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the world
October 5–7, 2015

International Conference on Gears 2015

WITH EXHIBITION

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Engineers, India



The Korean Society of
Mechanical Engineers, Korea



The Society of Instrument and
Control Engineers, Japan

DATE AND VENUE

October 5–7, 2015

Technische Universität München (TUM),
Garching (near Munich), Germany



HIGHLIGHTS

- + Panel discussion on “Gears 4.0”
- + Exchange of knowledge in five simultaneous tracks with more than 130 speakers
- + Two social evening events for excellent networking with colleagues

+ ACCOMPANYING VDI CONFERENCES

October 5–6, 2015

- » International Conference on Gears Production 2015
- » International Conference on High Performance Plastic Gears 2015



PRESIDENCY

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Prof. (TUM emeritus of excellence) Dr.-Ing. Bernd-Robert Höhn, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany

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MONDAY, OCTOBER 5TH, 2015, 1ST CONFERENCE DAY

08:30 Registration	
PLENARY LECTURES	
09:30	<div><div>Prof. (TUM emeritus of excellence) Dr.-Ing. Bernd-Robert Höhn, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany</div></div>
09:40	<div><div>Keynote speech</div><div>Prof. Dr. Dr. h.c. mult. Wolfgang A. Herrmann, President, Technische Universität München (TUM), Germany</div></div>
10:00	<div><div>Keynote speech: I 4.0 changes gears</div><div>Dr.-Ing. E. h. Manfred Wittenstein, Chairman of the Supervisory Board, WITTENSTEIN AG, Igersheim, Germany</div></div>
PANEL DISCUSSION: “GEARS 4.0”	
10:20	<div><div><div><div>MODERATION: Ken Fouhy, B.Eng., Editor in Chief, VDI nachrichten, Düsseldorf, Germany</div></div><div><div>M.M.E. Giuliano Spaggiari, Managing Director, Brevini Power Transmission S.p.A., Reggio Emilia, Italy</div></div><div><div>Dr.-Ing. E. h. Manfred Wittenstein, Chairman of the Supervisory Board, WITTENSTEIN AG, Igersheim, Germany</div></div><div><div>Dr. Eng. Masahiko Mori, President, DMG MORI SEIKI CO., LTD., Nagoya City, Japan</div></div></div><div><div><div>Dr.-Ing. Jianhui Gou, Managing Director & President, NGC Gears, Nanjing, China</div></div><div><div>Francois Barthel, Vice President Manufacturing GETRAG Operations, GETRAG, Getriebe- und Zahnradfabrik, Hermann Hagenmeyer GmbH & Cie KG, Untergruppenbach, Germany</div></div><div><div>Joe T. Franklin, Jr., President, AGMA, Alexandria, Virginia, USA</div></div><div><div>Dr. Eng. Makoto Fujishima, Senior Executive Officer, DMG MORI SEIKI CO., LTD., Nagoya City, Japan</div></div></div></div>
11:40	<div><div>Information and invitation to the FZG lab tours</div><div>Prof. Dr.-Ing Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany</div></div>

11:45 Lunch break and visit to the exhibition and poster presentations

Conference will continue in parallel sessions, First Section 13:15–15:15		
	Lecture Room A	Lecture Room B
	<div>WIND</div> <div>Dr.-Ing. Arbogast M. Grunau, Research Association for Drive Technology (FVA) and Schaeffler Technologies GmbH & Co. KG, Germany / Prof. Dr. Eng. Ichiro Moriwaki, KIT Liaison Center, Kyoto Institute of Technology, Japan</div>	<div>MOBILE APPLICATIONS</div> <div>Prof. (TUM emeritus of excellence) Dr.-Ing. Bernd-Robert Höhn, Technische Universität München, Germany / Prof. Dr. Changle Xiang, Beijing Institute of Technology and National Key Lab of Vehicle Transmission, China</div>
13:15	<div>High ratio gearbox with very low bearing loads</div> <ul style="list-style-type: none">Performance optimisation for the vehicle transmissionInfluence of the optimised lubricant fluid technology <div>Prof. Dr.-Ing. Peter Tenberge, Full Professor, Chair of Industrial and Automotive Drivetrains, Mechanical Engineering, Ruhr-University Bochum, Germany</div>	<div>A multiple-split load sharing model of star gearing system for 2-stage external gearing</div> <ul style="list-style-type: none">Calculated the load sharing coefficient based on transmission errorObtained the floating orbit and floating displacement of sun gear <div>Dr./PhD Mo Shuai, PhD Zhang Yidu, Professor, PhD Wi Qiong, Associate Professor, School of Mechanical Engineering & Automation, Beihang University, Beijing University of Aeronautics and Astronautics, Beijing, China</div>
13:45	<div>A new concept for the assessment of structural integrity considering local plastification of cast parts in gearboxes</div> <ul style="list-style-type: none">Effect of material quality on static and fatigue strengthEffect of local plastification on fatigue strength <div>Dipl.-Ing. Jean-André Meis, Development engineer, Siemens AG, Bocholt, M. Eng. Alexander Kamps, CAD engineer, Siemens AG, Voerde, Dipl.-Ing. (FH) Arno Klein-Hitpass, Head of R&D, Siemens AG, Aachen, Germany</div>	<div>Bearings for gearing - roller gearing technology</div> <ul style="list-style-type: none">Presenting our R&D progress in roller gearing - a novel mechanism for gearing and transmissions where purely rolling balls (rollers) are employed to intermediate between the input and output wheelsDiscussing selected examples of application projects done so far ranging from miniature wrist watch to gigantic wind turbine gears, proposing further ideas for more potential applications <div>Dr. Pál Bogár, Director, sincroll drive technologies kft., Budapest, Hungary</div>
14:15	<div>From a safety factor driven concept to reliability rating of a multi-mega-watt wind (MMW) energy gearbox</div> <ul style="list-style-type: none">Reliability engineering: determination of reliability limiting failure mechanisms and oversized gearbox componentsGearbox system reliability calculation: prediction of the gearbox system lifetime considering dominating failure mechanisms <div>Dr.-Ing. Falko Thoma, Team Manager, Verification and Validation, Dr.-Ing. Dirk Strasser, Design Department Manager, M.Sc. Philipp Schmaltz, Calculation Engineer, BOSCH Rexroth AG, Witten, Germany</div>	<div>Multiple drive for vertical roller mills – example for integrated drive systems</div> <ul style="list-style-type: none">Holistic view on a frequency inverter operated 16 MW electro-mechanical drive systemImprovement of life cycle costs by gear unit design features and integrated load and condition monitoring <div>Dr.-Ing. Jörg Deckers, Senior Key Expert Engineering, Dietmar Uebbing, Senior Key Expert Engineering, Customer Service, Siemens AG, Voerde, Germany</div>
14:45	<div>Accurate assessment of efficiency for multi-megawatt (MMW) gearboxes for wind turbines</div> <ul style="list-style-type: none">Standardized approach for measuring efficiency of MMW gearboxes for wind turbinesSimulation and calculation of efficiency for mmw gearboxes <div>Dipl.-Ing. Sonja Goris, Innovation Manager, Technology & Advanced Engineering, ZF Wind Power Antwerpen NV, Kontich, Dipl.-Ing. Dirk-Olaf Leimann, Gear Technology, Manager Gear Technology & Advanced Engineering, ZF Wind Power Antwerpen NV, Lommel, Belgium</div>	<div>Micro-pitting failure analysis and lesson learned in helicopter planetary gears</div> <ul style="list-style-type: none">Failure analysis and expertise investigation executed on helicopter planetary reduction stage gears affected by micro-pittingIdentification of the most relevant design parameters of the case study, detailing lesson learned and corrective actions <div>Eng. Sergio Sartori, Gear Design Specialist, Research Unit Responsible, Eng. Giuseppe Gasparini, Head, Transmission Systems Design & Development, AgustaWestland S.P.A., Cascina Costa di Samarate (Varese), Italy, Prof. Dr.-Ing Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany</div>
15:15	Coffee break and visit to the exhibition and poster presentations	

