superlubricity Room 8
Chair:	M. Dienwiebel	P. Lugt	S. Baumgärtel	M. Jungk	K. Topolovec Miklozic	E. Meyer	H. Schwarze	J. Schnagl
16:00	H. Spikes Imperial College, UK Shell Global Solutions UK Influence of Engine Oil Formulation on Wear for Soot-Containing Oils	M. Ratoi University of Southampton, UK Polymer Thickened Greases with Nanoparticle Additives	T. Pullen WZL – RWTH Aachen, Germany Investigation of Characteristic Particle Contamination of Cooling Lubricants due to Metal Cutting Processes	W. J. Bartz Technische Akademie Esslingen e.V., Germany The Green Automobile - Tribological Aspects of Definition and Realization	R. Beilicke University Magdeburg, Germany Transient Thermal EHD Simulation of a DLC Coated Helical Gear Pair Considering Limiting Shear Stress Behavior of the Lubricant	R. W. Carpick University of Pennsylvania, USA Tribological Challenges in Mechanical Computing: New Materials and Advanced Characterization for Nanoelectromechanical Switch Interfaces	M. Mauntz cmc Instruments GmbH, Germany Advances in Oil Condition Monitoring Permits Preventive Maintenance before Damage Occurs Assuring Asset Protection and Achieving Theoretical Component Lifetimes	A. V. Sumant Argonne National Lab, USA Origin of Reproducible Superlubricity at Macroscale with Graphene/Nanodiamond Ensembles
16:30	D. Boese Infineum, UK Controlling Low-Speed Pre-Ignition in Modern Automotive Equipment: Defining Approaches to and Methods for Analyzing Data in New Studies of Lubricant- and Fuel-related Effects	R. Westbroek Axel Christiernsson International, Sweden Lubrication Mechanism of Polypropylene Thickened Grease: Improved Energy Efficiency and Grease Life	H. Phan University of Wollongong, Australia Abrasive Wear on the High Speed Steel Surface in Hot Rolling	S. Tung Vanderbilt Chemical LLC, USA Engine Friction Reduction and Wear Control for Improving Energy Efficiency	A. Kadiric Imperial College London, UK Prediction of Power Losses in a Simple Spur Gearbox Incorporating a Thermally Coupled Lubrication Model	M. Kalin University of Ljubljana, Slovenia Correlation between Several Nano-Scale Tribofilm Parameters and Friction Behavior of DLC Coatings in Boundary Lubrication	J. Alarcon ik4-tekniker, Spain Prognostics and Condition Base Maintenance - How far are we?	V. Weihnacht Fraunhofer-Institut für Werkstoff- und Strahltechnik IWS, Germany Superlubricity and wear Phenomena on Hard and Superhard Carbon Coatings
17:00	F. Dassenoy Ecole Centrale de Lyon, France Benefits of Nanoparticles in the Lubrication of Engine and Gearboxes	A. Kailer * Fraunhofer IWM, Germany Conductive Lubricants for Functional Tribosystems	M. van Breemen Quaker Chemical B.V., The Netherlands Tapping Technology – Simulating Non-Ferrous Cut Tapping and Roll Tapping Performance in the Laboratory	M. Horn Volvo Group, Sweden Heavy-Duty Engine Development Trends for Improving Fuel Economy	M. Omasta Brno University of Technology, Czech Republic Elastohydrodynamic Lubrication under Conditions Occurring in Worm Gears	E. Gnecco IMDEA Nanociencia, Spain University Halle, Germany Surface Rippling in Abrasive Nanowear: A Novel Interpretation and Ways to Prevent it	B. Görlach A&S Chemie, Germany Modelling Interactions in Tribosystems	M. Höfer Fraunhofer IST, Germany CVD Diamond Coatings as Ultimate Solution for Reduction of Friction, Wear and Corrosion in Tribology
17:30	J. Qu Oak Ridge National Laboratory, USA Oil-Miscible Ionic Liquids as Multi-Functional Additives for Low-Viscosity Engine Lubricants		E. C. Galgoci Munzing Corporation, USA Innovations of 3-Dimensional (3D) Siloxane Defoamer Technology for Aqueous Metalworking Fluids	P. M. Lee South-West Research Institute, USA Using the Full Range of Tribology Tools to Cost Effectively Reduce Fuel Economy in Engines	P. Marques INEGI, Portugal Gear Dynamics and Power Loss	K. Tamura Idemitsu Kosan Co., Ltd., Japan Interfacial Repulsive Force Generated by Polymeric Lubricant Additives in Single-Asperity Contact	J. K. Duchowski HYDAC, Germany / General Electric, USA Elimination of Electrostatic Discharge in Hydraulic and Lubricating Circuits, Historical Perspective	S. Kosarieh University of Leeds, UK Insight on the Mechanism of High DLC Wear in Tests with MoDTC-Containing Lubricants in DLC/Steel Contacts
18:15	Departure for Esslingen (Conference Dinner)							
19:30	Conference Dinner							

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* Selected Paper from GfT-Conference (German Society of Tribology)

