

VOLUME 3 - CONFERENCE: WEDNESDAY, MARCH 26TH

9TH INTERNATIONAL FLUID POWER CONFERENCE (9TH IFK)

24th - 26th of March 2014
Aachen, Germany

Volume 1 - Symposium: Monday, March 24th

Volume 2 - Conference: Tuesday, March 25th
- Scientific Poster Session

09:00 - 10:30 a.m.

GROUP J - SIMULATION

Tadej Tašner	Energy efficiency of different electrohydraulic drives	14
Lionel Broglia Patron	Performance and Energy Consumption simulators of hydraulic hybrid off- highway vehicles	26
Dr. Heiko Baum	Hybrid Pump Model for 1D Hydraulic System Simulation	38

GROUP K - MOBILE APPLICATIONS

Taghi Akbarian	System integration and presentation of optimised drive solution with diesel engines in the Tier 4 emission level	50
Roman Krähling	Integration of Online Condition Monitoring (OCM) Sensor Systems for Hydraulics in Remote Interrogative Systems	62
Kalle Einola	Dimensioning and Control of a Hydraulic Hybrid System of a Cut-To-Length Forest Harvester	74
Henri Hänninen	Improving Energy Efficiency of Reach Truck Utilizing Hydraulic Transformer Based Recovery System	86

GROUP L - COMPONENTS

Dr. Siegfried Lösch	Piston with regular structured cellular core - Cellular Piston	96
Klaus Mössinger	A New Approach - Injection-Moulded Hydraulic Tanks for Mobile Applications	104
Dr. Olaf Stelling	Composite High Pressure Hydraulic Actuators for Lightweight Applications	114
Dr. Kristian Müller-Niehuus	Size optimized sealing systems via systematic integration of functional areas	126

11:00 - 12:30 a.m.

GROUP M - RENEWABLE ENERGY

Dr. Niels Diepeveen	Preliminary Design of the Hydraulic Drive Train for a 500kW Prototype Offshore Wind Turbine	132
Johannes Schmitz	Hydrostatic transmission for wind turbines - Comparison of different configurations and their applicability	144
Yukio Kamizuru	Development of Hydrostatic Drive Trains and Dielectric Elastomer Generators for Wave Energy Conversion	154
Dominic Diebel	Analysis of Characteristics for Transmissions in oscillating marine Wave Energy Converters	168

GROUP N - SYSTEMS

Arkadiusz Winnicki	A New Concept of Hybrid Displacement- throttled Control of Electro-hydraulic Servo Systems	180
Can Du	Load Prediction-based Energy-efficient Hydraulic Actuation of a Robotic Arm	186
Tobias Corneli	Employing Hydraulic Transmission for Light Weight Dynamic Absorber	198

GROUP O - COMPONENTS

Dr. Tom Ströhla	Fast Switching and Low Power Valve using Polarised Resonance Electromagnets	210
Prof. Dr. Jyh-Chyang Renn	Two-stage Large-stroke Proportional Linear Motor	220
Prof. Dr. Hong Ji	Mechanism of relief valve pressure maladjustment induced by solid particles	230
Dr. Lucian Nascutiu	High Performance Actuators for Fluid Power Drives	242

01:30 - 03:00 p.m.

GROUP P - COMPONENTS

Dr. Wolfgang Bauer	4/3 proportional valve with only one solenoid: A new technology for position control in suspension systems	254
Dany Abboud	Condition monitoring of gear pumps using cyclostationarity	262
Martin Dimitrov	Measurement System by Printed Thin Pressure Sensor Array	272
Dr. Stuart Lunt	Onboard Laboratory: Latest Developments in Oil Condition Monitoring for Mobile and Industrial Applications	284

GROUP Q - SIMULATION & VALIDATION

Cristian Ferrari	Methods of Computational Fluid Dynamics for a CVT Transmission Lubrication System of Agricultural Tractor	296
Dr. Jochen Lang	Simulation Methods for Elastohydrodynamically Coupled Hydraulic Components	308
Björn Scherweit	Longwall Mining Simulation	320
Christian Schleihs	3D-CFD simulation of an axial piston displacement unit	332

GROUP R - AUTOMOTIVE TECHNOLOGY

Werner Döhla	Further development of valve technology in vehicle's hydraulic roll control systems	344
Philipp Hedrich	Design of an Active Air Spring Damper	356
Sarah Flottmeier	Test Rig for the Hardware-in-the-Loop Simulation of Mechatronic Axles	366
JiBin Hu	Research on the Speed Ratio Follow-up Control of Hydro-mechanical Transmission	378

03:30 - 05:00 p.m.

GROUP S - MOBILE APPLICATIONS

Dr. Martin Inderelst	Rating of Efficiency Improvements in Mobile Hydraulic Systems	390
Emmanuel Viennet	Hybrid Systems Set New Requirements on Hydrostatic Units	402
Jan Schröter	Development of High Speed Electrical Drives for Machinery - Challenges and Potential Solutions	416
Andr�e Sitte	Design of independent metering control systems	428

GROUP T - NEW APPLICATIONS

Cord Neemeyer	DIVO® - Utilize pneumatic technology to reduce the burden of drowning in scuba diving	442
Dr. Reinhard Schiffers	Wizard-based operator guidance for finding the energetic optimal machine setting in hydraulically driven injection moulding machines	454
Ingo Ernst	Energy recuperation with a hydraulic LASCO servo direct drive for a 8.000 kN deep-drawing press	456
Dr. Markus Krach	Energy efficient hydro piston accumulator with sensor system	466

GROUP U - FLUIDS AND SYSTEMS

Wolfgang Bock	Fire-Resistant Hydraulic Fluids for Industrial and Mining Application - New Developments in Water-Free HFDU Fluids	474
Felizia Saile	New fluid rating procedure and fluid test at Bosch Rexroth	482
Jan Schumacher	Will it Work? Fluid Power and Functional Safety	488