



Meets



OCTOBER 29  
30  
31

voestalpine Stahl,  
Linz, Austria



# 2024 Annual Event

Sponsored by:

voestalpine

ONE STEP AHEAD.





# PROGRAMME

TUESDAY  
29 OCTOBER

## Visit to voestalpine facilities (optional)

09:00 *Welcome at voestalpine*

09:30 **Visit 1st group**

*Blast Furnace & automotive components*

10:00 **Visit 2nd group**

*Automotive components & H2 electrolyzer*

Waiting visit in-between : Zeitgeschichtemuseum

12:00 *Lunch*

## Technical conference

13:00 *Registration*

13:30 **Introduction to the Conference**

*Ismael Matino, Scuola Superiore Sant' Anna (Conference chairman)*

13:40 **Welcome and Opening of the 1st Day**

*Klaus Peters, Secretary General, ESTEP*

13:55 **Opening Lecture (online video)**

*Maria-Cristina Russo, DG RTD, European Commission*

14:05 **The Clean Steel Partnership: working together to achieve a clean and sustainable future for competitive steelmaking**

*Alessandra Colli, DG RTD, European Commission*

14:25 **Session 1 - Green Steel production by hydrogen**

*Thomas Bürgler, voestalpine (Session chairman)*

14:30 **Hy4smelt - Hydrogen-based direct reduction and smelting of ultra-fine iron ores to green hot metal**

*Hanspeter Ofner, Primetals*

14:50 **Simulation, modelling, and monitoring of plasma and arc-based processes for green metal production**

*Hamideh Hassanpour, K1-MET*

15:10 **Model-based control of electric arc plasma in the HPSR process for zero-emission iron ore reduction**

*Erwin Reichel, K1-MET*

15:30 **Mechanism of iron ore pellets direct reduction: new insights of factors affecting the kinetic of the process with low quality materials**

*Filippo Cirilli, RINA-CSM*

15:50 **Decarbonization solutions for the steel industry: an update**

*Gorkem Oztarlik, AirLiquide*

16:10 **Growing with Green Steel, how regional funding can play an important role in the development of decarbonisation know-how**

*Hans van der Weijde, Tata Steel*

16:30 *Coffee Break*



# PROGRAMME

TUESDAY  
29 OCTOBER

- 16:55 **Session 2 - Smart, efficient and circular resource management paving the way to decarbonization**  
*Ismael Matino, Scuola Superiore Sant' Anna (Session chairman)*
- 17:00 **Gas processing for syngas makeup and carbon monoxide valorization at integrated steelwork**  
*Balan Ramani, Tata Steel*
- 17:20 **Methodologies and tools for designing a decision support system for energy management**  
*Valentina Colla, Scuola Superiore Sant' Anna*
- 17:40 **Simulation and analysis of energy networks in the transition to sustainable steelmaking**  
*Christa Mühlegger, K1-MET*
- 18:00 **Exploring and optimizing process off-gas management in steelworks during their transitions towards C-clean processes**  
*Lorenzo Vannini, Scuola Superiore Sant' Anna*
- 18:00 **Digital transformation and sustainable innovation in steel manufacturing: the AID4GREENEST project**  
*Ilchat Sabirov, IMDEA Materials*
- 18:40 **Closure of first conference day**
- 19:00 **ESTEP Celebration 20<sup>th</sup> Anniversary**  
**voestalpine Stahl Linz, first floor**  
*(voestalpine-Straße 3 4020 Linz, Austria)*



# PROGRAMME

WEDNESDAY  
30 OCTOBER

08:00 **Registration**

08:45 **Welcome and Opening of the Second Day**

*Herbert Eibensteiner, CEO, voestalpine*

09:15 **High Level Panel Discussion**

*Moderated by Matthew Moggridge, Steel Times International*

*Axel Eggert, Director General, EUROFER*

*Kurt Satzinger, Head of R&D, voestalpine*

*Jürgen Schneider, Director of the Directorate General VI Climate action & Energy, Austrian Ministry Representative*

*Alexander Fleischanderl, CTO, Primetals*

*Christian Weinberger, Hydrogen Europe*

10:15 **Coffee Break**

10:35 **Session 3 - Resource efficiency and industrial symbiosis**

*Agnieszka Morillon, FEhS (session chairwoman)*

10:40 **TransZeroWaste – Upgrading of low-quality iron ores and mill scale with low carbon technologies**