MICRO GEOMETRY
Dr.-Ing. Reiner Vonderschmidt, Georgii Kobold GmbH & Co. KG, Germany / Prof. Dr. Eng. Jože Duhovnik, University of Ljubljana, Slovenia

Consideration of technology dependent deviations in designing gear micro geometry

- Effective simulation of manufacturing deviations
- Use of topographies in detailed tooth contact analysis

Dr.-Ing. Jörg Börner, Expert for Gearing Fundamentals and Software, Gear Development, ZF Friedrichshafen AG, Germany

Increased tooth bending strength and pitting load capacity of fine module gears

- Calculation of load capacity for fine module gears
- Higher power density in small gear applications

Dipl.-Ing. Andreas Dobler, Research Associate, Prof. Dr.-Ing. Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Dr.-Ing. Maria Hergesell, Head of Technology, WITTENSTEIN bastian GmbH, Fellbach, Germany

Quality dependent lifetime prognosis of micro gears

- Modelling of the relationship of measured shape deviations and the lifetime of micro gears
- Prognosis of the gear lifetime based on the model

M.Sc. Dipl.-Wi.-Ing. Benjamin Häfner, Research Assistant, Quality Assurance, Prof. Dr.-Ing. Gisela Lanza, Head, wbk Institute of Production Science, Karlsruhe Institute of Technology (KIT), Germany

Impact of gear finishing operation on micro geometry

- Capabilities of micro geometry modifications in certain manufacturing processes
- Simulation of failure influences on tooth micro geometry

Dipl.-Ing. Simon Kimme, Research Associate, Adaptronics and Acoustics, Dipl.-Ing. Ruben Bauer, Research Associate, Cutting Technology, Prof. Dr.-Ing. Welf-Guntram Drossel, Director, Fraunhofer Institute for Machine Tools and Forming Technology IWU, Dresden, Germany

Second section 16:00–18:00

Lecture Room A			Lecture Room B			Lecture Room C		
PLANETARY GEARS			HYPOID GEARS			ASYMMETRIC GEARS		
Dr.-Ing. Ralf Georg Wittor , Eickhoff Antriebstechnik GmbH, Germany / Dipl.-Ing. Dirk-Olaf Leimann , ZF Wind Power Antwerpen NV, Belgium			Prof. Dr.-Ing. Erhard Leidich , Technical University of Chemnitz, Germany / Eng. Amir Aboutaleb , American Gear Manufacturers Association, USA			Prof. Dr.-Ing. Bernd Sauer , University of Kaiserslautern, Germany / Prof. Dr. Eng. Haruo Houjoh , Tokyo Institute of Technology, Japan		
16:00	Low-loss gears for high efficiency precision planetary gearboxes: influence of the gear design on the meshing and the churning power losses		Optimization of hypoid gear design for high efficiency drives		Analysis and optimization of asymmetric epicyclic gears			
	<ul style="list-style-type: none">Substantial efficiency increment by topological modification of the teeth shapeExperimental validation of the analytical/numerical approach (CFD) in order to map the thermal and efficiency behavior of the gearbox under several operating conditions Dr.-Ing. Franco Concli , R&D Senior Engineer, Bonfiglioli Mechatronic Research S.P.A., Rovereto, Italy		<ul style="list-style-type: none">The high accuracy prediction method of hypoid gear meshing efficiencyOptimization of hypoid gear design for high efficiency drives Dipl.-Ing. Kazuhiro Takaki , Gear engineer, Dipl.-Ing. Masaki Sugimoto, Expert Leader, Dipl.-Ing. Atsushi Hayata, Manager, Powertrain Technology and Prototype Development Department, Nissan Motor CO., Ltd., Kanagawa, Japan		<ul style="list-style-type: none">Asymmetric tooth gears allows the improvement of amplify power transmission density, increasing load capacity, and reduce size and weightPresentation a sample of application of asymmetric epicyclic gears Dipl./Ph.D. Alexander Kapelevich , President, AKGears, LLC, Shoreview, Minnesota, USA			
16:30	On optimum tooth profile modifications to minimize dynamic mesh forces in planetary gears		Efficiency and load capacity of conjugate-curve gears		Theoretical and experimental dynamic gears researches with advanced asymmetrical profile on having in gears of runout and profile deviation			
	<ul style="list-style-type: none">Presentation of numerous numerical simulations illustrating the significant role of tooth profile modifications on dynamic tooth loadsProfile modification performances are illustrated at various speeds and loads Mechanical Engineer Matthieu Chapron , PhD student, Laboratory Engineer, Ing. Samuel Becquerelle, Head of the R&T department, Hispano-Suiza SA, Colombes, Dr. Ing. Philippe Velez, Full Professor, LaMCoS, INSA – Institute National des Sciences Appliquées de Lyon, Villeurbanne Cédex, France		<ul style="list-style-type: none">Meshing theory of conjugate-curve gearsExperimental investigation of conjugate-curve gears Prof. Bingkui Chen , Director, B.Eng. Yane Gao, The State Key Laboratory of Mechanical Transmissions, Chongqing University, Chongqing, China		<ul style="list-style-type: none">Essence of direct dynamic synthesis of gear teeth with asymmetrical tooth profile and its difference from other known methods of designingResults of measurement of vibrations of gearbox with asymmetrical teeth Prof. Dr. Sc. Vladislav Dorofeev , Head of scientific researches, Dipl.-Ing. Viktor Golovanov, Chief, Department of Air Gears, Central Institute of Aviation Motors (CIAM), Dr.-Ing. Dmitry Dorofeev, Assistant Professor, MATI – Russian State Technological University, Moscow, Russia			
17:00	Finite element method based analysis of planetary gear systems considering backlash and manufacturing errors		New method for calculation of the load carrying capacity of bevel and hypoid gears regarding tooth flank fracture		Asymmetric gears: design, test and certification from a practical point of view			
	<ul style="list-style-type: none">Implementation of finite element method in the analysis of planetary gear systemsInfluence of the backlash and manufacturing errors on the performance of planetary gear systems Prof. Dr. Eng. Athanassios Mihailidis , Head of the Laboratory of Machine Elements and Machine Design, Dipl. Eng. Emmanouil Bouras, Research Associate, Dipl. Eng. Emmanouil Athanasopoulos, PhD candidate, Mechanical Engineering, Aristotle University of Thessaloniki, Greece		<ul style="list-style-type: none">Load method for calculation of the load carrying capacity of bevel and hypoid gears regarding tooth flank fractureInfluence of gear geometry, heat treatment and operating conditions Dipl.-Ing. Ivan Boiadjiev , Research Assistant, Institute of Machine Elements, Dr.-Ing. Johann-Paul Stemplinger, Head of Department EHL, Efficiency Worm and Bevel Gears, Prof. Dr.-Ing Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany		<ul style="list-style-type: none">Measurements and calculation of tooth root stressesCalculation of load carrying capacity for asymmetric gears Dr.-Ing. Mara Ewering , Engineer R&D, Ph.D. Peter Michalke, test engineer, Dipl.-Ing. Michael Flinks, former student assistant, M.Sc., Siemens AG, Bocholt, Germany			
17:30	Calculation approach for load capacity calculation of the tooth root of thin walled planetary wheels for planetary drives with high peripheral speeds		A method to optimize the running behavior of planetary gear stages based on a dynamic approach and the FE-based tooth contact analysis		Geometry, strain and deformation of asymmetric spur gearings			
	<ul style="list-style-type: none">Load capacity calculation of thoothing for thin walled realized planetary gear rimsCalculation of the flexible and deformable circular ring with alternating load and high centrifugal force Dr.-Ing. Frank Baumann , Engineer for development and design, Gear Design, Business Unit power, oil and gas, Voith Turbo GmbH & Co. KG, Crailsheim, Dipl.-Ing. Johannes Woller, scientific assistant, Institute for solid state mechanics, Chair of Dynamics and Mechanism, Faculty of Mechanical Science and Engineering, Technical University of Dresden, Germany		<ul style="list-style-type: none">Analyzing the running behavior of bevel gearsDeveloping a method to optimize the running behavior Dipl.-Ing. Peter Knecht , Work group leader, Research Group Gear Testing, Prof. Dr.-Ing. Christan Brecher, Full Professor, Head of Chair of Machine Tools, Dipl. Wirt.-Ing. Christoph Löpenhaus, Chief Engineer Gear Department, Chair of Machine Tools, Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen University, Germany		<ul style="list-style-type: none">Comprehensive handling of an additional degree of freedom in spur gear calculationEnhanced load capacity by geometrically reduced stress level Dr.-Ing. Andreas Langheinrich , Development Drive Technology – Gearings in Plastic, Horst Scholz GmbH & Co. KG, Kronach/ Gundelsdorf, Prof. Dr.-Ing Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany			

