



International Deep Drawing Research Conference IDDRG 2013

Towards Zero Failure Production Methods by advanced Modelling Technics and Process Integrated Virtual Control

Technopark Zürich | 2.-5. Juni 2013

Der Automobilbau und somit auch die gesamte Blechumformung stehen heute vor einem enormen Umbruch.

Als wichtigste Herausforderung gilt der Leichtbau und die Optimierung der Strukturen für die alternativen Antriebe. Dies sowohl in Bezug auf Einzelkomponenten wie auch auf gesamte Strukturen. Neue, innovative Werkstoffe wie spezielle Al-Fusion-Verbundwerkstoffe, Ultra High Strength Steels, Magnesium aber auch Faserverbundwerkstoffe werden zukünftig untereinander noch in einem viel stärkeren Wettbewerb stehen. Es sind aber auch neue thermische Verfahren, wie das Presshärten, die als Leichtbautechnologie gelten und sich ebenfalls weiterentwickeln werden.

Die Konferenz in Zürich bringt die auf diesem Gebiet international führenden Firmen, Forscher, Teile- und Technologielieferanten und Softwarefirmen zusammen. Die ausgesuchten Plenarvorträge werden durch namhafte Persönlichkeiten von VW, TKS, Novelis und POSTECH gehalten. Zur Thematik Versagensvoraussage wird eine Spezialsession mit den Plenarvorträgen von Prof. T. Wierbicki, MIT, und Dr. T. Stoughton, GM, gehalten. Die immer wichtigeren optischen Messverfahren werden im Rahmen einer Technischen Session von den Firmen Steinbichler (Optische Identifikation von Oberflächenfehlern), GOM (Analyse von Dehnungszuständen) und Vialux vorgestellt. Begleitend zur Konferenz werden Technical Tours zu den Firmen Daimler, Feintool und Franke angeboten.

Detaillierte Informationen zur Konferenz sind unter www.iddrg2013.org zu finden. Bei Fragen wenden Sie sich bitte an unser Sekretariat, Frau Carole Haerry, +41-44-6322610 oder unter Email iddrg2013@ethz.ch. Die Anmeldefrist für die Tagung ist 15. Mai 2013.

Wir würden uns freuen, Sie bei der Konferenz begrüßen zu dürfen.

Organisationskomitee

Prof. Dr. P. Hora, Institut für virtuelle Produktion, ETH Zürich
Prof. Dr. K. Wegener, Institut für Werkzeugmaschinen, ETH Zürich
Prof. Dr. W. Volk, UTG, TU München, Deutschland
Dr. L. Kessler, ThyssenKrupp Steel Europe AG, Deutschland