*Martin Hubrich, BFI*

11:00 **Decarbonization through industrial symbiosis : The use of recycled carbon raw materials in the steelmaking**

*Elia Gosparini, I.Blu*

11:20 **Utilization of recovered refractory material as slag additive and experimental determination of liquid slag properties**

*Irmtraud Marschall, K1-MET*

11:20 **EUROSLAG – Core activities and challenges for the slag value chain**

*Thomas Reiche, FEhS*

12:00 **Valorisation of zinc containing residues : Zincval project**

*Damiano Capobianco, Esin Iplik, Marianne Magnelöv & Yanping Xiao, RINA-CSM, Linde, Swerim & Tata Steel*

12:40 **Decarbonization in the steel industry and future production routes (e.g., SuSteel) and future utilization paths for the by-products generated (e.g., slags and dusts)**

*Christoph Thaler & Wolfgang Reiter, voestalpine & K1-MET*

13:00 **Lunch**



# PROGRAMME

WEDNESDAY  
30 OCTOBER

## 14:00 Session 4 - Circularity in the European steel sector

*Valentina Colla, Scuola Superiore Sant' Anna (Session chairwoman)*

- 14:05 **Challenges and solution for steelmaking dust valorization in the green steel transition**  
*Bernhard Voraberger, Primetals*
- 14:25 **Development of a pyrometallurgical approach for iron and zinc recovery: design and modeling of a plasma reactor within the ReMFRA project**  
*Loredana Di Sante, RINA-CSM*
- 14:45 **Improved analysis of post-consumer scrap to further push a circular steel industry**  
*Johannes Rieger, K1-MET*
- 15:05 **Valorization and characterization of hydrochar for coke replacement in steelmaking: a circular economy approach**  
*Filippo Cirilli, RINA-CSM*
- 15:25 **Green solutions for by-product utilization from process gas cleaning plants**  
*Paul Trunner, Primetals*

## 15:45 Coffee Break

- 16:10 **DRASTIC: Demonstrating real & affordable sustainable building solutions with top-level whole life cycle performance and improved circularity**  
*Barbara Fernandez, CELSA*
- 16:30 **COACH - Cold-bonded agglomerates for blast furnace ironmaking with chemically engineered binders**  
*Frederic Van Loo, CRM Group*
- 16:50 **Gaining value with Ecolbriq : Two possible applications of Ecolbriq®: Reducing CO2 emissions and/or recycling of byproducts minimizing landfill**  
*Nella Janakova, Progress Ekotech*
- 17:10 **Steel: from main to co-product in a circular economy?**  
*Harmen Oterdoom, Butterbridge*

## 17:30 Closure of the second conference day

## 19:00 Sightseeing tour of Linz

*Meeting point: in front of the Old Town Hall Linz (Altes Rathaus)  
Address : Hauptplatz 1*

## 20:00 Conference Dinner at Herberstein

*Restaurant address : Altstadt 10, 4020 Linz, Austria*





# PROGRAMME

THURSDAY  
31 OCTOBER

## 08:00 Registration

### 08:10 Session 5 - Clustering special session on Hydrogen in heating technologies

The morning part of the special session aims at jointly presenting EU projects addressing hydrogen in heating technologies (steel downstream and other sectors) with a clear focus on demonstrators and NOx emissions, digital tools and KPIs topics.

The following projects contribute:

*HyInHeat, Thomas Echterhof & Nico Schmitz, RWTH Aachen*

*HyDreams, Martin Demuth, Messer Austria*

*H2AL, Marco Lubrano Lavadera, The Université libre de Bruxelles*

*H2GLASS, Antonio Tuzio, Stam Tech*

*HyTecHeat, Filippo Cirilli, RINA-CSM*

*TWINGHY, Hassan Mohanna, CELSA*

*GreenHeatEAF, Oliver Hatzfeld & Marianne Magnelöv, BFI & SWERIM*

*H2Reuse, Salvatore Nardi, Tenova*

### 08:10 Welcome and Introduction to the special session and presentation of involved speakers for each included project

