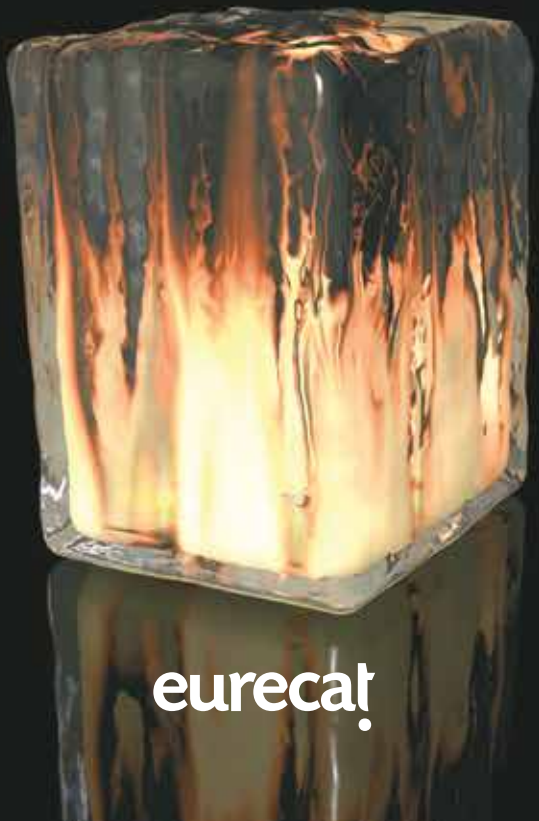
CHS² – 2022

8th International Conference on

HOT SHEET METAL FORMING OF HIGH-PERFORMANCE STEEL

May 30th to June 2nd, 2022,Barcelona, Spain

PROGRAM



Organized by:

LULEÅ UNIVERSITY OF TECHNOLOGY

eurecat

In collaboration with:

AIST ASSOCIATION FOR IRON & STEEL TECHNOLOGY

TOWARDS SUSTAINABLE, VERSATILE, RELIABLE AND EFFICIENT HOT FORMING OF HIGH PERFORMANCE MATERIALS FOR EMERGING INDUSTRIAL CHALLENGES

The interest in thermo-mechanical forming processes of high-performance steel, and high-performance materials in general, has grown significantly in the recent years. The automotive sector has been the main actor driving this development, pushed by the constant demands on passenger's safety and environmental regulations. Press hardening of boron steels is now a mature technology, deployed all around the world. It showed to be unbeatable for forming complex shape parts and easy forming of high strength materials with reduced spring-back. It also allows producing parts with tailored properties under accurate process monitoring. These benefits offer great flexibility and opens up possibilities to implement new materials in new industrial applications.

The lightweight demands that triggered the development of press hardening are still valid, but new industrial challenges are also emerging that requires sustainable, versatile, reliable and efficient forming processes. **Sustainability:** New trends in eco-design stimulate the application of materials with high mechanical and also environmental performance. This brings recyclability and life cycle assessment as necessary conditions for part design.

Process versatility: many materials for lightweighting can be transformed, as steels, stainless steels, light alloys (Al, Mg, Ti) and even multi-material solutions can be approached, such as metal sheets and CFRP patches. **Process reliability and efficiency:** With the rise of I4.0 concept and its associated technologies, new research lines focusing on manufacturing optimization towards the zero-defect paradigm have gained attention. Artificial Intelligence and Machine Learning based solutions are reaching the maturity level for exploiting the large streams of production data generated thanks to the in-line sensors, workers feedback, reports, quality control, etc. Press hardening can benefit from I4.0 data analytics through customized solutions, which offers many possibilities to improve process efficiency and stability:

Press hardening and related thermo-mechanical processes represent technologies with outstanding potential to meet such emerging industrial challenges and it is ready to expand to new markets (as heavy duty and industrial vehicles, aerospace, etc), new applications (new needs from e-mobility) and new materials (stainless steels, light alloys, CFRP, hybrid materials….). Research and Development both on academic as well as on indus-

trial level is one of the most important prerequisites for continuous innovation in hot forming of high performance materials and open new scenarios to exploit their lightweight potential. The CHS² conferences series established a worldwide unique competence network to discuss about hot forming technologies and to boost their application to other markets or materials. The conferences have been held in both Europe and North-America with the aim to meet future challenges in materials utilization by the promotion of hot sheet metal forming technologies.

CONFERENCE SERIES AND SCOPE

The biannual CHS² conference series has after seven very successful conferences since 2008 grown into the leading platform for scientific exchange in hot forming technologies. The first conference was held in 2008 in Kassel (Germany) and up to the 7th edition in 2019 in Luleå (Sweden) new topics and interests steadily increased and settle down in every conference edition. In the 7th edition the industrial community brought their recent developments in new materials, new sheet coatings, joining technologies and process monitoring. In addition, more fundamental works dealing with process modelling, fatigue and fracture and physical metallurgy were presented by the academia to strength the basis for future industrial developments.

The 8th CHS² edition will be held in Barcelona (Spain) and aims to keep pushing the innovation trends in hot sheet metal forming technologies. Apart from the Mediterranean Sea breeze and warm hospitality of the city, the industrial area around Barcelona is one of the most active in press hardening technologies in the South of Europe. Many relevant actors in press hardening (carmakers, part makers, tool makers, etc.) have their production and R&D facilities in this area, with the research support of academia.