18:30



Source: R&K Gastronomie GmbH

Evening Reception at the „Hacker-Pschorr Bräuhaus“ Munich

At the end of the first conference day we cordially invite you to our evening reception at the Hacker-Pschorr, a traditional Bavarian brewery with deep roots in Munich. Enhance your personal network and use the relaxed and informal atmosphere for deeper-going discussions with other participants and speakers. The name Hacker-Pschorr stands for a Munich brew tradition crafted over centuries, and acclaimed far beyond the borders of Bavaria throughout the entire world.



Dinner Speech
Johannes Hintersberger, Member of the Bavarian State Parliament, State Secretary in the Bavarian State Ministry of Finance, Regional Development and Regional Identity, Augsburg, Germany

TUESDAY, OCTOBER 6TH, 2015, 2ND CONFERENCE DAY

First Section 08:30–10:00

Lecture Room A			Lecture Room B			Lecture Room C		
PLANETARY GEARS			GEAR DESIGN			SPUR GEARS		
Prof. Dr.-Ing. Peter Tenberge , Ruhr-University Bochum, Germany / Prof. Dr. Eng. Adam Döbröczöni , University of Miskolc, Hungary			Prof. Dr.-Ing. Michael Weigand , Vienna University of Technology, Austria / Dr.-Ing. Jörg Hermes , SEW-EURODRIVE GmbH & Co. KG, Germany			Dr.-Ing. Burkhard Pinnekamp , Renk AG, Germany / Prof. Dr. D. Houser , Ohio State University, USA		
08:30	Analytical framework of planetary gearbox monitoring based on the machine current signature analysis		Statistical methods in gear design		Static and dynamic analysis of double-slope profile relief on high-contact-ratio spur gears			
	<ul style="list-style-type: none">Electro-mechanical coupling dynamics of the permanent magnetic synchronous motor (PMSM) based drive systemPrediction of the load torque oscillation frequency and the time-varying mesh stiffness frequency Dr. Kai Chen , Prof. Jibin Hu, department dean, Prof. Zengxiong Peng, prelector, School of Mechanical Engineering, Beijing Institute of Technology, China		<ul style="list-style-type: none">Geometrical generation and technical evaluation of gear design candidatesData presentation in order to assist the decision for final gear design Dipl.-Ing. Stephan Hellenbroich , Engineer gear development, Gear Design, Process & Tools, Getrag Ford Transmissions GmbH, Köln, Germany		<ul style="list-style-type: none">Gear dynamics and noise: analysis of the influence of particular tooth shape modifications on dynamic tooth loadingOptimization of tooth shape modification with regard to transmission error and dynamic factor Prof. Dr.-Ing. Philippe Velez , Full Professor, Dr.-Ing. Jérôme Bruyère, Associate Professor, LaMCoS, INSA - Institute National des Sciences Appliquées de Lyon, Villeurbanne Cédex, France			

Prof. Dr.-Ing. Bernd Sauer, Full Professor, Vice Dean and Head of MEGT – Institute of Machine Elements, Gears, and Transmissions, Department of Mechanical and Process Engineering, University of Kaiserslautern

Prof. Dr.-Ing. Berthold Schlecht, Full Professor, Institute of Machine Elements, Faculty of Mechanical Engineering, Technical University of Dresden

Dipl.-Ing. Michael Schöffmann, Head of Transmission Development, Audi AG, Ingolstadt

Prof. Dr. Alfred J. H. Schoo, Professor, Mechanical Engineering, Westfälische Hochschule Gelsenkirchen Bocholt Recklinghausen, University of Applied Sciences, Bocholt

Prof. Dr.-Ing. Peter Tenberge, Full Professor, Chair of Industrial and Automotive Drivetrains, Mechanical Engineering, Ruhr-University Bochum, Germany

Dr.-Ing. Joachim Thomas, Managing Director, ZG Hypoid GmbH, Eching

Dr.-Ing. Reiner Vonderschmidt, Managing Director, Georgii Kobold GmbH & Co. KG, Horb

Dr.-Ing. Ralf Georg Wittor, Managing Director, Eickhoff Antriebstechnik GmbH, Bochum

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Ir. J.J. Bos, Manager engineering and Director of Damen Schelde Gears, Vlissingen, The Netherlands

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Prof. Dr. Sc. Veniamin Goldfarb, Director, Institute of Mechanics, Izhevsk State Technical University, Russia

Prof. Ing. Carlo Gorla, Associate Professor, Department of Mechanical Engineering, Politecnico di Milano, Italy

Prof. Dr. Eng. Haruo Houjoh, Professor, Precision and Intelligence Laboratory, Precision Machine Devices Division, Tokyo Institute of Technology, Yokohama, Japan

Prof. Dr. Ahmet Kahraman, Howard D. Winbiger Professor and Director, Gear and Power Transmission Research Laboratory, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, USA

Dipl.-Ing. Dirk-Olaf Leimann, Gear Technology, Manager Gear Technology & Advanced Engineering, ZF Wind Power Antwerpen NV, Lommel, Belgium

Prof. Dr.-Ing. Athanassios Mihailidis, Full Professor, Head of the Laboratory of Machine Elements and Machine Design, Mechanical Engineering, Aristotle University of Thessaloniki, Greece

Prof. Dr.-Ing. Vojislav Miltenovic, Full Professor, Machines Development and Construction Centre, Faculty of Mechanical Engineering, University of Niš, Republic of Serbia

Prof. Dr. Eng. Ichiro Moriwaki, Professor of Mechanical and System Engineering, Director of KIT Liaison Center, Kyoto Institute of Technology, Kyoto, Japan

Dr. Michel Octrue, Senior Gear Consultant, Mechatronics, Power Transmissions and Sensors (MEC), CETIM (Technical Center for Mechanical Engineering Industries), Senlis, France

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Prof. Ray Snidle, Professor of Mechanical and Engineering, School of Engineering, Cardiff University, United Kingdom

Prof. Dr. Ing. Philippe Velex, Full Professor, LaMCoS, INSA – Institut National des Sciences Appliquées de Lyon, Villeurbanne Cédex, France

Prof. Dr.-Ing. Michael Weigand, Full Professor, Machine Design and Rehabilitation Engineering, Institute for Engineering Design and Logistics Engineering, Vienna University of Technology, Austria

Prof. Dr. Changle Xiang, Professor, Dean, School of Mechanical Engineering, Beijing Institute of Technology, Director, National Key Lab of Vehicle Transmission, China

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Prof. Dr.-Ing. Aizoh Kubo, General Manager, Research Institute for Applied Sciences, Kyoto, Japan

Prof. Dr.-Ing. habil. Heinz Linke, Emeritus Professor, Technical University of Dresden, Germany

Dr.-Ing. Toni Weiss, Gear Consultant, ret. from Renk AG Augsburg, now GanaCon – Gear analysis and Consulting, Inning, Germany

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POSTER PRESENTATIONS

P-1 Sustainable laser based surface-cleaning and preparation for welding and bonding in gear production
B.Sc. Tobias Weichert, Technology Consulting, Lean Lasersysteme GmbH, Herzogenrath, Germany