monday | june 3rd | morning

time	auditorium	cobol	fortran
08:30	welcome speech		
08:40	<p style="text-align: center;">plenary session</p> <p style="text-align: center;">THE INTERACTION OF STEEL MATERIAL DEVELOPMENT WITH VIRTUAL PRODUCTION EFFORTS</p> <p style="text-align: center;">Dr. Lutz Kessler, ThyssenKrupp Steel, Germany</p>		
	robust manufacturing methods	constitutive modeling	localization and failure
09:25	<p><i>MODEL BASED FEEDFORWARD TEMPERATURE REFERENCE CONTROL OF A DEEP DRAWING TOOL</i> T. Böhm*, R. Struck, A. Matveev, T. Meurer, M. Dagen</p>	<p><i>DEVELOPEMENT OF THE STRESS RATE DEPENDENCE CONSTITUTIVE MODEL TO PLASTIC ANISOTROPY</i> K. Ito*, N. Mori, G. Uemura, T. Oya, J. Yanagimoto</p>	<p><i>NEW CRITERION DESCRIBING COMBINED EFFECTS OF LODE ANGLE AND SIGN OF PRESSURE ON YIELDING AND VOID EVOLUTION</i> J.L. Alves, O. Cazacu*, B. Revil-Baudard</p>
09:45	<p><i>AN EFFICIENT METHOD TO PREDICT AND CONSIDER PART AND TOOL HEATING DURING PRODUCTION RUNS IN METALFORMING SIMULATIONS</i> D. Lorenz*, A. Emrich</p>	<p><i>CALIBRATION OF BBC2005 YIELD CRITERIA USING PLANE STRAIN YIELDING RESULTS FROM A BULGE TEST</i> L. Paraianu, D.S. Comsa, D. Banabic*</p>	<p><i>PREDICTION OF LOCALIZED NECKING FOR NONLINEAR STRAIN PATHS USING THE MMFC AND THE HAH MODEL</i> N. Manopulo*, P. Peters, P. Hora</p>
10:05	<p><i>CONSIDERATION OF THE IMPACT OF THE BLANK-HOLDER CONTACT CONDITION AFTER DIE TRYOUT IN ROBUSTNESS ANALYSIS</i> A. Emrich, M. Kraft</p>	<p><i>CALIBRATION OF PLASTICITY – AND FAILURE MODELS FOR AHSS SHEETS</i> E.T. Till*, B. Hackl</p>	<p><i>NUMERICAL INVESTIGATION OF SMALL CURVATURE BENDABILITY OF HIGH STRENGTH LOW ALLOYED STEEL IN AIR AND DIE BENDING PROCESSES</i> I. Tsoupis*, S. Hildering, M. Merklein</p>
10:25	coffee break		
10:55	<p><i>ACCOUNTING FOR MATERIAL SCATTER IN SHEET METAL FORMING SIMULATIONS</i> J.H. Wiebenga, E.H. Atzema, R. Boterman, M. Abspoel, A.H. van den Boogaard*</p>	<p><i>INFLUENCE OF NUMBER OF BACKSTRESSES ON THE MIXED HARDENING CHABOCHE-LEMAITRE MODEL FOR MODELLING ROLL LEVELLING PROCESSES</i> E. Silvestre*, J. Mendiguren, E. Saenz de Argandoña, L. Galdos</p>	advances in finite element modeling
			<p><i>SIMULATION BASED METHOD OF SURFACE DEFLECT DETECTION</i> T. Schönbach*, M. Avermann</p>
11:15	<p><i>SYSTEMATIC PROCESS IMPROVEMENT WITH NOISE OF SHEET METAL FORMING PROCESSES</i> M. Stippak*, B. Carleer</p>	<p><i>APPLICATION OF HAH MODEL WITH EXTENSION TO CROSS HARDENING EFFECTS TO DC05 DEEP DRAWING STEEL</i> P. Peters*, N. Manopulo, P. Hora</p>	<p><i>AIR BENT SAFETY COMPONENTS FOR THE CARBODY</i> C. Gasser*, R. Kolleck</p>
11:35	<p><i>DESIGNING AN ITERATIVE LEARNING CONTROL ALGORITHM BASED ON PROCESS HISTORY - USING LIMITED POST PROCESS GEOMETRICAL INFORMATION</i> B. Endelt*, W. Volk</p>	<p><i>PARAMETRIC FORMULATION OF THE FLOW RULE FOR ANISOTROPIC MATERIALS</i> M.P. Sklad*</p>	<p><i>FINITE ELEMENT SIMULATIONS FOR SHEET METAL FORMING PROCESS WITH FUNCTIONAL INPUT FOR THE MINIMIZATION OF SPRINGBACK</i> H. ul Hassan*, J. Fruth, A. Güner, T. Mennecart, A.E. Tekkaya</p>
11:55	<p><i>APPLICATION OF NON-DESTRUCTIVE TESTING TO CONTROL MATERIAL PROPERTIES OF STAINLESS STEEL IN KITCHEN SINK PRODUCTION</i> J. Heingärtner*, Y. Renkci, P. Hora</p>	<p><i>VIRTUAL DESCRIPTION OF BULK SHEET METAL FORMING PROCESSES CONSIDERING MULTIPHASE MODELS REGARDING THEIR ADJUSTMENT OF PRODUCT PROPERTIES</i> H. Schafstall*, R. Bernhardt, G. Mc Bain</p>	<p><i>HOW TO ENABLE A PROCESS PLANNER TO TAKE BETTER AND TRANSPARENT DECISIONS</i> S. Wagner*</p>
12:15	lunch break		