The year 2020 has been a long break without presential meetings. We all need to restart the networking activities we do every 2 years in the CHS² conference series. Consequently, we invite the specialists from all over the world to the 8th International Conference on Hot Sheet Metal Forming of High-Performance Steel CHS² 2022. This will be the opportunity to continue with the knowledge exchange and to benefit from each other's experience and expertise, under the warm environment of Barcelona and the Mediterranean Sea shore. The conference will be organized by Eurecat, the Technology Centre of Catalonia, together with the Luleå University of Technology.

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ABSTRACT AND PAPER SUBMISSION

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Updated information can be found on the conference homepage www.chs2.eu

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ORGANIZED BY

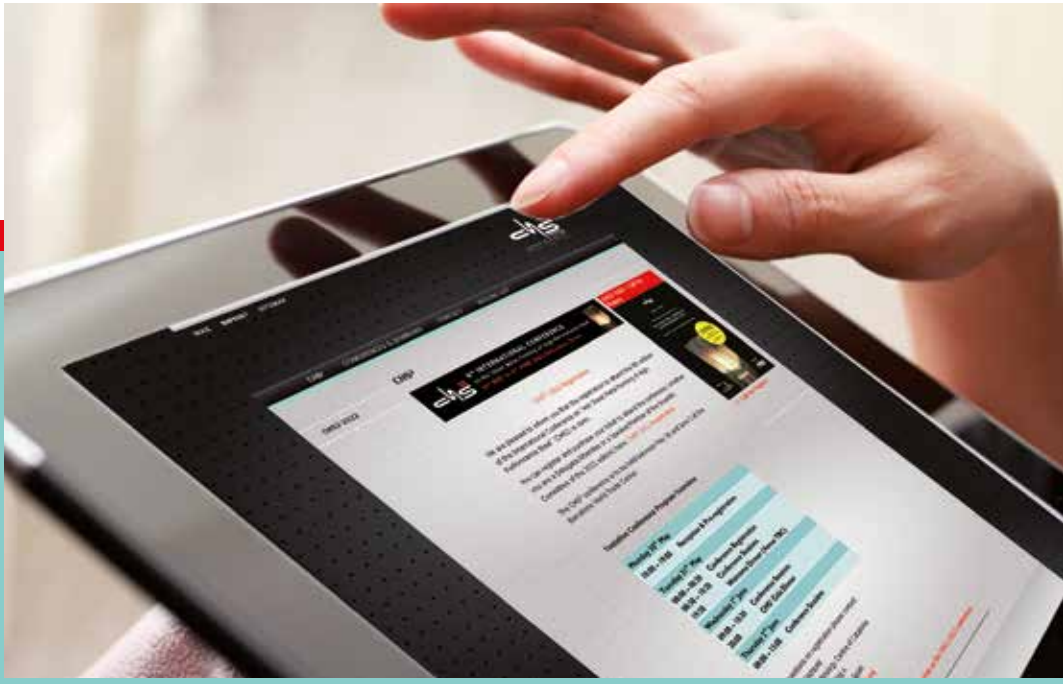
Eurecat, Technology Centre of Catalonia
Barcelona, Spain

Luleå University of Technology,
Luleå, Sweden

REGISTRATION

The Registration for the 8th International Conference on Hot Sheet Metal Forming of High-Performance Steel – CHS² 2022 is open now!

Online-registration: **www.chs2.eu**



COOPERATION

CHS^2 2022 is organized by Eurecat, Technology Centre of Catalonia, Barcelona, Spain and Luleå University of Technology, Luleå , Sweden, in collaboration with the Association for Iron & Steel Technology (AIST), USA.

VENUE 2022

Barcelona, Spain

For the first time, the CHS² conference
will be held in Barcelona, Spain,
May 30th – June 2nd, 2022,
at World Trade Center Barcelona.

WORLD TRADE CENTER
Moll de Barcelona s/n. Barcelona. Spain.
www.wtcbarcelona.com/en/

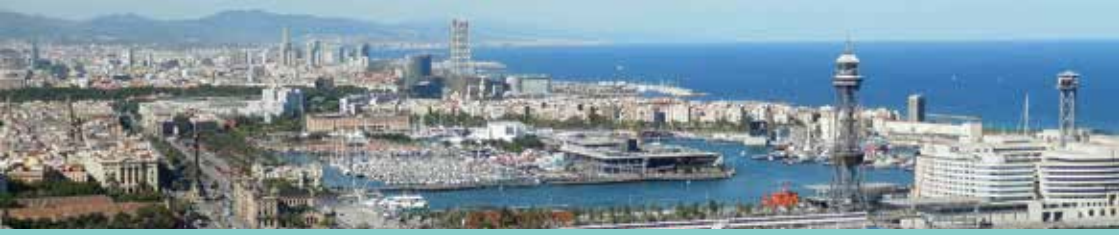
PROGRAM OVERVIEW

Monday 30th May	
18:00 – 19:00	Reception and pre-registration
Tuesday 31th May	
08:00 – 08:30	Conference Registration
08:30 – 18:15	Conference Sessions
20:00	Welcome Dinner at World Trade Center
Wednesday 1st June	
09:00 – 18:00	Conference Sessions
18:50	Gala Dinner (Meeting point at the Eurostars Gran Marina Hotel. Bus departure at 19:00 to Alella)
Thursday 2nd June	
09:00 – 12:40	Conference Sessions and Closure