P-2 A brief overview on the evolution of the scientific theory of gearing: A preliminary discussion
Prof. Dr. Eng. Sci, Ph.D., Stephen P. Radzevich, Principal R&D Gear Transmission Engineer, Apex Tool Group, LLC, Lexington, USA

P-3 Electromechanical dynamic analysis for the motor-gear-drum system of the unmanned long-wall shearer
Changzhao Liu, State Key Laboratory of Mechanical Transmission, Chongqing University, China

09:00	Investigation of motion of planet gear considering its instantaneous rotation center under three axes driving planetary gear set <ul style="list-style-type: none">Theory of three-axis driving planetary gear set based on driving testPower transmission mechanism of planet gear in the planetary gear set Masao Nakagawa (BA) , Graduate student, Doshisha university Graduate school of science and engineering, Kyoto, Japan
09:30	A computerized approach for load analysis of planetary gear drives with epitrochoid-pin tooth-pairs <ul style="list-style-type: none">An efficient computerized approach for load analysis of multiple tooth contactContact characteristics of cycloidal planetary drives Dr.-Ing. Shyi-Jeng Tsai , Assistant Professor, Wei-Jhen Huang, Jin-Hao Huang, Graduate Students, Department of Mechanical Engineering, National Central University, Jhong-Li, Taiwan
10:00	Coffee break and visit to the exhibition and poster presentations

Second Section 10:45–12:45

	Lecture Room A	Lecture Room B	Lecture Room C
	NOISE	LOAD CAPACITY	MEASUREMENT
	Dr.-Ing. Hartmut Faust , LuK GmbH & Co. KG, Germany / Prof. Dr.-Ing. Vojislav Miltenovic , University of Niš, Republic of Serbia	Dr.-Ing. Ralf Hess , Siemens AG, Germany / Prof. Ing. Carlo Gorla , Politecnico di Milano, Italy	Dr.-Ing. Joachim Thomas , ZG Hypoid GmbH, Germany / Prof. Dr. Geng Liu , Northwestern Polytechnical University and Shaanxi Engineering Laboratory for Transmissions and Controls, China
10:45	Effect of shot peening exposure time on the elemental accuracy deviation, noise and vibrational behavior of shaved spur and helical gears according to ALMEN saturation curve <ul style="list-style-type: none">Influence of shot peening exposure time on noise behav-iour and elemental accuracyPerformance optimised exposure time of shot peening for helical gear in terms of gear’s noise and accuracy Technical Expert Hossein Mohassel , Manufacturer of Gearbox and Steering System, Gearbox Research Center, P.h.D., Hasan Vafadar, Managing Director, Charkheshgar Co. (under the license of ZF Germany), Ph.D. Farid Vakili-Tahami, Department of Mechanical Engineering, University of Tabriz, Tabriz, Iran	Standardized wear and temperature prediction for worm gears under non-steady operating conditions <ul style="list-style-type: none">Improve standardized wear prediction method for worm gearsWear and temperature behavior of worm gears under non steady operating conditions Dr.-Ing. Björn Sievers , Gear-Development Engineer, Dr.-Ing. Jörg Hermes, Head of Development, Standard Gear Units, SEW-EURODRIVE GmbH & Co. KG, Bruchsal, Dr.-Ing. Marius Berger, Project Manager R&D, Ed. Fitscher GmbH & Co. KG, Oberhausen, Germany	Reliable measurements of the diametrical dimension over balls <ul style="list-style-type: none">Introduction of a novel measurement standard as well as a new measurement process for any measurements in double-flank contactA typical application in the field of gear inspection is the diametrical dimension over balls Dipl.-Ing. (FH) Achim Wedmann , Technical assessor for the German Accreditation Body (DAkKS) of gear and thread measurement, calibration of gear and thread standards, Dr.-Ing. Karin Kniel, Head of department “Coordinate Metrology”, Dr. rer. nat. Martin Stein, Head of working group “Gear and Thread”, Physikalisch – Technische Bundesanstalt, Braunschweig, Germany
11:15	Gear tooth profile for achieving both high load capacity and low noise performance <ul style="list-style-type: none">Durability improvement for the transmission gearsDownsize and reduce the weight Ryohei Saito , Assistant Manager, Hardware System Development Department, JATCO Ltd., Kanagawa, Dr.-Ing. Yoshitomo Suzuki, Senior Expert, Production Division, JATCO Ltd., Shizuoka, Japan	A dynamic load distribution model for parallel-axis gear pairs <ul style="list-style-type: none">Spur and helical gear dynamic load distributionDynamic contact and root stress Dr. David Talbot , Research Scientist, Prof. Dr. Ahmet Kahraman, Howard D. Winbigger Professor and Director, Gear and Power Transmission Research Laboratory, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, USA	Technology for detecting nicked gears for a mass production final tester <ul style="list-style-type: none">Detecting gear nicks simultaneously with the measurement of gear noise in the final tester process for transmissionsGear nick detection for multiple gears on the same shaft in a transmission Dipl.-Ing. Kouji Matsuo , Parts Process Engineering Department, Machining Process Engineering Section No.2, Dr.-Ing. Yoshitomo Suzuki, Production Division, JATCO Ltd., Shizuoka, Japan
11:45	Topographical tooth modifications in real running and for reduction of the noise excitation without load-capacity loss <ul style="list-style-type: none">Using profile angle variation along tooth wide is an option for noise reductionNoise reduction without load-capacity loss is possible by using the same contact pressure level Dr.-Ing. Johannes W. Vriesen , Senior Key Expert Gear Components, Winergy – Engineering Technology, Siemens AG, Voerde, Germany	Revolving kinematics of profile modified gears: impact on load carrying capacity and transmission error <ul style="list-style-type: none">Changing sliding directionsExact determination of load cycles Dr.-Ing. Khashayar Nazifi , Head of R&D, ZAT R&D, ZOLLERN GmbH & Co KG, Herberlingen, Germany	Recent advances in optical gear measurements – A new approach for fast measurements of large gears <ul style="list-style-type: none">Geometric gear measurements using an optical 1-d sensorGeometry and roughness measurements of large gears Dr.-Ing. Felix Balzer , Software Development Engineer, Dr. rer. nat. Markus Schäfer, Development Engineer, Hexagon Metrology GmbH, Wetzlar, Dipl.-Ing. Jan F. Westerkamp, Research scientist, Project manager EVEQT, Institute for Metrology, Automation and Quality Science, University of Bremen, Germany
12:15	Rapid simulation of bearing loads and stresses in thin-walled planetary gear rings <ul style="list-style-type: none">Total rating life of deformed bearingsRapid simulation using transfer matrices M.Sc. Lukas Quinkert , Scientific Assistant, Prof. Dr.-Ing. Peter Tenberge, Full Professor, Chair of Industrial and Automotive Drivetrains, Mechanical Engineering, Ruhr-University Bochum, Germany	Calculation of fatigue strength of transmission shafts with multiple notches according to the nominal stress concept by integrating FE-analysis results <ul style="list-style-type: none">Integrating FEA results in the nominal stress based strength calculationNew method for the determination of stress concentration factors at multiaxial stress states Dipl.-Ing. Jörg Wendler , Research Associate, Prof. Dr.-Ing. Berthold Schlecht, Full Professor, Institute of Machine Elements, Faculty of Mechanical Engineering, Technical University of Dresden, Germany	Fast and versatile measurement of residual stress and hardness of gear and shaft materials – material defect, mal-hardening and change of residual stress by usage <ul style="list-style-type: none">Measurement of residual stressQuality check of steel for gears Prof. Dr.-Ing. Aizoh Kubo , General Manager, Research Institute for Applied Sciences, Kyoto, Prof. Dr.-Ing. Toshihiko Sasaki, Department of Mechanical Engineering, Ordinarius of Kanazawa University, Japan
12:45	Lunch break and visit to the exhibition and poster presentations		