monday | june 3rd | afternoon

time	auditorium	cobol	fortran
14:15	<p style="text-align: center;">plenary session PHENOMENOLOGICAL AND NUMERICAL DESCRIPTION OF LOCALIZED NECKING USING GENERALIZED FORMING LIMIT CONCEPT W. Volk*, H. Weiss, D. Jocham, J. Suh</p>		
15:00	<p style="text-align: center;">A GLOBAL VIEW ON THE USE OF ALUMINIUM IN THE AUTOMOTIVE INDUSTRY, TRENDS AND NEW INNOVATIONS D. Jubera*</p>		
15:45	<p style="text-align: center;">coffee break</p>		
16:15	robust manufacturing methods	advanced experimental methods	<i>AN ADVANCED MATERIAL MODEL FOR THE PREDICTION OF PHASE FRACTIONS AND VICKERS HARDNESS IN HOT STAMPING PROCESSES</i> B. Hochholdinger*, D. Lorenz, T. Erhart, M. Schill
	<i>INCREASING THE ROBUSTNESS OF SHEET METAL FORMING PROCESSES USING AN INTELLIGENT PLANNING AND CONTROL SYSTEM</i> F. Quetting*, P. Hora, K. Roll	<i>A NEW DESIGN OF ELECTRO-MAGNETIC ACTUATOR FOR ELECTRO-MAGNETIC DEEP DRAWING (EMDD) OF AXISYMMETRIC SHELLS</i> M. Singhal, P.P. Date*	technical session: optical measurement systems
16:35	<i>TOWARDS ZERO-DEFECT MANUFACTURING OF SMALL METAL PARTS</i> R. van Ravenswaaij*, R. van Tijum, P. Hora, A.H. van den Boogaard, U. Engel	<i>DEVELOPMENT OF A FORMING METHOD USING AN ELASTOMERIC BAG CONTAINING HYDRAULIC FLUID</i> T. Saito*, J. Hiramoto, Y Yamasaki, T. Inazumi	<i>OPTICAL 3D METROLOGY IN SHEET METAL DEVELOPMENT AND PRODUCTION</i> M. Klein, H. Friebe*
16:55	<i>A FIRST STEP TOWARDS IN-LINE SHAPE COMPENSATION FOR ROLL FORMING APPLICATIONS</i> B. Abeyrathna*, B. Rolfe, P. Hodgson, M. Weiss	<i>COMPARISON OF ELECTRICAL AND THERMAL EFFECTS ON AA 5083 ALUMINUM ALLOY</i> A.D. Pleta, C.P. Nihare*, J.T. Roth	<i>APPLICATION EXAMPLES FOR AUTOMATED SURFACE INSPECTION AND 3D-DIGITIZING IN PRESS SHOP AND BODY-IN-WHITE</i> H. Lechner*
17:15	<i>PREDICTION OF GEOMETRICAL VARIATION OF FORGED AND STAMPED PARTS FOR ASSEMBLY VARIATION SIMULATION</i> K. Wärmefjord*, R. Söderberg, P. Ottosson, M. Werke, S. Lorin, L. Lindkvist, F. Wandebäck	<i>ON THE DESIGN OF A MULTISTAGE PROCESS IN DRAWN SHEET METAL PRODUCTS USING STRAIN DISTRIBUTION BASED PARAMETERS</i> P. Marathe, P. P. Date*	<i>SHEET METAL STRAIN ANALYSIS IN INDUSTRIAL ENVIRONMENT</i> R. Höfling*, P. Feldmann
17:35	<p style="text-align: center;">end of session</p>		