WTCB Business Complex, Barcelona, Spain

TUESDAY, May 31, 2022

08:00	**Conference Registration**	
08:30	**Institutional Welcome** Mr. Xavier Aldeguer, General Director for Knowledge Transfer at the Department of Research and Universities of the Government of Catalonia	
08:40	**Opening** Prof. Mats Oldenburg, Luleå University of Technology; Prof. Jens Hardell, Luleå University of Technology; Prof. Daniel Casellas, Eurecat and Luleå University of Technology	
09:00	**Opening speech** At the tipping point of the next industrial revolution by Maria Persson-Gulda, CTO of H2 Green Steel	
	Conference Room A (Auditorim level -1) **A**	**Conference Room B (1st floor)** **B**
09:20	**Materials & Metallurgy I** **A1** Chaired by: Pascal Drillet	**Modelling & Simulation I** **B1** Chaired by: Lucia G. Barbu
09:20	**Microstructural evolution of the Al-Si coating due to various heating rates** Siyu Wu, Matthew Bolan, Constantin Chiriac, Cangji Shi, Alexander Bardelcik University of Guelph	**Thermo-metallurgical Modelling of Roller Hearth Furnace for Hot Stamping** Boxuan Zhao, Constantin Chiriac, Kyle Daun University of Waterloo
09:40	**Conversion treatment for aluminium-silicon coatings with improved properties for press hardening of flexibly rolled and welded blanks** Friedrich Luther, Marc Debeaux, Frank Beier, Kerstin Körner, Alexander Tenié Salzgitter Mannesmann Forschung GmbH	**Enhanced modelling of bainite formation and resulting mechanical properties in hot forming processes** Mats Oldenburg, Stefan Golling, Greger Bergman, Stefan Marth Luleå University of Technology
10:00	**Aluminium and Silicon additions combined with microstructural tailoring of Press Hardened Steel** Vicente P. Aroca, Francisca G. Caballero, Clément Philippot, Fabrice Germain, Carlos Capdevila CENIM-CSIC	**Investigation and modeling of austenite grain growth of conventional hot stamping steel and its influence on microhardness** Alexander Horn, Marion Merklein Institute of Manufacturing Technology – Friedrich-Alexander Universität Erlangen-Nürnberg



10:20	**Influence of forming temperature and partitioning on properties of steels for press-hardening** Kateřina Opatová, Hana Jirková, Martina Holá, Štěpán Jeníček University of West Bohemia – Regional Technological Institute	**Characterizing the Heat Transfer Coefficient in the Hot Stamping of Al-Si Coated 22MnB5 Steel** Arpan Singh, Kyle Daun, Clifford Butcher University of Waterloo
10:40	**Coffee Break**	

	Conference Room A (Auditorim level -1) **A**	Conference Room B (1st floor) **B**
11:20	**Modelling & Simulation II** **A2** Chaired by: Mike Worswick	**Failure Mechanism** **B2** Chaired by: Josef Faderl
11:20	**Evaluation of main influencing parameters on the distortion of press hardened components with tailored properties based on statistical methods** Matthias Nestler, Rico Haase, André Albert, Martin Boesler, Stefan Polster, Verena Kräusel Fraunhofer Institute for Machine Tools and Forming Technology IWU	**Development of biaxial tests for forming and fracture limit characterization of boron steel in hot stamping and hardened conditions** Gustaf Gustafsson, Henrik Kohkoinen Gestamp Hardtech, R&D BiW
11:40	**2000 PHS Press Hardening Steel mechanical characterization and virtual simulation of automotive crash applications.** Matteo Ferrea, Daniele De Caro, Erik Baldoin, Michele Maria Tedesco, Bernardo Barile Centro Ricerche FIAT (FCA)	**Influence of laser tempering on fracture toughness of press hardened steels-correlation with components crash perfomance** David Frómeta, Sergi Parareda, Jaume Pujante, David Corón, Laura Galceran, Daniel Casellas Eurecat, Centre Tecnològic de Catalunya

TUESDAY, May 31, 2022

12:00	**Characterization of the Formability of Al-Si Coated PHS1800 during Hot Stamping** Ruijian He, Ryan George, Sante DiCecco, Pedram Samadian, Constantin Chiriac, George Luckey, Jimi Tjong, Cangji Shi, Jason Boettger, Clifford Butcher, Michael Worswick University of Waterloo	**Wear mechanisms of the tool steel used in press hardening of an Al-Si coated boron steel: a case study** Negar Panahi, Mikael Mikael Fallqvist, Petter Ulfberg, Mikael Grehk, Pavel Krakhmalev Karlstad university
12:20	**Experimental and numerical investigation of final product properties of Ductibor® 1000 AS under different process conditions** Alper Güner, Maximilian Sonntag, Clement Philippot, Jacques Bittendiebel, Benjamin Sarre, Ludovic Dormegny, Alborz Reihani, Sebastian Heibel AutoForm Engineering	**On the Fracture Response of Tailor Hot-Stamped Ductibor® 1000-AS Steel** Pedram Samadian, Armin Abedini, Clifford Butcher, Michael J. Worswick, Skye Malcolm, Dan Papalazarou, Willie Bernert, Jason Boettger University of Waterloo
12:40	**Impact crash tests of high-strength steels using 3D high-speed digital image correlation and finite element analysis** Simon Jonsson, Pär Jonsén, Jörgen Kajberg Department of Engineering Sciences and Mathematics, Luleå University of Technology	**Prevention of hydrogen uptake in Al-Si coated 22MnB5 steel using Physical Vapour Deposition coatings** Mélodie Mandy, Florin-Daniel Duminica, Xavier Vanden Eynde, Cédric Georges, Maïwenn Larnicol, Raisa Grigorieva, Thierry Sturel, Pascal Drillet CRM Group
13:00	**Lunch (Port Vell Room)**	

