ESTEP SPRING DISSEMINATION EVENT

5-6 JUNE 2025 KRAKOW (POLAND)

Welcome and Introduction

Klaus Peters

Secretary General, ESTEP

ESTEP

HOTEL ★★★★ GALAXY JORDAN GROUP

Łukasiewicz GIT

Start of the conference day

PROGRAMME

DAY 1 – 5 June (part I)

SESSION 1 & 2

07:45 – 08:30 Registration
08:30 Welcome & opening *Klaus Peters (ESTEP)*

S1	Decarbonisation	Chair: Agnieszka
Coffee break		
S2	People	Chair: Michael
Lunch break		
S3	Decarbonisatiuon	Chair: Jaroslaw
Coffee break		
S3 continued		
S4	Digitisation	Chair: Akhilesh
17:45	End of conference	
19:30	Invitation to ESTEP Dinner	Galaxy Hotel

DAY 2 – 6 June

Plant tour	
8:00	Leave Galaxy
13:00	Back to Galaxy

European Steel Technology Platform (ESTEP) – Overview

- European Technology Platform (EU 2020)
  - Created in **2004** (ULCOS) and reconfirmed by EC in 2013
  - Legal entity (AiSBL): incorporation by 13 founders in March 2018
  - Members more than 5-fold by 2025: 73 members (March 2025)
  - Open for organisations from EU + associated countries (steel producer, technology provider, university, RTO, SME, …)

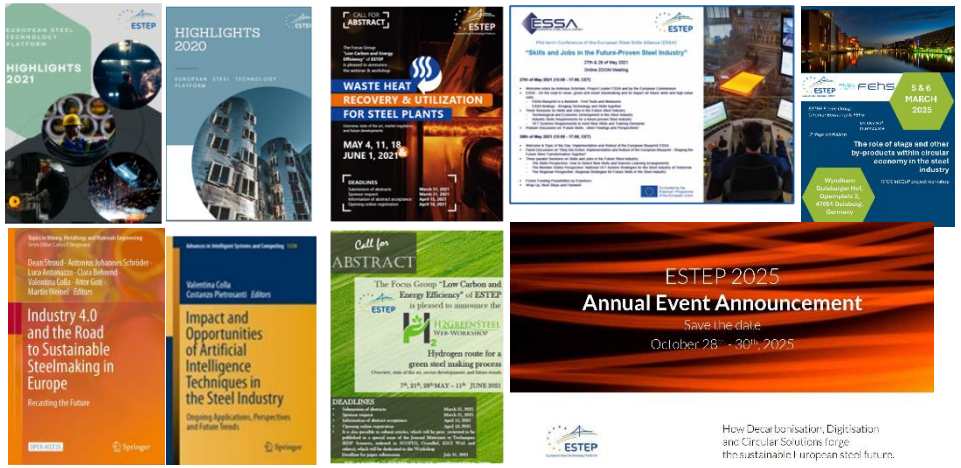
- ESTEP mission
  Collaborative EU actions (projects) on innovative technology to tackle EU challenges (renewable energy, climate change (CO_2), Circular Economy) in order to create a sustainable EU steel industry

- ESTEP Vision

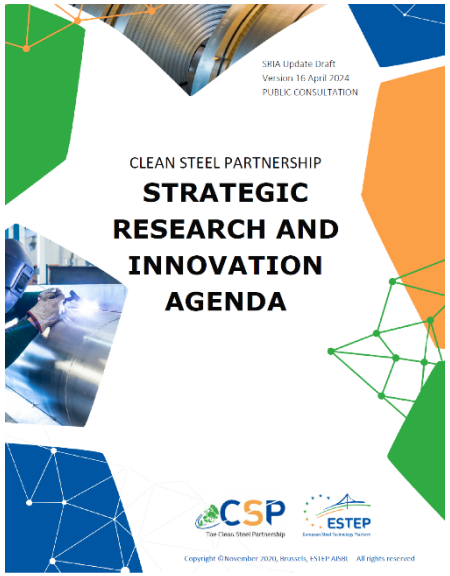
  Most recognized communication and dissemination platform for EU steel research