tuesday | june 4th | morning

time	auditorium	cobol	fortran
08:30	plenary session THE CONCEPT OF DAMAGE ACCUMULATION FOR PREDICTING NECKING AND FRACTURE OF SHEETS T. Wierzbicki*, Y. Bai		
09:15	A MODIFIED MOHR COULOMB FRACTURE MODEL FOR ANISOTROPIC METALS T. Stoughton*, J. Yoon		
10:00	INFLUENCE OF THE LODE PARAMETER AND THE STRESS TRIAXIALITY ON THE LOCALIZATION OF ELASTO-PLASTIC POROUS MATERIALS K. Danas*		
10:45	coffee break		
11:15	localization and failure	advances in friction and wear modeling	advances in finite element modeling
	<i>ESTIMATION OF THE LIMIT HOLE EXPANSION RATIO AFFECTED BY PRE-STRAIN PRODUCED DURING HOLE PIERCING PROCESS TO MAKE TEST SPECIMEN</i> K. Ito*, N. Mori, T. Imanaga, M. Narita	<i>EXPERIMENTAL AND NUMERICAL FRICTION CHARACTERIZATION FOR LARGE-SCALE FORMING SIMULATIONS</i> J. Hol*, V.T. Meinders, A.H. van den Boogaard	<i>ANALYSIS METHOD TO IDENTIFY CAUSE OF SPRING-BACK IN PRESS FORMING</i> M. Urabe*, A. Ishiwatari, H. Kano, J. Hiramoto, T. Inazumi
11:35	<i>DEVELOPMENT OF CRACK PREDICTION METHOD CONSIDERING BENDABILITY OF ULTRA-HIGH STRENGTH STEEL SHEETS</i> Y. Fujii*, T. Shinmiya, K. Higai, Y. Yamasaki, T. Inazumi	<i>THE USE OF GEOMETRIC DRAW BEADS FOR TOOL WEAR PREDICTION IN SHEET METAL STAMPING</i> M.P. Pereira*, J.W. Swallow, B.F. Rolfe	<i>TIME-DEPENDENT RESIDUAL STRESS AND GEOMETRY ANALYSIS OF UHSS DEEP DRAWN COMPONENTS</i> B. Wadman*, P. Ottosson, J. Holmberg, L.-O. Ingemansson, E. Sagström
11:55	<i>COMPARISON BETWEEN THE LEMAITRE AND A MODIFIED LEMAITRE DAMAGE MODEL ON SHEET STEEL BLANKING</i> B.-A. Behrens, A. Bouguecha, I. Peshekhodov, C. Bonk*	<i>WEAR BEHAVIOR OF A MICRO BLANKING AND DEEP DRAWING TOOL COMBINATION WITH DIFFERENT DRAWING RATIO</i> H. Flosky*, F. Vollertsen	<i>INFLUENCE OF USED YIELD FUNCTION IN DEEP DRAWING SIMULATION OF HIGHLY ANISOTROPIC ALUMINUM ALLOY</i> J. Nový*, V. Vaché, J. Sobotka
12:15	lunch break		