Third Section 14:15–15:45

	Lecture Room A	Lecture Room B	Lecture Room C
	NOISE	LOAD CAPACITY	SIMULATION
	Prof. Dr.-Ing Karsten Stahl , Technische Universität München, Germany / Prof. Dr. Ing. Philippe Velex , INSA – Institute National des Sciences Appliquées de Lyon, France	Prof. (TUM emeritus of excellence) Dr.-Ing. Bernd-Robert Höhn , Technische Universität München, Germany / Ir. J.J. Bos , Damen Schelde Gears, The Netherlands	Dr.-Ing. Jörg Börner , ZF Friedrichshafen AG, Germany / Prof. Dr.-Ing. José I. Pedrero , Universidad Nacional de Educación a Distancia (UNED), Spain
14:15	Magnetic gearboxes: comparing running noise and efficiency to gear transmissions <ul style="list-style-type: none">Magnetic gearboxes transmit power without physical contactThe contact-free power transmission leads to a significantly lower running noise and significantly higher efficiencies Dipl.-Psych. B.Sc. (Elektro.-Ing.) Andreas Vonderschmidt , Managing Director, Dr.-Ing. Reiner Vonderschmidt, President, magnetica GmbH & Co. KG, Horb, Germany	A load distribution model of major-diameter-fit splines <ul style="list-style-type: none">Major and minor diameter fit spline load distributionSpline contact pressure Dr. David Talbot , Research Scientist, Prof. Dr. Ahmet Kahraman, Howard D. Winbigger Professor and Director, Dr. Jiazheng Hong, Graduate Research Assistant, Gear and Power Transmission Research Laboratory, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, USA	Influence of profile modification on dynamic load of spur gear based on lateral-torsional-rocking coupled nonlinear dynamic model <ul style="list-style-type: none">Nonlinear dynamic model when considering coupling effects among different freedomsProfile modification and optimization by introducing dynamic response Prof. Hui Liu , Professor, Prof. Dr. Changle Xiang, Professor, Dean, School of Mechanical Engineering, Beijing Institute of Technology, Director, National Key Lab of Vehicle Transmission, Beijing, China, Dr. Cheng Wang, Engineer, China North Vehicle Research Institute, Beijing, China

14:45	Gear innovation: Game changer in thruster reliability <ul style="list-style-type: none"> Improved understanding of thruster utilisation through the means of CFD and FEM calculations, iso and AGMA based failure classification and latest FVA calculation methods Implementation of super finishing and adjusted macro and micro geometry to give optimum thruster reliability Dipl.-Ing. Andre Böhme , Development Engineer, Mechanical Design, R&T Department Propulsion – Ulsteinvik, Rolls-Royce Marine AS, Ålesund, Norway
15:15	A novel cost-effective permanent magnet gear with soft magnetic composite modulator and Halbach magnetized rotors <ul style="list-style-type: none"> Torque density optimization of permanent magnet gear Influence of modulator dimensions on cogging torque PhD Stig Högberg , PhD Student, Nenad Mijatovic, Post Doc, Department of Electrical Engineering, Technical University of Denmark, Lyngby, Dr. Flemming Buus Bendixen, Magnet Specialist, Sintex a/s, Hobro, Denmark
15:45	Coffee break and visit to the exhibition and poster presentations

Fourth Section 16:30–18:30		
	Lecture Room A	Lecture Room B
	<div>LUBRICATION</div> <div> Prof. Dr.-Ing. Gerhard Poll, Leibniz University Hannover, Germany / Prof. Ray Snidle, Cardiff University, United Kingdom </div>	<div>TOOTH GEOMETRY</div> <div> Prof. Dr.-Ing. Berthold Schlecht, Technical University of Dresden, Germany / Prof. Dr. Datong Qin, Chongqing University, China </div>
16:30	Monitoring of lubricants in gears to detect mixture and to avoid critical consequences <ul style="list-style-type: none"> Analysis to monitor lubricants Changes and consequences according to mixture in lubricants Dipl.-Ing. (FH) Stefan Mitterer , Head of Technical Service, OELCHECK GmbH, Brannenburg, Germany	Tooth root geometry optimization using FE-based tooth contact analysis <ul style="list-style-type: none"> Reduction of tooth root bending stress for cylindrical gear sets using 2-dimensional parametrization approaches Model generation and evaluation by FE-based tooth contact M.Sc. Jonas Pollaschek , Scientific Employee in Gear Calculation and Manufacturing Simulation, Prof. Dr.-Ing. Christian Brecher, Full Professor, Chair of Machine Tools, Dipl.-Wirt.-Ing. Christoph Löpenhaus, Chief Engineer of the Gear Department, Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen University, Germany
17:00	Influence of run-in procedures on the formation of anti-wear films in planetary gears <ul style="list-style-type: none"> Improved wear resistance of planetary gears Operating conditions for targeted anti-wear-layer formation Dipl.-Ing. Francisco Gutiérrez Guzmán , Research Scientist, Dipl.-Ing. Andreas Stratmann, team leader, Prof. Dr.-Ing. Georg Jacobs, Full Professor, IME - Institute for Machine Elements and Machine Design, Faculty for Mechanical Engineering, RWTH Aachen University, Germany	Implementation of a new coupling model for fast and accurate simulation of gear pairs using stiffness characteristic arrays <ul style="list-style-type: none"> Multibody simulation of gear pairs Load-dependent stiffness distribution M.Sc. Faysal Andary , Research Engineer, Dipl.-Ing. Matthias Wegerhoff, Chief Engineer, IME - Institute for Machine Elements and Machine Design, Dipl.-Ing. Daniel Piel, Research Engineer, Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen University, Germany
17:30	Influences on failure modes and load carrying capacity of grease lubricated gears <ul style="list-style-type: none"> Influences of grease components and NLGI (National Lubricating Grease Institute) grade on gear failure mode Lubrication supply mechanisms of gears with grease lubrication Dipl.-Ing. Hansjörg Schultheiss , Research Associate, Dr.-Ing. Thomas Tobie, Head of department, Prof. Dr.-Ing Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany	Proposal of a face gear which generates virtual high mesh frequency by addition of grooves on the tooth flank <ul style="list-style-type: none"> Proposal of a new method of tooth flank modification which increase a mesh frequency by several grooves on the tooth flank of a face gear as an illusion of high mesh frequency Investigation of the effect by these grooves using vibration simulator and sample face gears Tetsuo Inoue , Department Manager, Department of Reel Development/Fishing Operations Division Shimano Inc., Osaka, Prof. Dr. Eng. Syuhei Kurokawa, Faculty of Engineering, Kyushu University Fukuoka, Japan
18:00	Analysis of lubricating characteristics of gear pair with non-newtonian fluids under high shear rate condition <ul style="list-style-type: none"> A new rheology model in high shear rate presented by experiments in this paper Analysis of lubricating characteristics for gear pair based on different rheological models Ph.D. Xin Zhao , Student, Professor Yuan Shi-Hua, Associate Professor, Chao Wei, Transmission School of Mechanical Engineering, Beijing Institute of Technology, China	The electronic control anti-backlash transmission based on variable tooth thickness gear <ul style="list-style-type: none"> Design of the electronic control anti-backlash for the gear transmission Experiment of the anti-backlash technology Li Yu , PhD Candidate, Guangjian Wang, Associate Professor/PhD, Liangliang He, Master Candidate, The State Key Laboratory of Mechanical Transmission, Chongqing University, China
18:30		



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Non-linear dynamic analysis of geared systems with FEM simulation

- Results of dynamic modeling of gears meshing by finite element method with transient analysis
- Analysis of resonance vibrations of gears with the loss of teeth contact

Eng. Dmitry Kalinin, Head of group, Strength of aviation drives, Prof. Jury Temis, head of department, Central Institute of Aviation Motors, Moscow, Russia

Design, simulation and modal dynamics of gears and transmissions

- Innovative models for gear trains with improved parameters and technical indicators
- Influence of natural frequencies, natural modes and vibration amplitude upon different types of gears

Prof. PhD Antoaneta Dobрева, Lecturer, Department of Machine science, Machine elements and Engineering Graphics, Assoc. Prof. PhD Vasko Dobrev, Vice Dean, PhD Svetlin Stoyanov, Chief assistant, Faculty of Transport, University of Ruse, Bulgaria