14:20	**Tribology and Coatings I** A3 Chaired by: Leonardo Pelcastre	**Parts Performance I** B3 Chaired by: Henrik Sieurin
14:20	**Hot strip draw wear test and influence of tool material on adhesive and abrasive wear** Jenny Venema, Robert Stache, Mathias Kotzian Tata Steel	**A new methodology to validate crashworthiness of Hot Stamped Laser Welded Blanks** Sadok Gaied, Ivan Viaux ArcelorMittal Global R&D
14:40	**Investigation of the impact on the layer formation of AlSi coated boron-manganese steel in regard to friction and wear** Franz He, Marion Merklein Institute of Manufacturing Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg	**Effect of Niobium addition on hydrogen embrittlement susceptibility of press hardening steel grade 1500.** Fabio D'Aiuto, Renzo Valentini, Linda Bacchi, Serena Corsinovi, Hardy Mohrbacher NiobelCon BV
15:00	**Discontinuous laser dispersing of titanium nitride based hard ceramic particles for improving the tribological behaviour of hot stamping tools** Stephan Schirdewahn, Nils Carstensen, Felix Spranger, Kai Hilgenberg, Marion Merklein Institute of Manufacturing Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg	**An innovative rapid procedure for fracture toughness characterization of advanced high strength steels and press hardened steels** Laura Grifé, David Frómeta, Sergi Parareda, Antoni Lara, Daniel Casellas Eurecat, Centre Tecnològic de Catalunya
15:20	**Tribological behavior of post-machined additively manufactured tool steel in hot stamping conditions** Gabriel Macêdo, Leonardo Pelcastre, Jens Hardell Luleå University of Technology	**Evaluation of formability and performance for automobile parts manufactured by STAF (Steel Tube Air Forming) process** Masayuki Ishizuka, Kozaburo Sakamaki, Tomoyoshi Shiraishi, Kenta Watanabe, Hiroyuk Kumeno, Kimihiro Nogiwa, Norieda Ueno Sumitomo Heavy Industries, Ltd.
15:40	**Refreshment Break**	

TUESDAY, May 31, 2022

16:00	**Light Metals I** A4 Chaired by: Jörgen Kajberg	**Parts & Process I** B4 Chaired by: Grant Thomas
16:00	**Efficient Processing of Precipitation Hardenable High-Strength Aluminum Alloys by Combined Forming and Aging Processes** Steffen Lotz, Emad Scharifi, Ursula Weidig, Kurt Steinhoff Metal Forming Technology, University of Kassel	**Effect of in-die cooling paths on the tempering level of martensite and its related mechanical behavior** Clement Philippot, Sebastian Cobo, Vicente Perez Aroca, Carlos Capdevila, Sebastien Allain, Juan Macchi, Jaume Pujante, Paul Åkerstrom, Jonas Edberg, Greger Bergman, Laura Romero Ruiz ArcelorMittal Global R&D – Product center
16:20	**The Influence of Hot Stamping Process Parameters on Geometry and Mechanical Properties of High Strength Aluminum Bumpers** Unai Ibarretxe, Sara Garmendia, Nagore Otegi, Unai Argarate, Andoitz Aranburu, Aitor Ormaetxea, Monica Carranza, Lander Galdos. Mondragon Unibertsitatea	**Industrialization of an AlSi-coated press-hardening steel with reduced heating time, reduced hydrogen intake and reduced CO2 footprint for the hot stamper.** Raisa Grigorieva, Christine Dessain, Ludovic Dormegny, Pascal Drillet, Julio Rivera Garcia, Ivan Viaux ArcelorMittal Global R&D – Product Center
16:40	**Aluminum AA5754 Warm forming for railway vehicle applications** Eduard Garcia-Llamas, Jaume Pujante, Marc Grané, Miquel Brunet Oliva Torras	**Ges-SoftBend tailored properties of press-hardened steel by VCSEL Laser Technology** Daniel Minh Maier, Michael Fritz, Sabrina Vogt, Laura Galceran Oms, Marc Olavide Rubio, Ronald Verstraeten TRUMPF Laser- und Systemtechnik GmbH
17:00	**Influence of Aging Strategies on the Strain-Dependent Damping of the High-Strength Aluminum Alloy and AA7075** Steffen Lotz, Emad Scharifi, Ursula Weidig, Jürgen Göken, Kurt Steinhoff, Jiali Zhang, Christoph Broeckmann Metal Forming Technology, University of Kassel	**Multi Part Integration approach for Body Structure using breakthrough Hot Stamped Laser Welded Blanks solutions** Joel Wilsius, Kevin Luttenschlager ArcelorMittal Global R&D – Product Center, ArcelorMittal Tailored Blanks
17:20	**Break**	

