Institut für Virtuelle Produktion
Institute of Virtual Manufacturing

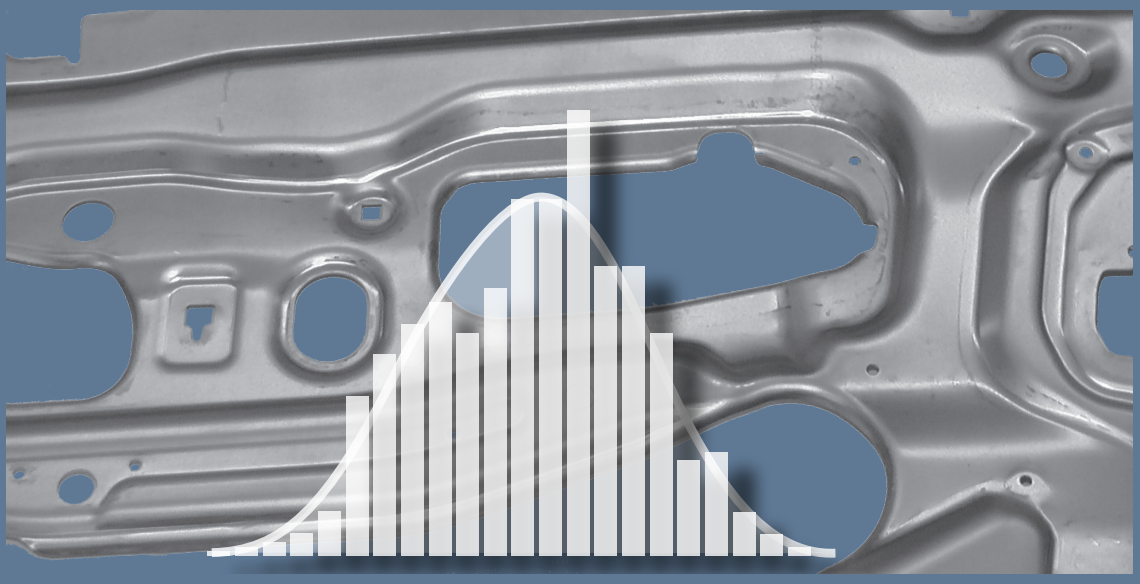
ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