SIMULATION

Dr.-Ing. Uwe Keller, Daimler AG, Germany / **Prof. Ahmet Kahraman**, The Ohio State University, USA

FE-based design method for pressure optimized profile corrections

- FE-based method for the evaluation of the influence of the profile modifications on tooth flank pressure
 - New approach for the evaluation of tip relief design
- M.Sc. Philip Konowalczyk**, Analysis and Testing of Tooth Flank Load Capacity, Research Group Gear Testing, Prof. Dr.-Ing. Christian Brecher, Full Professor, Chair of Machine Tools, Dipl.-Wirt.-Ing. Christoph Löpenhaus, Chief Engineer Gear Department, Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen University, Germany

Transmission error based simulations of the dynamic response of geared systems

- Formulation of mesh excitations by transmission error and mesh stiffness functions
- Influence of spacing errors on spur and helical gear dynamics

Nina Sainte-Marie, Vibro-acoustic engineer, Dynamics, Vibrations and Internal Noise department, Airbus Helicopters SAS, Marignane, Prof. Dr. Ing. Philippe Velez, Full Professor, LaMCoS, INSA – Institut National des Sciences Appliquées de Lyon, Villeurbanne Cédex, France

A method to optimize the running behavior of planetary gear stages based on a dynamic approach and the FE-based tooth contact analysis

- Analyzing the running behavior of planetary gear stages
 - Developing a method to optimize the running behavior
- Dipl.-Ing. Daniel Piel**, Calculation and Analysis of Planetary Gears, Research Group Gear Design and Manufacturing Simulation, Prof. Dr.-Ing. Christian Brecher, Chair of Machine Tools, Dipl. Wirt.-Ing. Christoph Löpenhaus, Chief Engineer Gear Department, Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen University, Germany

A complete parameter study approach to designing differential bevel gears

- Performance optimization of differential bevel gears
- Calculation method combining fast multi-parametric variants calculation together with stress prediction for bevel gear forging specific geometries

Dr.-Ing. Andreas C. Hohle, Programme Engineering Manager, GKN Driveline International GmbH, Lohmar, Germany, Dipl.-Ing. Jürg Langhart, Technical Sales, KISSsoft AG, Bubikon, Switzerland

P-4

Influence of casing stiffness in gearbox design

Dipl.-Ing. Jürg Langhart, Sales, KISSsoft AG, Bubikon, Switzerland

P-5

Challenges in 5-axis milling of gears

Dr.-Ing. Rafael Bieker, General Manager, GfFmbH & Co. KG, Dortmund, Germany

P-6

Traction calculation in toroidal traction drives including elastic slip

Prof. Dr.-Ing. Gerhard Poll, Director, Institute for Machine Design and Tribology, Leibniz University Hannover, Germany

P-7

System design of parallel hybrid transmission with electric torque support

Dr. Zengxiong Peng, Predictor, School of Mechanical Engineering, Beijing Institute of Technology, China

P-8

Design of bevel gear frictional damper of gas turbine engine drives with optimal parameters

Egor Kozharinov, Engineer, Strength of aviation drives, Central Institute of Aviation Motors, Moscow, Russia

P-9

Research and bench test for the dynamic power control strategy of the two-mode Electro-mechanical Variable Transmission (EVT) system

Dr. Eng. Weida Wang, Associate Professor, School of Mechanical Engineering, Beijing Institute of Technology, China

P-10

Cost reduction and weight optimization solutions for Powertrain Components

Dipl.-Ing. (FH), IWE Hakan Kendirci, Industry Manager Automotive Powertrain, TRUMPF Laser- und Systemtechnik GmbH, Ditzingen, Germany

P-11

Influence of load distribution in ball bearings with defects on the dynamic behavior of gear transmissions systems

Dr.Sci. Ivana Atanasovska, Associate Research Professor, Innovation center, Faculty of mechanical engineering, University of Belgrade, Serbia

P-12

Numerical analysis of the production and operation loading conditions of polymer S-type gears

Borut Černe (mag. ing. stroj), Researcher, LECAD Group Laboratory, Chair for Design and Transport systems, Faculty for Mechanical Engineering, University of Ljubljana, Slovenia

P-13

Gear transmission error measurement: application to an all-electric vehicle gearbox

Dr. Eng. Antonio Palermo, Research Engineer, Digital Factory Division - Simulation and Test Solutions, SIEMENS Industry Software NV, Leuven, Belgium

P-14

Experimental study of shot peening influence on the surface, accuracy and vibrational behavior of shaved spur gears

Technical Expert Hossein Mohassel, Manufacturer of Gearbox and Steering System, Gear Research Center, Charkheshgar Co. (under the license of ZF Germany), Tabriz, Iran

P-15

Electrically insulating coatings for rolling bearings as an application example for the functionalization of bearings by thermal spray technology

Dr. Sven Hartmann, Technical Director, obz innovation gmbh, Bad Krozingen, Germany



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WEDNESDAY, OCTOBER 7TH, 2015, 3RD CONFERENCE DAY