17:35	**Parts Performance II** A5 Chaired by: David Frómeta	**Tribology & Coatings II** B5 Chaired by: Giselle Ramírez
17:35	**Understanding and Mitigating Hydrogen Embrittlement of Press-Hardened Steels** Lawrence Cho, Eunjung Seo, John G. Speer, Kip O. Findley, Kyoung Rae Jo, Seong Woo Kim, Peter E. Bradley, Matthew J. Connolly, May L. Martin, Damian S. Lauria, Andrew J. Slifka Advanced Steel Processing and Products Research Center, Colorado School of Mines	**Laboratory scale test methodology for performance evaluation of lubricants for hot stamping of aluminium** Barbara Rodriguez, Justine Decrozant-Triquenaux, Jens Hardell, Leonardo Pelcastre Luleå University of Technology
17:55	**Effect of cutting clearance and sandblasting on fatigue of thick CP800 steel sheets for heavy-duty vehicles** David Gustafsson, Sergi Parareda, Pär Jonsén, Jörgen Kajberg, Erik Olsson Luleå University of Technology	**Influencing parameters on the onset of galling during hot forming of aluminium** Yogendra Joshi, Leonardo Pelcastre, Graham Twiddle, Damian Szegda, Jens Hardell Luleå University of Technology
18:15	**End of Day 1**	
20:00	**Welcome Dinner at World Trade Center**	

WEDNESDAY, June 1, 2022

08:30	**Opening Doors**	
	Conference Room A (Auditorim level -1) **A**	**Conference Room B (1st floor)** **B**
09:00	**Materials & Metallurgy II** **A6** Chaired by: Lawrence Cho	**Thick Sheets** **B6** Chaired by: Thomas Kurz
09:00	**Mechanical Behavior of 22MnB5 and 37MnB5 at high temperatures** Mihaela Teaca, Laurent Durrenberger, Pascal Drillet, Ludovic Dormegny, Sebastian Cobo, Morgan Stein, Antoine Amorese ArcelorMittal	**Essential work of fracture method for toughness evaluation of thick press hardened 22MnB5 plates** Ilef Tarhouni, David Frómeta, Daniel Casellas Eurecat, Centre Tecnològic de Catalunya
09:20	**Influence of Isothermal Soaking After Galvannealing Heat Treatment on Microstructure of Galvannealed (GA) Coating During Hot Stamping Process** Henrique Lacerda Eleuterio, Aldo Henrique Almeida Barbosa, Vicente Tadeu Lopes Buono Usiminas	**Warm forming of hot rolled high strength steels with enhanced fatigue resistance as a lightweight solution for heavy-duty vehicles** Sergi Parareda, Daniel Casellas, David Frómeta, Laura Grifé, Antoni Lara, Jaume Pujante, Mats Oldenburg, Reinhard Hackl, Markus Sonnleitner, Henrik Sieurin Eurecat, Centre Tecnològic de Catalunya
09:40	**An evaluation of hot-stamping process variables for industrially produced press hardened steel grades with strengths ranging from 500 MPa to 2000 MPa** Chris Jones, Garrett Angus, Grant Thomas Cleveland-Cliffs Steel Corporation	**Optimization of Thick 22MnB5 Sheet Steel Part Performance through Laser Tempering** Jaume Pujante, David Frómeta, Eduard Garcia-Llamas, Stefan Golling, Carlos Seijas, Daniel Casellas, Laura Galceran, David Corón Eurecat, Centre Tecnològic de Catalunya

10:00	**Effect of rapid tempering on the mechanical properties and microstructure of 51CRV4 Steel** Antti Kaijalainen, Oskari Haiko, Saeed Sadeghpour, Vahid Javaheri, Jukka Kömi Centre for Advanced Steels Research, University of Oulu	**A testing methodology for hot rolled high strength steels under warm forming conditions** Fredrik Larsson, Mats Oldenburg, Pär Jonsén Luleå University of Technology
10:20	**Press hardening on high-strength steels with higher ductility values** Hana Jirková, Kateřina Opatová, Štěpán Jeníček, Ludmila Kučerová Regional Technological Institute, University of West Bohemia	**Modified hot stamping process and fatigue behavior of thick 22MnB5 sheets** Bernd-Arno Behrens, A. Esderts, Rainer Masendorf, Sven Hübner, Max Gabriel, Chris Pfeffer Institut für Umformtechnik und Umformmaschinen
10:40	**Coffee Break**	
11:20	**Parts & Process II** **A7** Chaired by: Paul Belanger	**Materials & Metallurgy III** **B7** Chaired by: Francisca Caballero
11:20	**Lessons learned from use of Thermal Printer in heat treatment process for press-hardening applications on an industrial scale** Harald Lehmann, Nathalie Macherey schwartz GmbH	**New MBW1900 press hardening steel combined with AS Pro coating for excellent resistance to hydrogen embrittlement and improved material performance** Cassia Castro Müller, Thomas Gerber, Janko Banik, Dirk Rosenstock, Sebastian Stille, Aleksandra Bejm thyssenkrupp Steel Europe AG
11:40	**Feasibility Study For Bumper Reinforcement manufactured with STAF (Steel Tube Air Forming) process** Kozaburo Sakamaki, Masayuki Ishizuka, Hiroyuki Kumeno, Kimihiro Nogiwa, Norieda Ueno Sumitomo Heavy Industries, Ltd.	**Comparison between the laboratory and field results of hot stamping Q&P treated samples** Farnoosh Forouzan, Esa Vuorinen, Karin Gärdelid, Henrik Sieurin, Joachim Larsson, Marta-Lena Antti Luleå University of Technology