iddrg
International Deep Drawing Research Group

2013 CONFERENCE

zurich | switzerland

june 2–5 | 2013



general information

contents

conference program

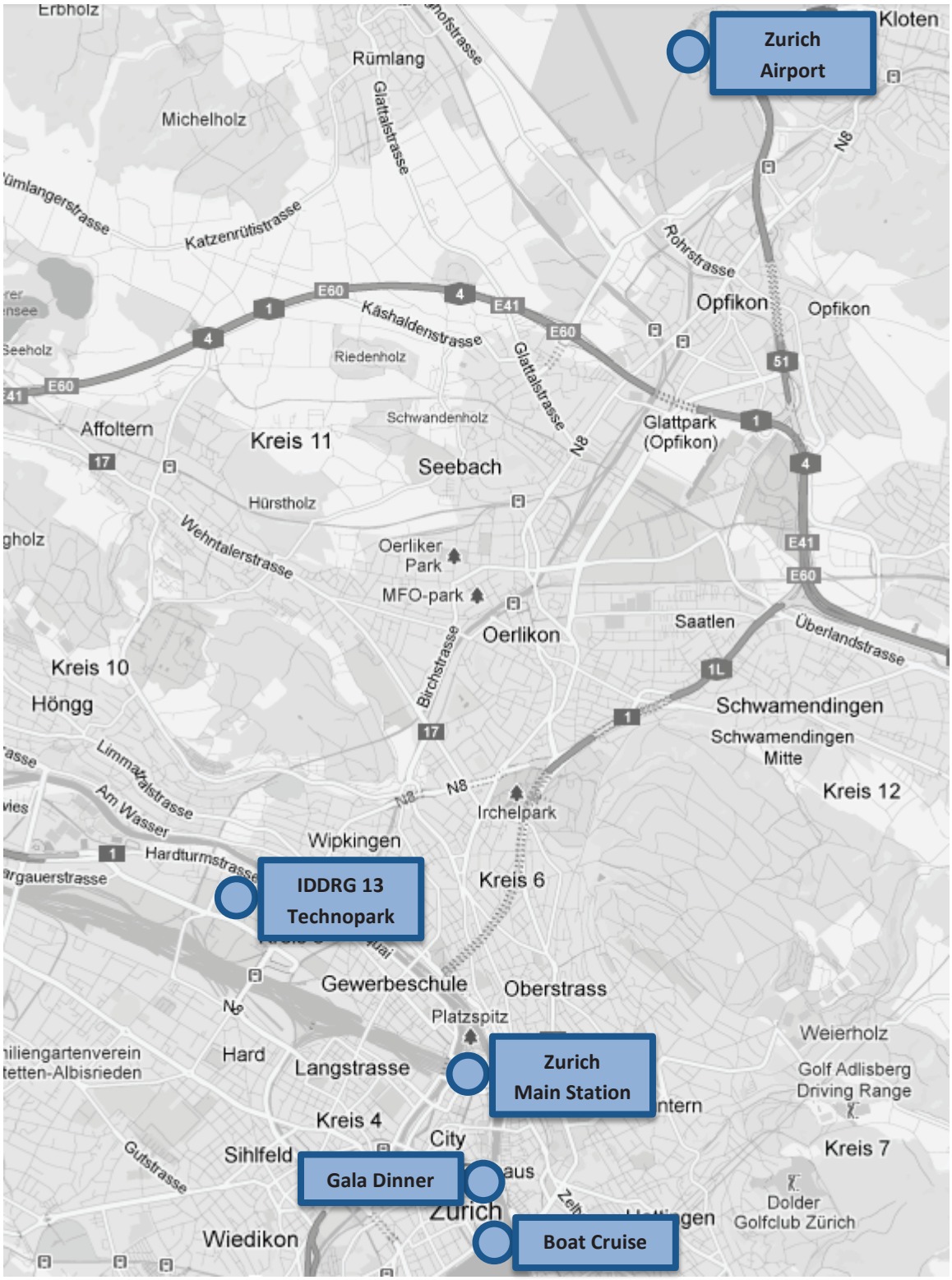
Sunday	02.06.2013
17.00 – 19.00	welcome drink / registration
Monday	03.06.2013
from 07.30	registration
08.30 – 08.40	welcome speech (auditorium)
	Prof. Dr. Pavel Hora, IVP, ETH Zurich, Switzerland
08.40 – 09.25	plenary session (auditorium)
	Dr. Lutz Kessler, Thyssen Krupp Steel Europe, Germany
09.25 – 10.25	parallel sessions (auditorium / cobol / fortran)
10.25 – 10.55	*coffee break*
10.55 – 12.15	parallel sessions (auditorium / cobol / fortran)
12.15 – 14.15	*lunch break*
14.15 – 15.00	plenary session (auditorium)
	Prof. Dr. Wolfram Volk, utg TU München, Germany
15.00 – 15.45	plenary session (auditorium)
	Daniel Jubera, Novelis Switzerland SA
15.45 – 16.15	*coffee break*
16.15 – 17.35	parallel sessions (auditorium / cobol / fortran)
19.15 – 23.00	boat cruise

Tuesday	04.06.2013
08.30 – 09.15	plenary session (auditorium)
	Prof. Dr. Tomasz Wierzbicki, MIT, USA
09.15 – 10.00	plenary session (auditorium)
	Dr. Thomas Stoughton, GM, USA
10.00 – 10.45	plenary session (auditorium)
	Dr. Kostas Danas, C.N.R.S., ParisTech, France
10.45 – 11.15	*coffee break*
11.15 – 12.15	parallel sessions (auditorium / cobol / fortran)
12.15 – 14.15	*lunch break*
14.15 – 15.00	plenary session (auditorium)
	Dr. Robert Struck, Volkswagen AG, Germany
15.00 – 16.00	parallel sessions (auditorium / cobol / fortran)
16.00 – 16.30	*coffee break*
16.30 – 17.30	parallel sessions (auditorium / cobol / fortran)
19.00 – 23.00	gala dinner (zunfthaus zur meisen)

Wednesday	05.06.2013
08.30 – 09.15	plenary session (auditorium)
	Prof. Dr. Frèdèric Barlat, POSTECH, Rep. of Korea
09.15 – 10.15	parallel sessions (auditorium / cobol / fortran)
10.15 – 10.45	*coffee break*
10.45 – 11.45	parallel sessions (auditorium / cobol / fortran)
11.45 – 13.00	*lunch*
13.00 – 17.30	technical tour FRANKE
13.15 – 19.45	technical tour FEINTOOL
14.00 – 18.00	alternative trip Rhine Falls