tuesday | june 4th | afternoon

time	auditorium	cobol	fortran
14:15	plenary session REDUCED RAMP-UP TIME AND ROBUST PROCESS CONTROL IN AUTOMOTIVE MANUFACTURING H. Wautl, R. Struck*, J. Kappey, A. Eckert, D. Barth		
	localization and failure	advances in friction and wear modeling	constitutive modeling
15:00	<i>OPTIMIZATION OF THE CUTTING EDGE GEOMETRY FOR SINGLE STAGED TRIMMING WITH HIGH CUTTING ANGLES</i> M. Bednarz*, A. Lipp, C. Sunderkötter, T. Hallfeldt, M. Grünbaum, W. Volk	<i>DETERMINATION OF FRICTION COEFFICIENTS FOR VARIOUS LUBRICATION CONDITIONS IN STRETCH FORMING PROCESS</i> C. Karadogan*, C.O. Alkas, H.A. Hatipoglu	<i>A STUDY REVIEW ON YIELDING AND HARDENING BEHAVIOR OF SHEET METAL</i> W-P. Wang, K.-S. Diao, X.-D. Wu*, M. Wan
15:25	<i>INFLUENCE OF THE SHEARED EDGE CONDITION ON THE HOLE EXPANSION OF DUAL PHASE STEEL</i> N. Pathak, C. Butcher*, M. Worswick	<i>THE EFFECT OF ULTRASONIC VIBRATION ON FRICTION IN SHEET METAL FORMING</i> J.Y. Park*, H.Y. Lee, K.C. Park	<i>APPLYING A MODIFIED AUSTENITE TRANSFORMATION MODEL INTO A THERMO-MECHANICAL MODEL OF HOT STAMPING</i> A. Abdollahpoor, X. Chen, M. Pereira*, A. Asgari, N. Xiao, B. Rolfe
15:45	<i>EXPERIMENTAL INVESTIGATION OF THE INFLUENCE OF SHEAR CUTTING PARAMETERS ON THE EDGE CRACK SENSITIVITY OF DUAL PHASE STEELS</i> M. Liewald, M. Gall*	<i>VERIFICATION OF SHEET METAL FORMING SIMULATION OF ADVANCED THIN PLATE PARTS USING A FIRST ORDER FRICTION MODEL</i> P. Gabrielson*, L Ekdahl, V. Hafsäter, H. Löfgren, J.-E. Ståhl	<i>CORRELATION BETWEEN THE CLASSICAL FLD AND THE LODE-TRIAXIALITY FRACTURE CURVE BY CONSIDERING DAMAGE FOR SHEET METAL APPLICATIONS</i> M. Gorji*, P. Hora, B. Berisha
16:05	coffee break		
16:35	<i>MULTISCALE SIMULATION OF DUCTILE DAMAGE OF DUELPHASE STEELS</i> J. Lian*, S. Münstermann, W. Bleck	springback modeling	forming limits and quality control
		<i>NUMERICAL SIMULATION AND EXPERIMENTAL RESEARCH ON SPRINGBACK OF AZ31 MAGNESIUM ALLOY</i> N.N. Song*, S.H. Wu, F.M. Andrade Pires, A.D. Santos	<i>EVALUATION METHOD OF STRETCH FLANGE-ABILITY BY STRAIN CONCENTRATION AND STRAIN GRADIENT</i> H. Yoshida*, T. Yoshida, T. Miyagi, K. Sato, J. Nitta, M. Suehiro
16:55	<i>MULTIMODALITY CHARACTERIZATION OF BURR EDGE IN SHEET BLANKING</i> S. Kumar , K. Narasimhan, A.Tewari*, V. Hiwarkar	<i>AN ELECTRIC TOUCH FOR ALUMINUM SPRINGBACK ELIMINATION</i> M.A. Lobdell, C.P. Nihare*, J.T. Roth	<i>RELATIONSHIP MODELING OF PROCESS PARAMETERS FOR WRINKLING OPTIMIZATION OF TAIL CAP – AN AUTOMOTIVE COMPONENT</i> M. Kakandikar Ganesh*, M. Nandedkar Vilas
17:15	<i>DEVELOPMENT OF STRESS TRIAXIALITY AND LODE PARAMETER IN 3D ALE FINE BLANKING SIMULATIONS</i> T. Wesner*, N. Manopulo, P. Hora	<i>ON THE VARIATION OF ELASTIC MODULUS IN LOADING, UNLAODING AND RELOADING</i> A. Melander*, N. Stenberg	<i>FINITE ELEMENT ANALYSIS FOR OPTIMISING PROCESS PARAMETERS IN TUBE HYDROFORMING PROCESS</i> S. Memon, A. Omar, K. Narasimhan*
17:35	end of session		