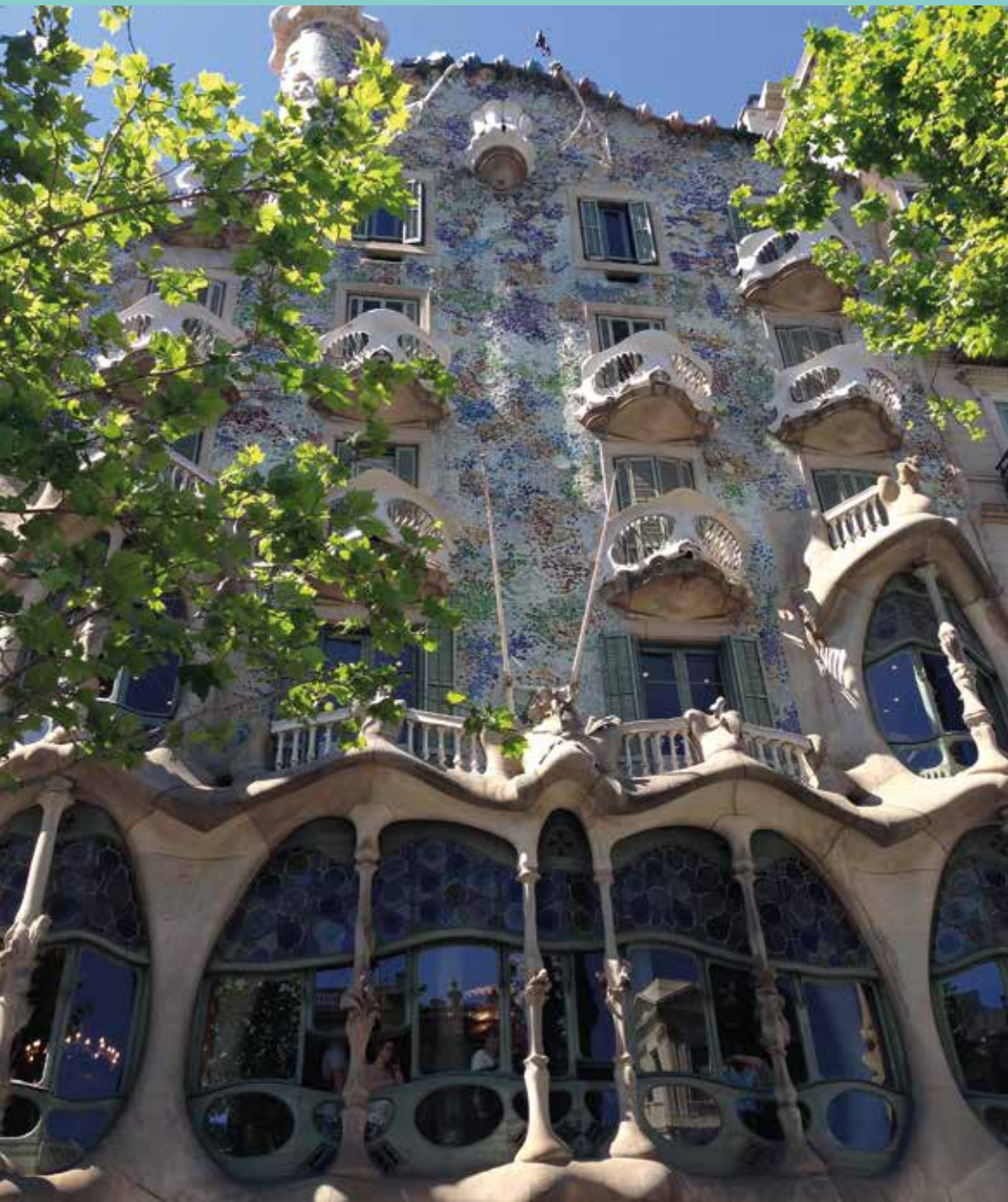
WEDNESDAY, June 1, 2022

12:00	**Evaluation of the bond strength of roll clap chromium-boron steel composites for Hot Stamping** Markus Stennei, Aron Ringel, Tobias Plum, Rickmer Meya, Felix Kolpak, Johannes Lohmar, A. Erman Tekkaya, Gerhard Hirt Institute of Forming Technology and Lightweight Components, TU Dortmund University	**Effect of TiN inclusions on the crash ductility behaviour of Press Hardened Steels of 2nd generation** Adrien Milani, Clement Philippot, Emmanuel Lucas, Sebastian Cobo, Anne Francoise Gourgues ArcelorMittal Global R&D – Product & Process Centers
12:20	**Tailor Welded Tube for Form Blow Hardened Body Structure Enabling Weight Efficient Open-Air Top** Mark Sullivan, Rhys Jones, Bryan Conrod, Cameron Benedict, Dennis Fuss, Forrest Eddings Multimatic, Inc.	**Improvements on strength of car door beam due to bake hardening effect on 32MnB5 hot stamping steel** Marcos Castro, Ramon Silva, Mariano Esparcia ESI Group
12:40	**Meso-scale modeling of spot weld failure in hot stamped automotive steel using hardness mapping approach** Alireza Mohamadizadeh, Elliot Biro, Michael Worswick University of Waterloo	**Determination of stress-strain curves of Ductibor®1000 steel using a novel hot bulge test device** Nathan Demazel, Adrien Boyer, Hervé Laurent, Marta Oliveira Université Bretagne Sud
13:00	**Lunch (Port Vell Room)**	
14:20	**Tribology & Coatings III** A8 Chaired by: Jenny Venema	**Modelling & Simulation III** B8 Chaired by: Dennis Fuss
14:20	**A Novel PVD Coating for Wear Reduction in Press Hardening Tools** Ibon Azkona, Jaume Pujante, Giselle Ramírez, Jaume Caró, Eduard García-Llamas, Raül Bonet Montserrat, Jordi Orrit-Prat Metal Estalki, S. L.	**Estimation of mechanical properties of low carbon boron steels with varying microstructures.** Erik Lundholm, Paul Åkerström, Pär Jonsén, Farnoosh Forouzan, Jörgen Kajberg, Rosa Sala Luleå University of Technology