First Section 08:30–10:30		
Lecture Room A	Lecture Room B	Lecture Room C
LUBRICATION	HEAT	SURFACE
Prof. Dr.-Ing. Peter Tenberge , Ruhr-University Bochum, Germany / Prof. Ray Snidle , Cardiff University, United Kingdom	Prof. Dr. Alfred J. H. Schoo , Westfälische Hochschule Gelsenkirchen Bocholt Recklinghausen, Germany / Prof. Ing. Carlo Gorla , Politecnico di Milano, Italy	Dr. Ulrich Knödel , GETRAG Getriebe- und Zahnradfabrik Hermann Hagenmeyer GmbH & Cie KG, Germany / Prof. Dr.-Ing. Athanassios Mihailidis , Aristotle University of Thessaloniki, Greece
08:30 A study on the characteristics of dynamic load for involute gear in heavy duty transmission considering oil film lubrication effect <ul style="list-style-type: none">Dynamic load distribution in various heavy load conditions and various parametersEffect of dynamic load on the lubrication characteristics Ph.D. Shiyang Hou , Student, Professor Jibin Hu, Vice Dean of School of Mechanical Engineering, Wei Wu, Associate Professor, Beijing Institute of Technology, Beijing, China	New analysis on the heat balance of industrial gearboxes – optimized calculation-method of a gearbox manufacturer <ul style="list-style-type: none">New examination results on the accuracy of existing calculation methods for calculating the heat balance of industrial gearboxesImproved calculation of the heat balance of industrial gearboxes Dipl.-Ing. Jan Bendzulla , Calculation Engineer, Dr.-Ing. Bernhard Bouché, Technical Director, Dr.-Ing. Reiko Thiele, Head of Calculation Department, Getriebebau NORD GmbH & Co. KG, Bargteheide, Germany	Elimination of shot-peening in gas carburized components through innovative steel design <ul style="list-style-type: none">Changing the residual stress state on the surface from tensile to compressive to improve bending fatigue strengthApplying an alloying strategy that enable a surface free of intergranular oxidation and non-martensitic structure to improve bending fatigue strength M.Sci Patrik Ölund , Head of Group R&D, Ovako AB, Hofors, M.Sci Hans Hansson, Technical Director, Swepart Transmission AB, Liatorp, M.Sci Mats Wennmo, Senior Technical Manager, Gear Milling Solutions, Sandvik Coromant, Sandviken, Sweden
09:00 New approval process for dynamic tightness tests of gear units – Practical qualifications based on increased customer requirements & optimized lubricant properties <ul style="list-style-type: none">New test conditions for practical evaluating of dynamic gearbox tightnessTest results of the new SEW test in comparison with tests by state of technology Dr.-Ing. Jörg Hermes , Head of Development, Standard Gear Units, Dipl.-Ing. (BA) Alexander Huettinger, Engineering Engineer, SEW-Eurodrive GmbH & Co. KG, Bruchsal, Erich Prem, Product development Industry, Freudenberg Sealing Technologies GmbH & Co. KG, Weinheim, Germany	Prediction of heat generation in meshing of HRC gears <ul style="list-style-type: none">Prediction of heat generation in gear mesh using FEMInfluence of the coefficient of friction in meshing zone of HCR gears Dr.-Ing. Aleksandar Miltenovic , Research assistant, Ing. Milan Banic, teaching & research assistant, Prof. Dr.-Ing. Vojislav Miltenovic, Faculty of Mechanical Engineering, University of Nis, Serbia	Studies for the load capacity of nitrocarburized gears <ul style="list-style-type: none">Flank and tooth root load capacity of nitrocarburized gearsDamage progress of the white layer M.Sc. Peter Elkenkamp , Testing Engineer, Dr.-Ing. Norbert Kurz, Manager, Gear Laboratory, ZF Friedrichshafen AG, Germany
09:30 Analysing tribological stresses of gear tooth contacts: The distribution of the specific dissipated friction power along the line of contact <ul style="list-style-type: none">Combined gear tooth meshing and micro contact simulationHighly localized character of tribological stresses Dipl.-Ing. Daniel Stickel , Research Assistant, Material Science and Engineering, University of Duisburg and Essen, Duisburg, Prof. Dr.-Ing. Peter Tenberge, Full Professor, M.Sc. Christoph Lohmann, Research Assistant, Chair of Industrial and Automotive Drivetrains, Mechanical Engineering, Ruhr-University Bochum, Germany	Thermal behaviour of a high-speed gear unit <ul style="list-style-type: none">Analyse of the amount of power losses and of physical phenomena with a thermal model of a high-speed gear unitDissipation sources like hydrodynamic bearings, jet lubrication, windage effects, friction and fluid trapping between teeth are taken into account Prof. Dr. Eng. Christophe Changenet , Head of Research, ECAM, Lyon, Prof. Dr. Eng Fabrice Ville, Research Suprvisor, Prof. Dr. Ing. Philippe Velez, Full Professor, LaMCoS, INSA – Institut National des Sciences Appliquées de Lyon, Villeurbanne Cédex, France	Tribological characterization of WC/C coated gears <ul style="list-style-type: none">Interpretation of WC/C coated gears wear behaviorLubrication of WC/C coated gears Dr. Boris Kržan , Researcher, Prof. Mitjan Kalin, Head of department, Laboratory for Tribology and Interface Nanotechnology, Faculty of Mechanical Engineering, University of Ljubljana, Ljubljana, Slovenia
10:00 Simulating the wear behaviour of worm gears with local contact patterns <ul style="list-style-type: none">Experimental investigations on the running-in process of worm gears with local contact patternLocal simulation of the wear behavior of worm gears Dipl.-Ing. Werner Sigmund , Team leader worm gears, Gear Research Centre, Dr.-Ing. Johann-Paul Stemplinger, Department leader, Prof. Dr.-Ing Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany	New prospects for oil flow simulation in rotating spur-gear systems <ul style="list-style-type: none">Computational fluid dynamics (CFD) simulation of an inter-meshing gear-systemMultiphase simulation of gear lubrication Dr. rer. nat. Christine Klier , CFD engineer, Dipl.-Ing. Kathleen Stock, Branch Manager Munich, CFD Schuck Ingenieurgesellschaft mbH, Munich, Dipl.-Ing. Ludwig Berger, Branch Manager Heidenheim, CFD Schuck Ingenieurgesellschaft mbH, Heidenheim, Germany	Stress Distribution over gear teeth after grinding, running-in and efficiency testing <ul style="list-style-type: none">Surface stresses generated by grinding were fairly uniform on one side of the gear tooth, while the other side there were stress gradients from tip to dedendum and in axial directionThe compressive stresses were increased by running-in but less so by the following efficiency testing M.Sc. Dinesh Mallipeddi , PhD student, Dr. Mats Norell, Senior Lecturer, Prof. Lars Nyborg, Head, Materials and Manufacturing Technology, Chalmers University of Technology, Göteborg, Sweden
10:30	Coffee break and visit to the exhibition and poster presentations	

Second Section 11:15–13:15		
Lecture Room A	Lecture Room B	Lecture Room C
FATIGUE	EFFICIENCY	SURFACE
Prof. (TUM emeritus of excellence) Dr.-Ing. Bernd-Robert Höhn , Technische Universität München, Germany / Prof. Dr.-Ing. Aizoh Kubo , Research Institute for Applied Sciences, Japan	Prof. Dr.-Ing Karsten Stahl , Technische Universität München, Germany / Prof. Dr. Ing. Philippe Velez , INSA – Institut National des Sciences Appliquées de Lyon, France	Dr.-Ing. Bernhard Bouché , Getriebebau NORD GmbH & Co. KG, Germany / Dr. Michel Octrue , CETIM (Technical Center for Mechanical Engineering Industries), France
11:15 Tooth flank fracture – Research, standardization and practical experience <ul style="list-style-type: none">Research activities for tooth flank fracture and the international standardizationValidation of the approach in ISO DTR 19042 with practical examples Dr.-Ing. Michael Heider , Calculation engineer, Dr.-Ing. Burkhard Pinnekamp, Head of Division Central Gear Technology, Renk AG, Augsburg	Automated efficiency measurements of vehicle gearboxes on durability test benches <ul style="list-style-type: none">Combination of durability tests and efficiency measurements on one test benchBetter statistical coverage of efficiency measurement results by a higher number of measurement points Dipl.-Ing. Robert Voigt , Team Leader, Dipl.-Ing. Tim Willers, Department Manager Powertrain Testing, GIF-Gesellschaft für Industrieforschung mbH, Alsdorf, Germany	HiPerComp: high performance materials for gears <ul style="list-style-type: none">Gear load carrying capacity of improved materialsDifferent types of mechanisms to increase strength and damage tolerance were considered Dipl.-Ing. Carolin Wickborn , Research Associate, Dr.-Ing. Thomas Tobie, Head of department, Prof. Dr.-Ing Karsten Stahl, Full Professor, Institute of Machine Elements, Director, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany
11:45 Influence of macro and micro geometry on tooth flank fracture <ul style="list-style-type: none">General concept of new ISO standard for calculation of flank fracture safetyInfluence of gear geometry on the calculation results Dr. rer. nat. Stefan Beermann , CEO, KISSsoft AG, Bubikon, Switzerland	Enhanced gear efficiency calculation including contact analysis results and drive cycle consideration <ul style="list-style-type: none">Integrated determination of power losses in gear drive trains on system levelModification and optimization of parameters for most accurate calculation of thermal rating Dipl.-Ing. Jürg Langhart , Technical Sales, Mechanical Engineer INSA Lyon Thomas Panéro, Development/Support, KISSsoft AG, Bubikon, Switzerland	New case hardening processes for highly stressed gears <ul style="list-style-type: none">Thermo-chemical heat treatment of gear wheelsStabilized retained carbon-nitrogen-austenite Dr.-Ing. Matthias Steinbacher , Deputy head of department heat treatment, Prof. Dr.-Ing. habil. F. Hoffmann, head of department heat treatment, Prof. Dr.-Ing. Hans-Werner Zoch, Director, Foundation Institute for Material Science Bremen, Germany
12:15 Simulation of initiation and increasing of fatigue failure on tooth flanks <ul style="list-style-type: none">Analysis and simulation of gear fatigue failure (like micropitting, pitting) on tooth flanksSimulation of a Wöhler Curve M.Sc. Christoph Lohmann , Member of research staff, M.Sc. Tim Voßschmidt, Graduate assistant, Prof. Dr.-Ing. Peter Tenberge, Full Professor, Chair of Industrial and Automotive Drivetrains, Department of Mechanical Engineering, Ruhr-University Bochum, Germany	High torque, torsional stiff and precise – the Galaxy-Kinematics <ul style="list-style-type: none">Introduction of a new gearbox kinematic – surface tooth contact instead of a line tooth contactOptimization of load distribution by adaptive teeth MEng. Tobias Burger , Head of Engineering Galaxie Drive Systems, Dr.-Ing. Thomas Wimmer, Head of Mechatronic Lab, Dipl.-Ing. Heiko Schreiber, Development Engineer, WITTENSTEIN AG, Igersheim, Germany	A gear contact model to analyze the dynamics of transmissions with lightweight, flexible gears <ul style="list-style-type: none">Efficient gear contact modelling accounting for true gear geometry and materialHigh-fidelity gear loads prediction for lightweight gears Dr.-Ing Gert Heirman , Sr. research engineer, Dr.-Ing Alessandro Toso, Sr. project leader RTD, Siemens Industry Software NV, Leuven, Ing. Niccoló Cappellini, Research engineer, Department of Mechanical Engineering, University of Leuven (KU Leuven), Leuven, Belgium