Thursday	06.06.2013
07.00 – 20.00	technical tour DAIMLER

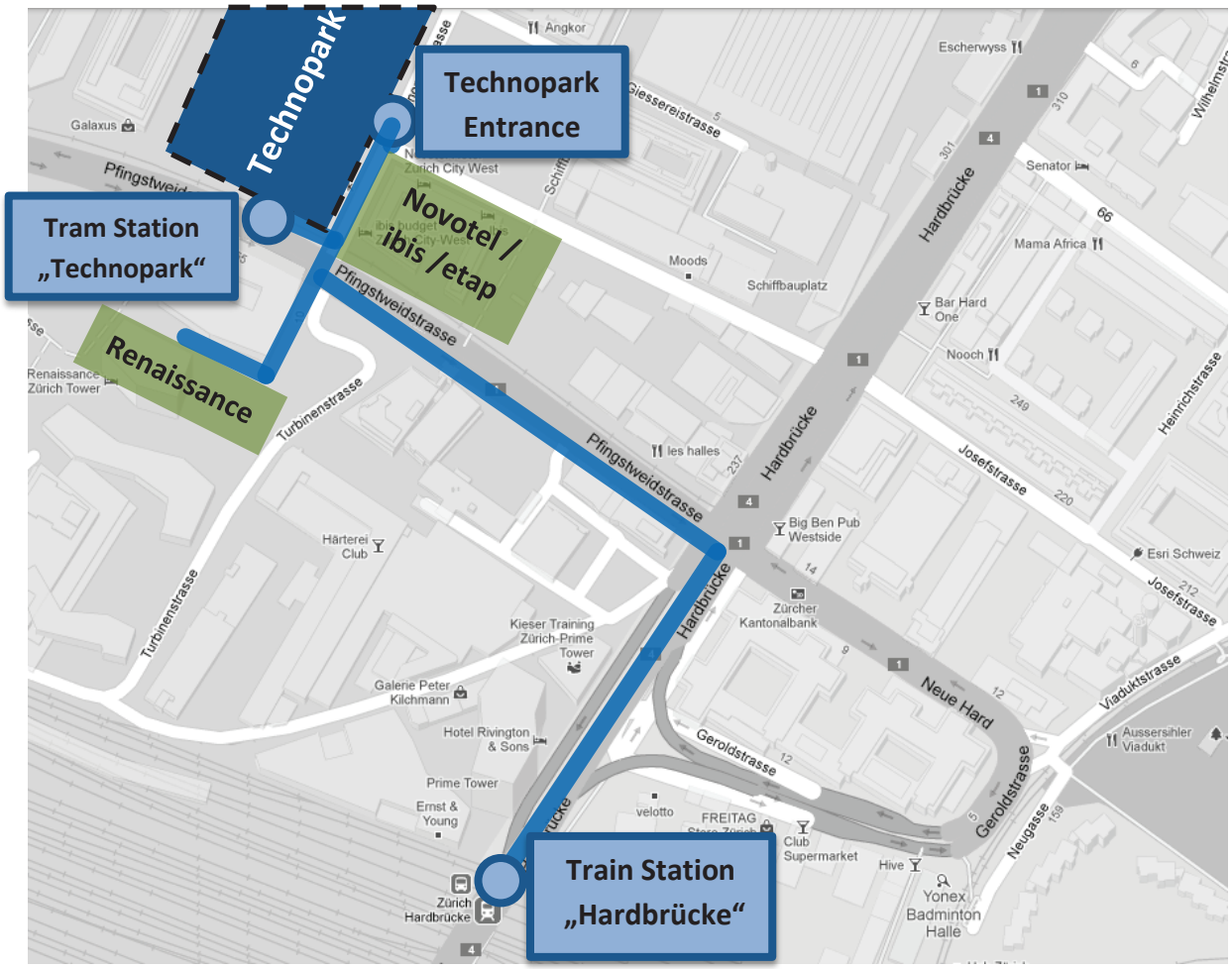
overview locations



transportation info

Sunday, 02.06.2013

Registration, Welcome Drink (17.00 -19.00)



Airport – Technopark:

Public Transportation:

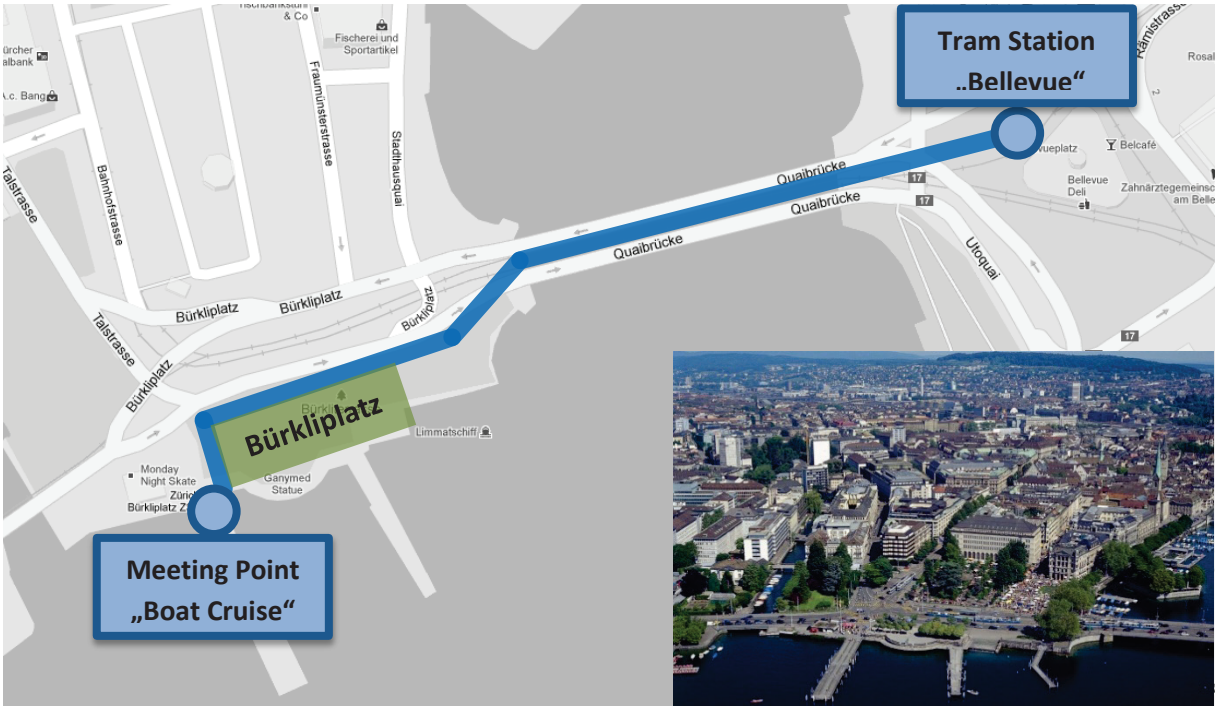
(1)	Urban Train „S16“	Zurich Airport → Zurich Hardbrücke
	10’ walk	Zurich Hardbrücke → Technopark
(2)	Train	Zurich Airport → Zurich Main Station
	“Tram 4”	Zurich Main Station → Technopark

By car: Please consider that we do not have the possibility to offer reserved parking areas for our guests at Technopark. There is a limited number of parking places in and around the conference location at Technopark, all subject to charges.

By taxi: A taxi run from the airport to the conference venue / hotel area should cost around 50 CHF

Monday, 03.06.2013

Boat Cruise (begin 19.15): Meeting Point Bürkliplatz



We recommend public transportation.

<u>Public Transportation:</u>

„Tram 4“	Technopark	→ Bellevueplatz
2‘ walk	Bellevueplatz	→ Bürkliplatz

Same itinerary for returning to Technopark.

Tuesday, 04.06.2013

Conference Gala Dinner (begin 19.00): Zunfthaus zur Meisen (Münsterhof 20)

We recommend public transportation.