14:40	**Evaluation of lubricants for hot forming of high strength aluminium 6xxx series** Arturo G. Casielles, Dolores de Planell, Nuria Rodríguez, Jaume Pujante, Daniel Casellas Fuchs Lubricantes S.A.U	**Prediction of localization in thermo-mechanical forming simulation of a higher strength press hardening steel** Greger Bergman, Rickard Östlund Gestamp HardTech
15:00	**Reduced friction and localized thinning of hot stamped parts with a graphene-based lubricant** Ryan George, Tim Reaburn, Tim Skszek, Michael Worswick University of Waterloo	**Advances in Tribological Modelling: Friction and Heat Transfer modelling in Hot Forming** Lars Bruinekreeft, Johan Hol, Alper Güner, Mats Sigvant TriboForm Engineering
15:20	**Break**	
15:40	**Materials & Metallurgy IV** A9 Chaired by: Laura Galceran	**Parts & Process III** B9 Chaired by: Montserrat Vilaseca
15:40	**Hot deformation behaviour of microalloyed medium manganese steel during hot compression** Saeed Sadeghpour, Vahid Javaheri, Mohammed Ali, Mahesh Somani, Jukka Kömi, Pentti Karjalainen Centre for Advanced Steels Research, University of Oulu	**Application of a novel hot stamping steel for the automotive suspension parts** Adem Karşi, Tanya Başer, Alperen Bayram, Oğuz Gürkan Bilir, Ersoy Erişi, Ahmet Onaylı, Merve Bıyıklı, Metin Çallı Coşkunöz R&D CENTRE
16:00	**Coating-Free Press Hardened Steels of 1.2 and 1.7 GPa Tensile Strength** Paul Belanger, Qi Lu, Zhisong Chai, Sarah Tedesco, Mingfeng Shi, Jason Coryell, Luke Reini, Qingquan Lai, Wei Xu, Jeff Wang Gestamp North American R&D Center	**Isothermal high temperature pneumo-forming of stainless steel tubes at low pressure levels** Mike Kamaliev, Felix Kolpak, A. Erman Tekkaya Institute of Forming Technology and Lightweight Components

