Conference: Agricultural Engineering





Content

	Pi	age
Plenary Lectures		
J. Zeddies	Effects of the Demand of Bioenergy on the Prices in the Agricultural Markets	3
Tractors I–IV		
S. Sarami, H. J. Meyer	Development and Investigation of a Semi-active Suspension System for Full Suspension Tractors	11
P. E. Hannukainen, T. Virtanen	Developing a Control System for a Semi-Active Cabin Suspension by Utilizing a Combined Simulation Approach	17
F. Carimantran	New technology for agricultural tractor cab's suspension	25
H. Schmidt, P. Huth	Intelligent Axle Suspension for on-road and off-road application A mechatronical Approach	29
H. Heinle	Tier III solution for standard tractors	39
K. Thuneke, P. Emberger	Exhaust Gas Emission Characteristics of Rapeseed Oil Fuelled Tractors Investigations at a Test Stand	47
H. Prankl	Motortuning on Tractors	53
J. Pohlenz, K. Grad	CVT for Input Power above 300 kW	59
J. Rieth	Global Tractor Field Test	67
T. Maier	Industrial design and tractor technology – competition between form and function?	<i>7</i> 3
H. Defrancq	Active Ground Contour Following Device to automaticaly improve Implement's ground contour following while being carried by the Front 3 point hitch	79
J. Kapfer	Hitch systems for standard tractors from 100 hp to 360 hp	83
Ch. von Holst	Experimental and Numerical NVH Analysis and Simulation for Tractor Cabin Booming Noise Reduction	89
A. Berg	CFD Analysis of Recirculation in a Virtual Wind Tunnel	97
B. Ferhadbegović, St. Böttinger, HD. Kutzbach	Handling Analysis of Agricultural Tractors Using Multi-Body Simulation	103

	1	Page
M. Grimsel, G. Bernhardt, J. J. Höfle	An interactive driving simulator for tractors Virtual reality in agricultural engineering	109
Mobile Hydraulics I-II		
M. Gallmeier, H. Auernhammer	Hydraulic and electric drivelines for mobile working machines Assessment of powertrains for use in mobile applications based on stationary and dynamic efficiency test	115
C. Kempermann	Hydrostatic Variators for Stepless Transmissions Aspects of CVT Technology from a supplier's viewpoint	121
A. Roth	New CVT Development for new Axial Combine Hydro-mechanical Drive – Concept, Development and Results	127
B. Donohoe, J. Fuller	Full Toroidal IVT for the Off-Highway market Hydro-mechanical control system development	133
M. Behm, M. G. Kliffken	Brake Management for Hydrostatic Wheel Drives	139
A. Widemann, S. Martensen	Hydraulic and Electronic Demands for the Propel Drive System of Telescopic Handlers	147
B. Grösbrink, HH. Harms	Free Air Hydraulic Systems	153
M. Hohlfeld, N. Strieker, Th. Stiller	New Hydraulic Features for a Forage Harvester	161
Field Robotics		
E. J. van Henten, J. Müller	The Field Robot Event An international Design Contest in Agricultural Engineering	169
H. W. Griepentrog, B. S. Blackmore	Autonomous Crop Establishment and Control System	175
T. Bakker, C. J. van Asselt, G. van Straten,	RTK-DGPS based path following with a Robotic Platform	183

J. Bontsema, J. Müller

		Page
W. Niehaus, M. Urra Saco, KU. Wegner, A. Linz, M. Thiel, A. Ruckelshausen, J. Marquering, B. Scheufler, T. Pfisterer	Autonomation of the self propelled mower Profihopper based on intelligent landmarks	185
Electronic and Automo	ation Technology I-IV	
G. Henninger	Safety of agricultural machinery and municipal equipment – Safety related parts of electrical, electronic and programmable control systems	193
A. K. W. Rekow, H. Ohlemeyer	Automated Headland Turns The Next Step in Automated Agricultural Machines	199
R. Laing	Definition and implementation of a groupwide terminal strategy in agricultural machinery	211
St. Crow, T. Rudolph, K. Buus	Steer-by-Wire A technology for tomorrow, or today?	217
J. Huster, N. Diekhans	An Assistance System for the Spout Control on Forage Harvesters	225
A. MohseniManesh, S. M. Ward	Soil-tyre interaction monitoring on soft soil using an on-the-move wireless system	231
R. Ostermeier, M. Gallmeier, H. Auernhammer, J. Hering, S. Glück	"Intelligent bearing" – a new sensor for agricultural engineering applications	237
A. El Aissaoui, F. Lebeau, M. F. Destain	Development of an Optical Sensor to Measure Direct Injection Spraying System Performance	243
M. Sießmair, C. Hauenschild	Benefits of an ODX database based service tool in a CAN based tractor ECU network	253
N. Schlingmann	Development strategy for On-board, Off-board and Remote diagnostics	259