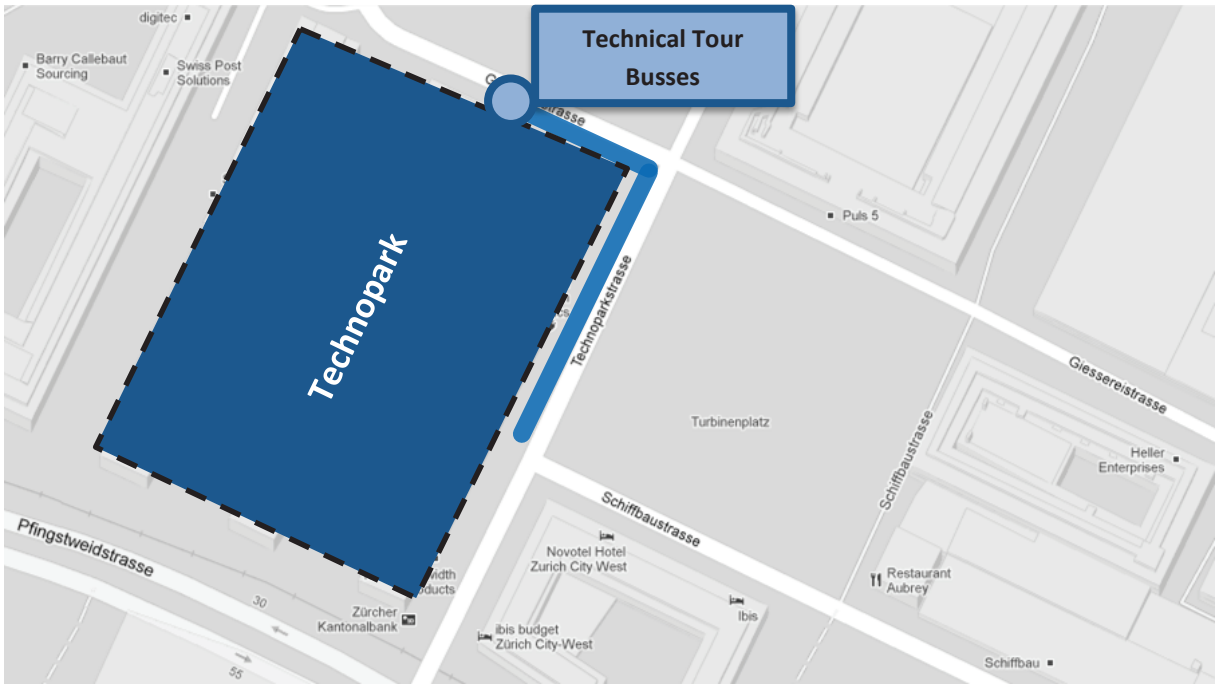
Public Transportation:

„Tram 4“	Technopark	→ Helmhaus
2’ walk	Helmhaus	→ Zunfthaus zur Meisen

Same itinerary for returning to Technopark.

Wednesday, 05.06.2013

Technical Tours: Busses will wait at the Technical Tour Bus Stop.



Technical Tour: **FRANKE**

Departure: 13.00

Technical Tour: **FEINTOOL**

Departure: 13.15

Alternative Trip: **RHINE FALLS**

Departure: 14.00

Thursday, 06.06.2013

Technical Tour: **DAIMLER**

Departure : 07.00

Conference Venue

iddrg 2013 CONFERENCE
International Deep Drawing Research Group
june 2-5 | 2013
zurich | switzerland