Thursday Morning										Thursday, 14 Januar 2016																																																																																									
P3 – Plenary										Chair: F. Franek										Room 1																																																																															
9:00										N. Dörr AC²T research GmbH, Austria Long-Term Behaviour of Oils Containing Ionic Liquid Additives																																																																																									
9:30										B. N. J. Persson Multiscale Consulting, Germany Multiscale Contact Mechanics																																																																																									
10:00										J. Luo State Key Laboratory of Tribology, Beijing, China Advances in Superlubricity																																																																																									
10:30										Break										Exhibition and Poster Session																																																																															
Chair:										F1 – Automotive Lubricants (4) – Gearbox										F2 – Additives (1) Polymers VI/FM										F3 – Ionic Liquids (1)										F4 – Engines (6) – Coatings (4)										F5 – Machine Elements – Bearings										F6 – Lubricants Testing										F7 – Tribotesting and Surface Characterisation										F8 – Contact Mechanic										F9									
										M. Priest Room 1										S. Oberoi Room 2										N. Dörr Room 9										J. Schnagl Room 6										A. Rienäcker Room 7										S. Lunt Room 3										W. Stehr Room 4										B. Persson Room 8										R 5									
11:00										Y. Onumata University of Leeds, UK JX Nippon Oil, Japan Behaviour of Organic Friction Modifiers at Steel and Paper Clutch Component										K. Trickett Lubrizol Ltd, UK How Linear and Block Copolymers Behave as Viscosity Index Improvers										J. Qu Oak Ridge National Laboratory, USA Using Ionic Liquids as Anti-Wear Additives to Lubricate Non-Metallic Surfaces										J. Becker Oerlikon Balzers Coating Germany GmbH, Germany Alternatives to Carbon-based Coatings in Automotive Applications										M. Fillon University of Poitiers, GMSC, France Performance Predictions of Tilting-Pad Journal Bearings under Thermo-elasto-hydrodynamic Regime										M. Båse Magdeburg-Stendal University of Applied Sciences, Germany Practical Application of Thermo-tribometrical Investigations for Characterizing Different Lubricant Oils										M. Rodriguez Ripoll AC²T research GmbH, Austria In-situ Generation of Tungsten Disulfide using Functionalized Surfaces and Green Additives										N. Myshkin Metal-Polymer Research Institute of Belarus National Academy of Sciences, Belarus Tribology of Electrical Contacts										Panel Discussion: Wassermischbare Kühlschmierstoffe in 2020 * Moderator: S. Baumgärtel, German Lubricant Manufacturers Association, Hamburg, Germany									
11:30										M. Hammami INEGI, Portugal Axle Gear Oils: Tribological Characterization using Film Thickness Measurements and Traction Curves										F. S. Qureshi The Lubrizol Corporation, USA Impact of High Pressure and Shear Stress on Polymer Thickened Lubricants										T. J. S. Schubert IOLITEC Ionic Liquids Technologies GmbH, Germany Ionic Liquids and Ionic Liquid-Mediated Dispersions of Nanomaterials as High Performance Additives										R. Jacobs IHl Hauzer Techno Coating B.V., The Netherlands Developments in PVD/PECVD Coatings for Automotive Applications										B. Remy LaMCoS - INSA Lyon Honeywell Turbo Technologies, France Influence of Dynamic Effects on a Turbocharger Thrust Bearing										M. Manning Savant Inc., USA Isothermal Study of the Influence of Water on Lubricant Oxidation										M. Novak Bruker Nano Surfaces Division, USA Inspection of Engineered Functional Sealing Surfaces: 3D Metrology for Structural and Texture										R. Jackson Auburn University, USA The Average Real Contact Pressure During Elastic-plastic Rough Surface Contact																			
12:00										D. Shakhvorostov Evonik, Germany Lubricant Role in Shift Performance of Manual Transmissions										A. Viadas Croda, UK Minimising Wear and Friction of Diamond-Like Carbon Surfaces With Polymeric Organic Friction Modifiers										P. Aswath University of Texas at Arlington, USA Interaction between Boron Additives and Ionic Liquids in Engine Oil																				P. Sperka Brno University of Technology, Czech Republic A Role of Surface Grooves on Transition from Full to Mixed Lubrication										L. Kogel SGS, Germany Lubricant Induced Metal Corrosion – an Electrochemical Impedance Spectroscopy Approach										J. Läger Anton Paar Germany GmbH, Germany A Closer Look at Static Friction with an Oscillating Tribometer										I. Velkavrh V-Research GmbH, Austria Modelling of Friction in Forming Processes																			
12:30										Break										Exhibition and Poster Session																																																																															

* Panel Discussion (Room 5) in German. No simultaneous translation provided.