12:45	A comparative study of the tooth flank fracture in cylindrical gears <ul style="list-style-type: none"> Risk assessment of the tooth flank fracture on the cylindrical gears Parametric study: influence of geometrical parameters and heat-treatment characteristics Dr. Dhafer Ghribi , Engineer, Dr. Michel Octrue, Senior Gear Consultant, CETIM: Technical Center for Mechanical Engineering Industries, Senlis, Dr. Philippe Sainsot, Professor, LaMCoS, INSA Lyon-Université de Lyon, France	Worm gear drives with high efficiency <ul style="list-style-type: none"> Calculation and improvement of the efficiency of worm gear drives Optimization of the tribological behaviour of worm gear drives Dipl.-Ing. Manuel Oehler , research associate, Jun. Prof. Dr.-Ing. Balázs Magyar, Prof. Dr.-Ing. Bernd Sauer, Full Professor, Vice Dean and Head of MEGT – Institute of Machine Elements, Gears, and Transmissions, Department of Mechanical and Process Engineering, University of Kaiserslautern, Germany	Investigations on tooth root bending strength of case hardened and shot-peened gears <ul style="list-style-type: none"> Bending strength of aerospace gears Influence of ultrasonic shot peening Dr. Edoardo Conrado, PhD , Assistant Professor, Department of Mechanical Engineering, Politecnico di Milano, Milano, Eng. Sergio Sartori, Gears Design Specialist, Transmission System Design & Development, AgustaWestland S.P.A., Cascina Costa di Samarate (Varese), Italy
13:15	Closing remarks	Closing remarks	Closing remarks
13:30	Awarding of the best paper for junior engineers by the vice president Prof. Dr.-Ing Karsten Stahl in the main hall		

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EXTRACT FROM THE PROGRAMME

Gear Data Exchange (GDE) – Basic for the Industry 4.0
Dr.-Ing. Herman Yakaria, Corporate Research and Development, Gear Development/ Gear Manufacturing, Simulation, ZF Friedrichshafen AG, Germany

Manufacturing Method of Large-Sized Cylindrical Worm Gear Set with Neiman Profile Using Multi-Axis Control and Multi-Tasking Machine Tool
Dr. Eng. Kazumasa Kawasaki, Associate Professor, Institute for Research Collaboration and Promotion, Niigata University, Niigata, Japan

Influence of the tool geometry on properties of surface densified PM gears
M.Sc. Tim Frech, Research Assistant, Chair of Manufacturing Technology, Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen, Germany

New macro-and micro-geometries of generated ground gears
Dipl.-Phys. Robert Würfel, Technical Mathematics, Development and Design Gear Cutting Machines, Liebherr-Verzahntechnik GmbH, Kempten, Germany

Study on the continuous generating grinding method of gear shaper cutters with cone worm wheel
Dr. Guolong Li, Professor/Mechanical, Department of Mechanical Engineering, The State Key Laboratory of Mechanical Transmission, Chongqing University, China

Manufacturing of High Quality Miniature Gears by Wire Electric-Discharge Machining
Dr./Ph.D.-Mechanical Eng. Kapil Gupta, Postdoctoral Research Fellow, Department of Mechanical and Industrial Engineering Science, University of Johannesburg, South Africa

5-Axis milling and properties of spherical conjugated bevel gears
Dipl.-Ing. Jean-André Meis, Development Engineer, Process Industries & Drives, Mechanical Drives, Research & Development 1, Siemens AG, Bocholt, Germany

Integrated Closed Loop in 5-Axis CnC Gear Manufacturing
Ing.-Ph.Dr. Claude Gosslin, President, Involute Simulation Softwares Inc., Quebec, Canada

Measurement of microgears in a production environment – an interaction of µN and µm
M.A. (Oxon), M.B.A. Christopher Morcom, President/CEO, Tool MT, Gießen, Germany

Waviness analysis in the serial production of cylindrical gears
Dipl.-Ing. Frank Descher, Metrology Specialist, Central Manufacturing Engineering, GETRAG Getriebe- und Zahnradfabrik Hermann Hagenmeyer GmbH & Cie KG, Untergruppenbach, Germany

Further details and the final programme can be found here:
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EXTRACT FROM THE PROGRAMME

Maximum shear stress of composite gears: Analytic model and experimental study
Ph.D. Jiaxing Zhan, School of Aerospace, Mechanical & Manufacturing Engineering, RMIT University, Melbourne, Australia

Wear on gears: Prediction of the worn tooth form and the consequences on load capacity and NVH behavior during wear progression
Dr.-Ing. Ulrich Kissling, President, KISSsoft AG, Hombrechtikon, Switzerland

The Effect of tooth flank geometry on the lifetime of injection moulded polymers
Prof. Dr. Eng. Jože Duhovnik, Full Professor, Head of LECAD Group Laboratory, Chair for Design and Transport systems, Faculty for Mechanical Engineering, University of Ljubljana, Slovenia

Thermoplastic Materials for Gears: Status, Future Trends and Solutions
Dr. Domenico La Camera, Staff Scientist, Material Science, Innovative Plastics, Sabic BV, Bergen op Zoom, The Netherlands

Vibration and Damping – Characteristics of Steel Polymer-Compound-Gears evaluated on a Back-to-Back Test Rig
Dipl.-Ing. (FH) Christoph Nitsch, Gear Research Centre (FZG), Technische Universität München (TUM), Garching, Germany

Plastic materials in automotive gears – tailored solutions for requirements of today and future needs
Dr.-Ing. Reimo Nickel, Application Development Manager - Automotive, DSM Engineering Plastics Research & Technology B.V., Geleen, The Netherlands

Injection-molded-plastic-crossed-helical-gears filled with carbon powder made from rice hull
Dr.-Eng. Takayoshi Itagaki, Associate Professor, Department of Mechanical Engineering, National Institute of Technology, Kisarazu College, Japan

Integrative simulation approach for an optimized design and dimension of short-fiber-reinforced plastic gears
Dr.-Ing. Jan-Martin Kaiser, Research and Development Engineer, Design of Plastic Components, Robert Bosch GmbH, Renningen, Germany

Further details and the final programme can be found here:
www.vdi.de/plasticgears

VENUE

The International Conference on Gears will take place in Munich, Technische Universität München (TUM), Garching, Germany, from Monday 5th to Wednesday 7th October, 2015



Gear Research Centre
(Forschungsstelle für Zahnräder und Getriebebau)

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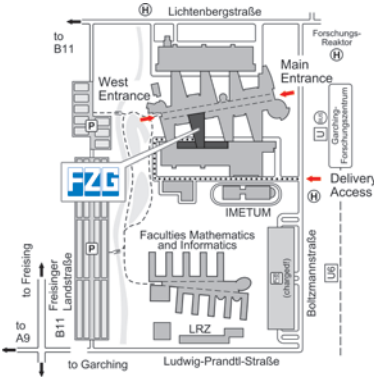
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The web-site www.mvv-muenchen.de offers a direct query for connections. menu items "journey planner"/"timetable information" – recommend on journeys from Munich airport

by car

- highway A9, exit Garching-Nord – proceeding direction Forschungs-Institute
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