Paae

		Page
T. Göres, HP. Grothaus, T. Rustemeyer, A. Möller	Development of a data management system for Teleservice applications on mobile working machines – DAMIT	265
A. Orbach	New Concept for Precision Farming, Auto Guidance and Telematics	271
S. Thomsen, C. Christensen, T. Rudolph	User friendly, high performing Electro Hydraulic Tractor Systems	279
S. Rathmann, R. Fischerkeller, A. Schweiker	Latest Trends In Automotive Electronic Systems, Highway Meets Off-Highway	287
WD. Gruhle, Ch. Göbel, R. Geiger	Modularisation and Standardisation of Software in Tractor Applications	295
P. Hieronymus	Development of an electronic concept for harvesting machinery and tractors Concept, methods and experiences	303
Bio Energy		
F. Lavoie, L. D'Amours, Ph. Savoie	Development and Field Performance of a Willow Cutter-Shredder-Baler	311
M. Kratzeisen, E. Stumpf, J. Müller	Suitability of plant oil as fuel in pressure stoves	317
T. Rehl, R. Doluschitz, T. Jungbluth, J. Müller	Environmental impact of different types of biogas effluent processing	323
D. Preissler, A. Lemmer, H. Oechsner, T. Jungbluth	Anaerobic digestion of maize silage without manure addition	335
Harvesting Technology I—IV		
T. Csanadi, B. Hamphoff	A header for efficient sunflower harvesting Deployment of special sunflower head	343

		Page
H. Grossjohann, L. Bischoff	New Separation System for Conventional Walker Combines Combining capacity benefits of axial flow with straw quality benefits of conventional walkers	347
M. Roberge, J. Posselius	Crop Flow Modeling in Harvesting Equipment	353
G. Craessaerts, W. Saeys, B. Missotten, J. De Baerdemaeker	Identification and control of the cleaning section on a combine harvester	359
G. Marathe, M. Zeuner	Development of a new Combine Harvester for Asian market requirements Deployment of Tangential-Axial Flow Technology	367
C. Wallays, W. Saeys, J. De Baerdemaeker, B. Missotten	Material other than grain and broken grain sensor for combine harvesters	373
T. Coen, B. Missotten, J. De Baerdemaeker	Feed rate Control on a Combine Harvester	379
H. Hamacher	Telematics – Maximum combine capacity over the whole season Using Internet technology on combines to manage the harvest	387
D. Verhaeghe, St. De Rycke, N. Monteyne, A. Naaktgeboren, J. Vande Ryse, O. Vanhercke, J. Vanpoucke, B. Missotten	Non-stop accurate bale weighing on big square balers	393
M. Mumme	Radiometric density-determination on round and big bales	399
K. Martensen	Development of a new Round Baler for bales with a variable diameter	405
K. Motobayashi, T. Yukawa, M. Kojima	Development of round bale carrier for self-propelled rice whole crop harvester	411

		Page
B. Niemöller, HH. Harms, N. Erasmy	A Method for Measuring and Analysing the Cutting Process in a Disc Mower	417
Th. Reiter, M. Baldinger	Perfect ground hugging with new alpha-motion front mower technology	425
P. Weiß	Self-propelled forage harvesters with 1000 HP and more The current market and engineering	431
Soil Protection and Cu	altivation I–II	
S. Denker, L. Volk, W. Lücke	Systematic approaches of soil mechanical stress induction in arable lands Impact assessment and implications for energy efficiency enhancement in agricultural engineering	441
HJ. Koch, H. Heuer, O. Tomanová	Soil properties and sugar beet growth as affected by repeated passes of heavy machinery and soil tillage	447
R. Geischeder, M. Demmel, R. Brandhuber	Preventive Soil Protection at Sugar Beet Harvest Comparison of Different Types of Undercarriages	455
D. Ansorge, R. J. Godwin	Soil Movement due to Tires and Tracks An investigation into the longitudinal movement of soil below rubber tracks and tires including its practical consequences	463
S. Dutzi	Effects of the different soil cultivation and sowing systems on energetic and crop growing parameters in special consideration of field emergence and area yield	469
S. Walther, T. Schüle, C. F. Gall, K. Köller	Online Variation of Soil Tillage Intensities	477
L. Alakukku, P. Perälä, K. Regina	Structure of mouldboard ploughed and zero tilled topsoil Zero tilled topsoil structure	483
M. R. Khaledian, J. C. Mailhol, P. Ruelle, I. Mubarek, R. Lahmar, F. Forest, D. Rollin, M. Mirzaii, L. Kradia	The impacts of no-tillage and conventional tillage on some hydraulic characteristics of topsoil in the Mediterranean Climate	489

		Page
Crop Protection and F	ertilisation	
R. Latsch, J. Sauter, S. Hermle, L. Dürr, Th. Anken	Control of Rumex Obtusifolius L. in Grassland Using Microwave Technology	501
J. Vondřička, P. Schulze Lammers	Optimization of Direct Nozzle Injection System's Response Time	507
T. Meyer, H. Wesche, F. Haerst	Driving dynamic of the field sprayer Eurotrain 3500 Experimental & virtual product research and development of the sprayer boom movement	513
D. Ehlert, P. Juerschik, S. Otter-Nacke	Advanced pendulum sensor for site specific crop production	519
Industrial Product Dev	relopment	
B. Kleffmann	Development of a Modular Cabin Concept for Selfpropelled Machines	52 <i>7</i>
G. Bitsch, K. Dreßler, A. Marquardt, I. Nikelay, M. Gölzer	Computing digital road profiles for agricultural vehicle simulations	533
C. Köbke, S. Dohmann	Into the development process integrated assembly and test concept for production A new self-propelled forage harvester family	539
J. C. Käppeler, T. Meinel, H. Friel	The development of pneumatic 12m drill with modern design and verification tools	545