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Thursday Afternoon								
Thursday, 14 Januar 2016								
	G1 – Automotive Lubricants (5)	G2 – Additives (2) – Nanoparticles	G3 – Ionic Liquids (2)	G4 – Engines (7) – Applications	G5 – Machine Elements – Sealings	G6 – Machine Elements – Journal Bearings	G7– Fundamentals of Lubrication	G8 – Materials
Chair:	C. Wincierz Room 1	M. Ratoi Room 2	I. Minami Room 9	Room 6 G. Wachtmeister	F. Bauer Room 7	H. Schwarze Room 3	A. Miyamoto Room 4	J. Luo Room 8
14:00	C. Warrens BP, UK Lubricant Effects on Valvetrain Friction and Wear	S. von Haartman Ab Nanol Technologies Oy, Finland Fraunhofer IWM, Germany Multi-Phase Friction and Wear Reduction by Colloidal Copper Additive	S. Glavatskih KTH Royal Institute of Technology, Sweden Ionic Liquids as Additives to Environmentally Friendly Oils	E. Tack Daimler AG, Germany Mixed-beared Crankshaft of an Internal Combustion Engine	F. Pérez-Ràfols Luleå University of Technology, Sweden Study of Static Seals by Means of a Stochastic two-scale Model	D.-O. Leimann ZF Windpower Antwerpen, Belgien Plain Bearing Lubrication in Wind Turbine Gearboxes	T. Hoffmann Leibniz-Institut für Polymerforschung Dresden e.V., Germany Chemically Modified PTFE Particles as Solid Lubricant Additive for the Fixation on Substrate Surfaces	A. Pauschitz AC²T research GmbH, Wiener Neustadt, Austria Evaluation of Porous Friction Plates for Wet Friction Applications by Permeability Measurement
14:30	C. Besser AC²T research GmbH, Austria Influence of Engine Oil Degradation on Corrosion and Wear in Gasoline Fuelled Engines with Special Consideration of Acetic Acid	Y. Wu University of Twente, The Netherlands The Improvement of Stability and Tribological Properties of Oil-in-Water Emulsion by Incorporating Modified Graphene Oxide	F. Zhou Lanzhou Institute of Chemical Physics, China Task Specific Ionic Liquids Lubricants	D. Häggström Scania CV AB KTH Royal Institute of Technology, Sweden Predicting Friction in Synchronizer Systems	A. Bormuth Freudenberg New Technologies SE & Co. KG, Germany Influence of Polymer/Lubricant Interaction on the Static Friction in Polymeric Tribosystems	T. Amann Fraunhofer- IWM, Germany Development of Sintered Bearings with Minimal Friction Losses and Maximum Life Time using Infiltrated Liquid Crystalline Lubricants	D. Stickel Universität Duisburg-Essen, Campus Duisburg, Germany The Specific Dissipated Friction Power Revised: A possible Source of New Design Guidelines for Boundary Lubricated Contacts	M. Repka Daido Metal Co., Ltd., Czech Republic Lubricant-Surface Interactions of Polymer Coated Engine Bearings
15:00	N. Marx Imperial College, UK Shell Global Solutions UK Influence of Polymer Shear Thinning on Friction in Hydrodynamic Lubricated Contacts	R. S. Notay Millers Oils Ltd, UK The Use of Solid Nanoparticles as Potential Friction and Wear Reducing Additives in Industrial Gear Lubricants	J. Fernandez University of Santiago de Compostela, Spain Pressure-Viscosity Behaviour and Film Thickness in EHD Regime of Lubrication of Ionic Liquids	I. Sherrington University of Central Lancashire, UK A New Approach to Cylinder Lubrication in Large Two Stroke Marine Engines	J. Gözl University of Stuttgart, Germany Influences on Sealing Systems with PTFE Lip Seals – Eccentricity, Oil Viscosity and Shaft Surface	A. Zogopoulos University of Patras, Greece Tribological Investigation of Grooved Journal Bearings with Cavitation Considerations	P. M. Ligrani University of Alabama in Huntsville, USA Onset and Transition to Elastic Turbulence: Effects of Rheological Property Variations	M. Ebner * Technische Universität München, FZG, Germany Self-Lubricated Elastohydrodynamic (EHL) Contacts with Oil-Impregnated Sintered Material
15:30	B. Zhmud BIZOL, Germany Fuel Economy Engine Oils: Scientific Rationale and Controversies	V. B. Niste University of Southampton, UK Tungsten Dichalcogenide Lubricant Nanoadditives for Demanding Applications	A. Igartua Tekniker, Spain Ionic Liquids Working under Vacuum and Ultrahigh Vacuum Conditions	J. Biberger * Daimler AG, Germany A Test Method for Single-Parameter Dependent Analysis of the Tribosystem Piston Ring/Cylinder Liner	M. Scaraggi Università del Salento, Italy The Transition from Boundary to Hydrodynamic Lubrication for Viscoelastic Solids	A. Zavos University of Patras, Greece Cavitation Effects on Textured Compression Rings in Mixed Lubrication		C. Kalscheuer * RWTH Aachen University, Germany Friction and Wear Analysis of Low Temperature Hybrid dcMS/HPPMS (Cr,Al)N Hard Coatings
16:00	Short Break							
	P4 – Concluding Plenary Session Room 1							
16:15	N. Argibay Sandia National Lab, USA Why is there a Correlation between Hardness, Friction and Wear of Metal Contacts? Modifying Microstructural Mechanistic Misconceptions							
17:00	Farewell Party							

You will find the detailed and up-to-date version of the programme with all co-authors at www.tae.de/tribology

* Selected Paper from GfT-Conference (German Society of Tribology)