*Thomas Echterhof, RWTH Aachen University (session chairman)*

### 08:20 Demonstrators subsession - introducing the demonstrators of the included projects

## 10:05 Coffee Break

### 10:20 Panel Discussion on NOx emissions and emission limits, Digital Tools, and KPIs of the included projects

### 11:50 Concluding remarks

*Thomas Echterhof, RWTH Aachen University*

## 12:00 Lunch

### 13:00 Development and testing of low-NOx roof burner SMS-RADFlame HY2 for the steel industry

*Tommaso Bortolussi & Irene Luzzo, SMS Group & RINA-CSM*

### 13:20 Results from the experimental campaign with H2 oxyfuel burner for electric arc furnaces (EAF)

*Irene Luzzo, RINA-CSM*

### 13:40 CFD modelling of flameless combustion: from natural gas to hydrogen

*Mattia Bissoli, TENOVA*

### 14:00 Scenario analyses to evaluate the effects of hydrogen exploitation in EAF burners

*Ismael Matino, Scuola Superiore Sant'Anna*

### 14:20 Fuel flexible self-recuperative burners for radiant tube heating systems

*Christian Wupperman, RWTH Aachen*

### 14:40 Greetings and next steps

*Ismael Matino, Scuola Superiore Sant'Anna (Conference chairman)*

### 14:45 Closure of the ESTEP Annual Event

*Klaus Peters, Secretary General, ESTEP*



# PROGRAMME

THURSDAY  
31 OCTOBER

## 08:00 Registration

### 08:20 Session 6 - Renewable energy and hydrogen availability in Europe

*Hans van der Weijde, Tata Steel (Session chairman)*

#### 08:25 Hydrogen production by methane pyrolysis

*Robert Obenaus-Emler, University of Leoben*

#### 08:45 RecHycle - Recycling hydrogen for climate neutrality

*Joke Bauwens, ArcelorMittal*

#### 09:05 Hydrogen online training (steelHub)

*Antonius Schröder, TU Dortmund*

#### 09:25 Towards a skills intelligence framework. Mapping of hydrogen skills initiatives in Germany and Austria

*Karina Maldonado - Mariscal, TU Dortmund*

## 10:05 Coffee Break

## Poster session

### Getting ready for EAFs – Data-driven modelling of mechanical properties of steel sheets from chemical analysis and process parameters

*Peter Raninger, Materials Center Leoben*

### Physics-based modelling of tramp element effects on microstructure evolution during downstream processing

*Peter Raninger, Materials Center Leoben*

### ZincVal - Valorisation of zinc containing residues

*Damiano Capobianco, Esin Iplik, Marianne Magnelöv & Yanping Xiao,  
RINA-CSM, Linde, Swerim & Tata Steel*

### Converting an Existing Integrated Steel Plant to Electric Steel Production with 80% CO2 Emission Reduction

*Gabor Szabo, University of Miskolc*

## Abstract booklet

The abstracts are compiled in the form of a digital booklet to be found on the event webpage





# ABOUT ESTEP



The European Steel Technology Platform (ESTEP) brings together all the major stakeholders in the European steel industry. Its membership includes major European steel producers and the European Steel Association, EUROFER; academic centres and research organisations working in steel sector R&D; industrial stakeholders drawn from steel-consuming sectors, such as car manufacturing and heavy engineering; and other stakeholders such as trade union representatives. The European Commission and the Member States are also represented in ESTEP management committees.

ESTEP is also facilitating the Clean Steel Partnership.



## Next events



**ESTEP & CLEAN STEEL PARTNERSHIP INFORMATION DAYS**

19 - 20 November 2024  
Třinec (Czech Republic)

Venue :  
Hotel Vitality, Vendryně, Třinec (CZ)

Find out more on [www.estep.eu](http://www.estep.eu)



**ESTEP workshop SecCarb4Steel**

Preparation and use of biogenic and non-biogenic secondary carbon carriers (SCC) in processes for iron and steelmaking

Three-part webinar  
15 | 22 | 29  
November 2024

## Further information

Additional information about ESTEP, the Clean Steel Partnership and upcoming events can be found on its website : [www.estep.eu](http://www.estep.eu)