wednesday | june 5th | morning

time	auditorium	cobol	fortran
08:30	<p style="text-align: center;">plenary session TAILORED MATERIAL PROPERTIES IN HOT PRESS FORMING H. Bok, J.W. Choi, M.-G. Lee, F. Barlat*</p>		
	hot forming methods	advanced experimental methods	non-conventional methods
09:15	<p><i>ZINC-ALLOY COATING– ADVANCED OPTIONS IN HOT PRESS FORMING</i> M. Köyer, T. Gerber, G. Parma, J. Banik, S. Sikora, F.-J. Lenze</p>	<p><i>IMPLICATION OF A NEW KIND OF STRUCTURE BUILDING DURING DEEP DRAWING TO MINIMIZE LOCAL IMPERFECTIONS IN CRASH PERFORMING ELEMENTS</i> H. Niemeier*, X. Jing, W. Päufer, T. Ludewig, J. Schrödter, S. Hübner, B.-A. Behrens</p>	<p><i>IMPROVING THE SURFACE QUALITY IN THE INCREMENTAL SHEET FORMING PROCESS</i> B. Lu, J. Chen*, X. Song, J. Cao</p>
09:35	<p><i>TOWARDS THE GENERATION OF TAYLORED TEMPERED COMPONENTS: CONCEPT DEFINITION AND PROCESS PARAMETERS OPTIMIZATION</i> L. Galdos*, E. Sáenz de Argandoña, R. Ortubay</p>	<p><i>SENSITIVITY ANALYSIS ON THE CALCULATED BENDING ANGLE IN THE INSTRUMENTED BENDING TEST</i> P. Larour*, B. Hackl, F. Leomann</p>	<p><i>INFLUENCE OF BHF-PUNCH MOTION ON DRAWABILITY OF AHSS SHEETS</i> O. Majidi, M.-G. Lee, F. Barlat*</p>
09:55	<p><i>A NEW TRY OF HOT STAMPING PROCESS WITH HIGHER STRENGTH-DUCTILITY BALANCE</i> X. Han*, P.S. Xin, X. Hao, Z.S. Cui</p>	<p><i>ADVANCED SHEET METAL PARTS QUALITY CONTROL IN THE PRESS SHOP TO ACHIEVE ZERO DEFECT STAMPING PRODUCTION</i> Q. Braun*, D. Hortig, M. Merklein</p>	<p><i>ADVANTAGES OF CONTROLLED MOTION IN NONISOTHERMAL WARM FORMING</i> S. Kaya*</p>
10:15	coffee break		
10:45	<p><i>FORMING ANALYSIS IN PRESS HARDENING</i> C. Sunderkoetter*, H.-E. Marusch, A. Plath</p>	<p style="text-align: center;">innovative materials</p> <p><i>DEVELOPMENTS OF MG WARM FORMING TECHNOLOGIES</i> S.-H. Zhang*, G.-S. Song, L. Zheng</p>	<p><i>FORMING BEHAVIOR OF THIN FOILS</i> S.V. Joshi, H. Puthran, K. Narasimhan*</p>
11:05	<p><i>WARM BULGE TESTING OF ADVANCED HIGH STRENGTH STEELS</i> M.-G. Lee*, J.-Y. Lee, L. Xu, F. Barlat, R.H. Wagoner</p>	<p><i>A NEW CONSTITUTIVE MODEL FOR MAGNESIUM</i> S.H. Wu*, N.N. Song, F.M. Andrade Pires, A.D. Santos, A. Barata da Rocha</p>	<p><i>STAGE COEFFICIENTS STUDY FOR MULTISTAGE DRAWING IN STRETCHING MODE</i> A. Danel*, A. Maillard</p>
11:25	<p><i>PROCESSING OF ULTRA HIGH-STRENGTH STEELS INVOLVING THERMO-MECHANICAL HARDENING EFFECTS</i> W. Homberg, T. Rostek*</p>	<p><i>FORMABILITY OF TP340 PURE TITANIUM SHEET IN DEEP DRAWING SUPERIMPOSED ULTRASONIC VIBRATION</i> G. Iwamatsu*, Y. Okude, S. Yoshihara, T. Ishii</p>	
11:45	lunch break		
13:00	departure technical tours		