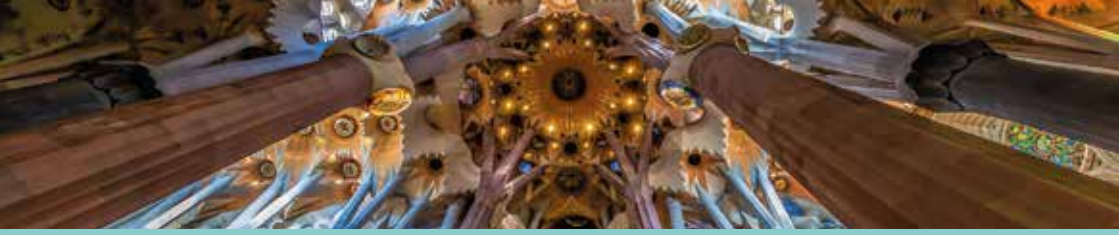
WEDNESDAY, June 1, 2022

16:20	**On the Role of Rapid Cyclic Re-austenitization on the Grain Refinement and Tensile Properties of an As-rolled Medium Carbon Low Alloy Steel** Vahid Javaheri, Saeed Sadeghpour, Roohallah Surki Aliabad, Oskari Haiko, Sakari Pallaspuro, Antti Kaijalainen, Jukka Kömi Centre for Advanced Steels Research, University of Oulu	**STAF (Steel Tube Air Forming) process for continuous closed cross-section BIW (Body-In-White) parts** Masayuki Ishizuka, Noboru Itagaki, Kei Yamauchi, Hiroyuki Kan, Kimihiro Nogiwa, Norieda Ueno Sumitomo Heavy Industries, Ltd.
16:40	**Investigating the oxidation of Al-Si coated 22MnB5 steel during heating with reflectance measurements** Cameron Klassen, Kyle Daun University of Waterloo	**Contributing to the Hot Stamping of the future with a revolutionary Ultra-Fast System to produce light weight structural vehicle components combined with Artificial Intelligence monitoring** Daniele Bassan, Alessandro Agnello, Marco Colosseo, Antonella Turi, Isaac Valls, Andrea Padré Rovalma S.A.
17:00	**Break**	
17:15	**Part Performance III** **A10** Chaired by: Sílvia Molas	**Light Metals II** **B10** Chaired by: Jaume Pujante
17:15	**Approaches to improve the critical bending angle in press hardened steels** Hardy Mohrbacher, Matthew Enloe NiobelCon BV	**On the effect of testing setups on Aluminum alloys Interfacial Heat Transfer Coefficient Measurement** Nagore Otegi, Iñigo Llavori, Unai Ibarretxe, Maider Muro, Garikoitz Artola, Alaitz Zabala Mondragon Unibertsitatea
17:35	**Crash assessment of laser softened USIBOR2000** Laura Galceran Oms, David Corón Moreno, Esther Rayo Martínez, Josu Ramón, Gorka Martinez Gestamp, Autotech Engineering	**Formability study of 2198 aluminium alloy for hot stamping** Maider Muro, Monica Carranza, Garikoitz Artola Fundación AZTERLAN, Basque Research and Technology Alliance (BRTA)
17:55	**End of Day 2**	
18:50	**Gala Dinner** **(Meeting point at the Eurostars Gran Marina Hotel. Bus departure at 19:00 to Alella)**	



THURSDAY, June 2, 2022

08:30	**Opening Doors**	
	Conference Room A (Auditorim level -1) **A**	**Conference Room B (1st floor)** **B**
09:00	**Materials & Metallurgy V** **A11** Chaired by: Marta-Lena Antti	**Light Metals III** **B11** Chaired by: Nagore Otegi
09:00	**Newly Developed High Thermal Conductive Die Steel with Superior Performance for Hot Stamping** Naoki Umemori, Makoto Hobo, Krzysztof Biesiada Daido Steel Co., Ltd.	**Influence of microstructural conditions on hot deformation behavior of precipitation hardenable aluminum alloy AA7075** Emad Scharifi, Jürgen Nietsch, Angela Quadfasel, Ursula Weidig, Kurt Steinhoff University of Kassel, Metal Forming Technology
09:20	**New premium tool steel UH1 for increasing the performance of hot stamping tools** Philipp Görts Kind & Co., Edelstahlwerk, GmbH & Co. KG	**Shape prediction and validation of a hot formed component in alloy 718 and Haynes 282** Lluís Pérez Caro, Eva-Lis Odenberger, Fredrik Niklasson Division of Materials and Production, RISE IVF AB
09:40	**Application Potential of New Hot Forming Steels under Consideration of Processing Technologies** Janko Banik, Cassia Castro Müller, Thomas Gerber, Clemens Latuske, Dirk Rosenstock thyssenkrupp Steel Europe AG	**Hot Stamped Aluminium: Process Viability and Implications on Crashworthiness** Jaume Pujante, David Frómeta, Eduard Garcia-Llamas, Maria Giménez Eurecat, Centre Tecnològic de Catalunya
10:00	**Study of displacive stress and strain induced transformations in a medium carbon steel** Adriana Eres-Castellanos, Pedro Carrero-Santos, Francisca G. Caballero, Carlos Garcia-Mateo Colorado School of Mines	**Development of Lightweight High Strength Aluminum Alloy Door Beam by Structure Design Optimization and Hot Stamping Process** Wan-Ling Chen, Yi-Chiung Chen, Cheng-Kai Chiu Huang, Chung-Yi Yu, Rong-Shean Lee Metal Processing R & D Department, Metal Industries Research and Development Centre



10:20	**Coffee Break**	
11:00	**Parts & Process IV** **A12** Chaired by: Pär Jonsén	**Heating Technology** **B12** Chaired by: Per-Emil Back
11:00		**Development of a partial heating system for freeform bending with movable die** Daniel Maier, Christoph Kerpen, Matthias Werner, Lorenzo Scandola, Philipp Lechner, Sophie Stebner, Ahmed Ismail, Boris Lohmann, Sebastian Münstermann, Wolfram Volk Technical University of Munich
11:20	**Development of a 1000 MPa Hot Stamped Crush Tip** Suh Ho Lee, Matt Tummers, Jose Imbert, Alireza Mohammadizadeh, Cliff Butcher, Michael Worswick, Skye Malcolm, Pavlo Penner, Willie Bernert, Dan Papalazarou, Eric Famchon University of Waterloo	**Estimation of process window for overlap patch products by simulating the heating cycle and AlSi diffusion layer.** Mats Karlberg, Simon Lindgren Gestamp R&D BIW
11:40	**Thermographic Process Monitoring in Press Hardening and the Digitalisation into an INDUSTRY 4.0 Data Management System** Steffen Sturm InfraTec GmbH Infrarotsensorik und Messtechnik	**Direct Resistance Joule Heating of Al-Si Coated Steel Pipes in the Steel tube Air Forming Process** Kimihiro Nogiwa, Akihiro Ide, Masashi Kawakami, Ryohei Ikeda, Masayuki Ishizuka, Hiroyuki Kan, Norideda Ueno Sumitomo Heavy Industries, Ltd.
12:00	**Closing Session** Prof. Mats Oldenburg, Luleå University of Technology; Prof. Jens Hardell, Luleå University of Technology; Prof. Daniel Casellas, Luleå University of Technology	
12:40	**End of the Conference**	

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