

REGISTRATION OPEN

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



ESTEP workshop

SecCarb4Steel

15 | 11 Utilization of biogenic SCC in iron and steelmaking
22 | 11 Non-biogenic SCC for iron and steelmaking
29 | 11 Recent project activities on European level following SCC usage

Facing green steel production by utilisation of secondary carbon carriers

Progressing the iron and steelmaking industry towards a CO₂-lean goal is closely linked to the lowered use of fossil fuels and reducing agents. Biogenic and non-biogenic secondary carbon carriers can significantly contribute by being applied in various metallurgical processes including cokemaking, iron ore sintering, blast furnaces, direct reduction of iron ore, and electric arc furnaces. Moreover, it is essential to fully account for circular economy principles, as well as social, economic, and environmental aspects.

The ESTEP community will get an update about recently finished and ongoing R&D&I initiatives by sharing experiences, needs, best practices, innovative solutions for use and valorisation of SCC in iron and steelmaking.

During the event also sector coupling possibilities are presented allowing a deeper understanding of industrial symbiosis. This contributes to the decarbonisation pathway of "Smart Carbon Usage - Process Integration" within the frame of the Clean Steel Partnership (CSP) as stated in the Strategic Research and Innovation Agenda (SRIA).

Participation fee

- » Free for speaker in the related session
- » 50 € per person per session
- » 100 € per person for all sessions

Student fee (all sessions)

- » 60 € (additional seats offered based on availability)

Company flat rate fees (all sessions)

- » 300 € (max. 25 persons)

Fee is used by ESTEP for workshop organization as well as generation and provision of the proceedings and related publications. Members of ESTEP interested in sponsoring the event (1000 €) are invited to contact the ESTEP secretariat via e-mail: D.Snaet@estep.eu

Scientific committee

J. Wiencke (ArcelorMittal), G. Landra (Beltrame Group), L. Kieush, S. Lesiak, (K1-MET), C. Prietl, B. Voraberger (Primetals Technologies), F. Cirilli (RINA-CSM), T. Echterhof (RWTH), V. Colla (Scuola Superiore Sant'Anna), E. Malfa (Tenova)

Organisational committee

K. Peters, D. Snaet, A. Swarnakar (ESTEP), J. Rieger (K1-MET)

Keynote lectures

15 November 2024

Biochar production plants: Status quo by Next Generation Elements (NGE)

NGE produces customised facilities for recycling of biogenic residues utilising pyrolysis. Carbon capture and storage by pyrolysis (PyCCS) has recently been acknowledged by the EU as a reasonable approach.

22 November 2024

Decarbonization through recycling and industrial symbiosis: The use of recycled carbon raw materials in steelmaking by I.BLU

Decarbonisation in steelmaking thanks to the use of recycled carbon contained in recycled polymers allows for the replacement of virgin coal and maintenance of carbon “in the ground” thanks to industrial symbiosis.

29 November 2024

Ecological evaluation of the utilization of secondary carbon sources in the steel industry through a Life Cycle Assessment approach by RWTH Aachen

The implementation of Life Cycle Assessment (LCA) helps to identify and address shifts in environmental burdens using SCC across different stages or processes, promoting more sustainable technology development and eco-friendly design.

Workshop programme

15 | 11 – Utilization of biogenic SCC in iron and steelmaking – Chair E. Malfa (Tenova)

09:00 Opening words – *ESTEP*

09:10 Biochar production plants: Status quo – *Next Generation Elements*

09:40 Towards low-carbon cokemaking: Insights on the influence of alternative materials on the coke quality and process performance – *ArcelorMittal*

10:00 Hydrochar as a secondary carbon carrier: A circular approach for low-carbon steel production – *RINA-CSM*

10:20 Application of hydrochar for a sustainable electric arc furnace process – *KTH Royal Institute of Technology*

10:40 Lignin-based products as biogenic secondary carbon carriers for the manufacture of furnace electrodes and refractories in iron metallurgy and steelmaking – *KTH Royal Institute of Technology*

11:00 Plenary discussion with authors and closure of the session

22 | 11 – Non-biogenic SCC for iron and steelmaking – Chair V. Colla (Scuola Superiore Sant’Anna)

09:00 Decarbonisation through recycling and industrial symbiosis: The use of recycled carbon raw materials in steelmaking – *I.BLU*

09:30 A techno-economic and environmental assessment of coke-making with non-recyclable waste plastics in Europe: Evaluation of current and future market conditions – *University of Ghent*

09:50 The SMART project: Recycling of plastics and waste materials in TORERO to substitute more coal injection in the blast furnace – *CRM Group*

10:10 Practice of recycled plastics injection into a blast furnace at voestalpine Stahl – *K1-MET*

10:30 Polymer injection in EAF as a secondary carbon carrier scaled at industrial level: Process KPIs and decarbonization performance assessment – *Beltrame Group*

10:50 Analysing the green hydrogen to green steel transition through the sustainability triple helix lens: Reflections upon HYDRA (IT06) IPCEI – *RINA-CSM*

11:10 Plenary discussion with authors and closure of the session

29 | 11 – Recent project activities on European level following SCC usage – Chair G. Landra (Beltrame Group)

09:00 Ecological evaluation of the utilization of secondary carbon sources in the steel industry through a Life Cycle Assessment approach – *RWTH Aachen*

09:30 TACOS: Towards a zero CO₂ sintering – *CRM Group*

09:45 OnlyPlastic: EAF working with polymers derived from plastic residue in substitution of fossil fuel – *Tenova*

10:00 Creation of new value chain relations through novel approaches facilitating long-term industrial symbiosis – *CORALIS – RINA-CSM*

10:15 Exploring the effects of the use of alternative carbon-bearing materials in EAF through dedicated simulations – *Scuola Superiore Sant’Anna*

10:30 BioCoDe: Biomass for cokemaking decarbonization. Objectives and first project results – *Acciaierie d’Italia*

10:45 Hard-to-abate? Our solution for the EAF route within the BioRECAST project – *Politecnico di Torino*

11:00 Valorisation of biomass residues for sustainable steel production – EU RFCS project of BioReSteel – *SWERIM*

11:15 Plenary discussion with authors and closure of the session