



CHS<sup>2</sup> – 2021

8<sup>th</sup> International Conference on  
**HOT SHEET METAL FORMING OF  
HIGH-PERFORMANCE STEEL**

May 31<sup>st</sup> to June 3<sup>rd</sup>, 2021, Barcelona, Spain

**ANNOUNCEMENT—SAVE THE DATE & CALL FOR PAPERS**



Organized by:



eurecat

In collaboration with:



# 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 industrial 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 CHS<sup>2</sup> 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.

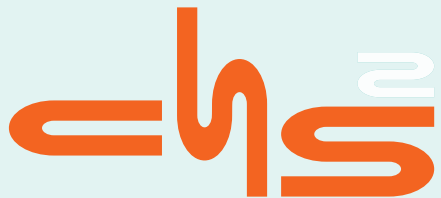
## CONFERENCE SERIES AND SCOPE

The biannual CHS<sup>2</sup> 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 7<sup>th</sup> edition in 2019 in Luleå (Sweden) new topics and interests steadily increased and settle down in every conference edition. In the 7<sup>th</sup> 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 8<sup>th</sup> CHS<sup>2</sup> 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.

Consequently, for the 8<sup>th</sup> International Conference on Hot Sheet Metal Forming of High-Performance Steel CHS<sup>2</sup> 2021, specialists from all over the world are invited to join this unique opportunity for 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.





WTCB Business Complex

For the first time, the CHS<sup>2</sup> conference will be held in Barcelona, Spain, May 31<sup>st</sup> – June 3<sup>rd</sup>, 2021, at World Trade Center Barcelona.

CHS<sup>2</sup> 2021 will be organized by Eurecat, the Technology Centre of Catalonia, and Luleå University of Technology, in cooperation with the Association for Iron & Steel Technology (AIST)

**WORLD TRADE CENTER**  
**Moll de Barcelona s/n. Barcelona. Spain.**  
**[www.wtcbarcelona.com/en/](http://www.wtcbarcelona.com/en/)**

**May 31<sup>st</sup>, 2021:** Reception and pre-registration

**June 1<sup>st</sup>, 2021:** Registration and conference

**June 2<sup>nd</sup> – 3<sup>rd</sup>, 2021:** Conference

# CONFERENCE TOPICS



Port Vell Room. WTCB

## Material

- High-performance steels
- Light-weight and high performance materials; as aluminium alloys, magnesium alloys, titanium alloys, superalloys, composite materials, etc.
- Mixed material processes and multi-material solutions
- Tool materials
- Microstructure – properties relationship
- Surface engineering and coatings
- Additive Manufacturing solutions

## Modeling and Simulation

- Process modeling
- Microstructure
- Heat transfer
- Thermo-mechanical properties
- Friction and wear
- Component properties
- Deformation, fracture and fatigue

## Process Design

- Tool systems
- Heating and cooling strategies
- Automation and control
- Process monitoring
- Artificial Intelligence and Machine Learning

## Products

- Light-weight and high performance components for transport sector
- Solutions for e-mobility needs
- Product innovations and optimization
- New products for new markets
- Tailored material properties
- Cutting and joining technologies
- Fatigue, fracture and crash performance
- Circular Economy and Life Cycle Assessment
- Eco-design

## CALL FOR PAPERS

All contributions on the theme of the conference are welcome. Prospective authors are invited to submit their abstracts by uploading these to the conference paper submission system (see instructions below). The full papers will be reviewed by the members of the scientific advisory board and, if accepted, will be published in the conference proceedings.

The organizing committee encourage high scientific quality conference papers to be published in international journals after the conference.

## ABSTRACT SUBMISSION GUIDELINE

For submission of abstracts, please register to the conference paper submission system and upload your abstract in accordance to the abstract submission guideline:

[www.chs2.eu](http://www.chs2.eu)

## IMPORTANT DATES

**Abstract submission:**  
October 15<sup>th</sup>, 2020

**Full paper submission:**  
February 8<sup>th</sup>, 2021

**Revised paper submission:**  
April 5<sup>th</sup>, 2021

**Conference:**  
May 31<sup>st</sup> to June 3<sup>rd</sup>, 2021



- Abstract text: maximum 400 words
- Language: English
- The abstract submission includes
  - > title of paper
  - > presenting author
  - > co-authors
  - > affiliations
  - > abstract including keywords and references



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**Updated information can be found on the conference homepage [www.chs2.eu](http://www.chs2.eu)**

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