monday | june 3rd | morning

Institut für Virtuelle Produktion
Institute of Virtual Manufacturing

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

monday | june 3rd | afternoon

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

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**
	ESTIMATION OF THE LIMIT HOLE EXPANSION RATIO AFFECTED BY PRE-STRAIN PRODUCED DURING HOLE PIERCING PROCESS TO MAKE TEST SPECIMEN K. Ito*, N. Mori, T. Imanaga, M Narita	*EXPERIMENTAL AND NUMERICAL FRICTION CHARACTERIZATION FOR LARGE-SCALE FORMING SIMULATIONS* J. Hol*, V.T. Meinders, A.H. van den Boogaard	*ANALYSIS METHOD TO IDENTIFY CAUSE OF SPRING-BACK IN PRESS FORMING* M. Urabe*, A Ishiwatari, H. Kano, J. Hiramoto, T. Inazumi
11:35	*DEVELOPMENT OF CRACK PREDICTION METHOD CONSIDERING BENDABILITY OF ULTRA-HIGH STRENGTH STEEL SHEETS* Y. Fujii*, T. Shinmiya, K. Higai, Y. Yamasaki, T. Inazumi	*THE USE OF GEOMETRIC DRAW BEADS FOR TOOL WEAR PREDICTION IN SHEET METAL STAMPING* M.P. Pereira*, J.W. Swallow, B.F. Rolfe	*TIME-DEPENDENT RESIDUAL STRESS AND GEOMETRY ANALYSIS OF UHSS DEEP DRAWN COMPONENTS* B. Wadman*, P. Ottosson, J. Holmberg, L.-O. Ingemarsson, E. Sagström
11:55	*COMPARISON BETWEEN THE LEMAITRE AND A MODIFIED LEMAITRE DAMAGE MODEL ON SHEET STEEL BLANKING* B.-A. Behrens, A. Bouguecha, I. Peshekhodov, C. Bonk*	*WEAR BEHAVIOR OF A MICRO BLANKING AND DEEP DRAWING TOOL COMBINATION WITH DIFFERENT DRAWING RATIO* H. Flosky*, F. Vollertsen	*INFLUENCE OF USED YIELD FUNCTION IN DEEP DRAWING SIMULATION OF HIGHLY ANISOTROPIC ALUMINUM ALLOY* 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. Waltl, R. Struck*, J. Kappey, A. Eckert, D. Barth		
	localization and failure	**advances in friction and wear modeling**	**constitutive modeling**
15:00	*OPTIMIZATION OF THE CUTTING EDGE GEOMETRY FOR SINGLE STAGED TRIMMING WITH HIGH CUTTING ANGLES* M. Bednarz*, A. Lipp, C. Sunderkötter, T. Hallfeldt, M. Grünbaum, W. Volk	*DETERMINATION OF FRICTION COEFFICIENTS FOR VARIOUS LUBRICATION CONDITIONS IN STRETCH FORMING PROCESS* C. Karadogan*, C.O. Alkas, H.A. Hatipoglu	*A STUDY REVIEW ON YIELDING AND HARDENING BEHAVIOR OF SHEET METAL* W-P. Wang, K.-S. Diao, X.-D. Wu*, M. Wan
15:20	*INFLUENCE OF THE SHEARED EDGE CONDITION ON THE HOLE EXPANSION OF DUAL PHASE STEEL* N. Pathak, C. Butcher*, M. Worswick	*THE EFFECT OF ULTRASONIC VIBRATION ON FRICTION IN SHEET METAL FORMING* J.Y. Park*, H.Y. Lee, K.C. Park	*APPLYING A MODIFIED AUSTENITE TRANSFORMATION MODEL INTO A THERMO-MECHANICAL MODEL OF HOT STAMPING* A. Abdollahpoor, X. Chen, M. Pereira*, A. Asgari, N. Xiao, B. Rolfe
15:40	*EXPERIMENTAL INVESTIGATION OF THE INFLUENCE OF SHEAR CUTTING PARAMETERS ON THE EDGE CRACK SENSITIVITY OF DUAL PHASE STEELS* M. Liewald, M. Gall*	*VERIFICATION OF SHEET METAL FORMING SIMULATION OF ADVANCED THIN PLATE PARTS USING A FIRST ORDER FRICTION MODEL* P. Gabrielson*, L Ekdahl, V. Hafsäter, H. Löfgren, J.-E. Ståhl	*PREDICTION OF RUPTURE PHENOMENA IN SHEET METAL FORMING* M. Gorji*, P. Hora, B. Berisha
16:00	coffee break		
16:30	*MULTISCALE SIMULATION OF DUCTILE DAMAGE OF DUAL-PHASE STEELS* J. Lian*, S. Münstermann, W. Bleck	**springback modeling**	**forming limits and quality control**
		AN ELECTRIC TOUCH FOR ALUMINUM SPRINGBACK ELIMINATION M.A. Lobdell, C.P. Nikhare*, J.T. Roth	*EVALUATION METHOD OF STRETCH FLANGE-ABILITY BY STRAIN CONCENTRATION AND STRAIN GRADIENT* H. Yoshida*, T. Yoshida, T. Miyagi, K. Sato, J. Nitta, M. Suehiro
16:50	*MULTIMODALITY CHARACTERIZATION OF BURR EDGE IN SHEET BLANKING* S. Kumar , K. Narasimhan, A.Tewari*, V. Hiwarkar	*ON THE VARIATION OF ELASTIC MODULUS IN LOADING, UNLAODING AND RELOADING* A. Melander, N. Stenberg*	*RELATIONSHIP MODELING OF PROCESS PARAMETERS FOR WRINKLING OPTIMIZATION OF TAIL CAP – AN ATOMOTIVE COMPONENT* M. Kakandikar Ganesh*, M. Nandedkar Vilas
17:10	FAILURE PREDICTION METHODS IN 3D ALE FINE BLANKING SIMULATIONS T. Wesner*, N. Manopulo, P. Hora	*FINITE ELEMENT SIMULATIONS FOR SHEET METAL FORMING PROCESS WITH FUNCTIONAL INPUT FOR THE MINIMIZATION OF SPRINGBACK* H. ul Hassan*, J. Fruth, A. Güner, T. Mennecart, A.E. Tekkaya	*FINITE ELEMENT ANALYSIS FOR OPTIMISING PROCESS PARAMETERS IN TUBE HYDROFORMING PROCESS* S. Memon, A. Omar, K. Narasimhan*
17:30	end of session		
19.00	gala dinner		

wednesday | june 5th | morning

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