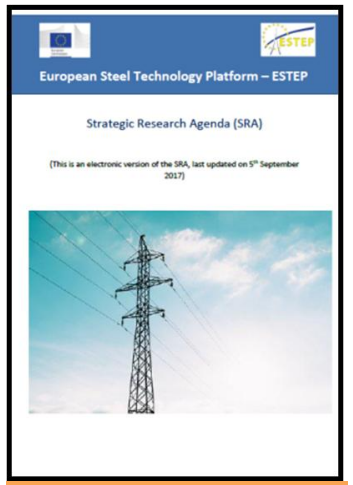
- Collaborative work in 6 Focus Groups
  - Thematic conferences
  - Initiate proposal writing
  - Road mapping and publication
  - Work towards standardization
  - Position papers

- EU Clean Steel Partnership (CSP)
  ESTEP facilitates the private side



The Clean Steel Partnership



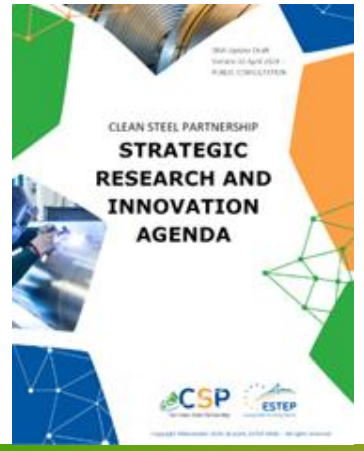


ESTEP SRA available at ESTEP.eu

EU Clean Steel Partnership

Accelerate towards net zero CO_2 steelmaking

- Partnership in the frame of Horizon Europe (HEU) in 2021 to 2027/2030
  - Unique setting due to synergies of public financial pillars (HEU + **R**esearch **F**und **C**oal+**S**teel)
  - Memorandum of Understanding signed by ESTEP + European Commission (RTD+Grow)
- CSP-Budget: € 1.7 billion
  - €350 million from Horizon Europe (=> 50 million EUR each year)
  - €350 million from assets of the ECSC* in Liquidation (source of RFCS funding)
  - At least matched by steel sector (expected €1.000 million)
- Projects
  - size: € 10-100 million
  - Developments starting at TRL 6 to end up with TRL 8 (Technology Readiness Level) exceptional start at 5 to end up with at least TRL 7
  - 2 + 2 demonstrators showing CO_2 emission reduction potential of at least 50% (80%)
- Strategic Approach by 12 Building Blocks
  - Building Blocks define collaborative research areas
  - Impact by linking the Building Blocks with company pathways
    - Carbon Direct Avoidance
    - Smart Carbon Usage (Process Integration and CCUS)
    - Circular Economy
  - Enablers: People + Digitization (2% of the total budget)



*ECSC=European Coal and Steel Community (grandfather of the EU)

Big Success of Clean Steel Partnership
32 projects since 2021

ESTEP
European Steel Technology Platform

CSP
The Clean Steel Partnership

Horizon Europe

No.	Project Acronym	Funding call	Area of Intervention	EU Funding (mln Euro €)
1	MaxH2DR	HEU 2021 #18	CDA	4.2
2	HIYIELD	HEU 2021 #19	CE	3.6
3	RemFRa	HEU 2021 #19	CE	4.8
4	CAESAR	HEU 2021 #19	CE	5.6
5	RecHycle	HEU 2021 #22	COMB	6.2
6	PURESCRAP	HEU 2022 #13	CE	5.0
7	TransZeroWaste	HEU 2022 #13	CE	5.0
8	GreenHeatEAF	HEU 2022 #16	PI	3.6
9	ModHEATech	HEU 2022 #16	PI	3.4
10	HyTecHeat	HEU 2022 #16	PI	3.4
15	Agiflex	HEU 2023 #43	SCU	4.7
16	H2PlasmaRed	HEU 2023 #43	PI	6.0
17	Dust2Value	HEU 2023 #45	CE	4.6
18	ZHyRON	HEU 2023 #45	CE	4.5
19	MEDALS	HEU 2023 #45	CE	5.7
20	SMARTChain	HEU 2024 #44	ENA	5.0
21	DiGreeS	HEU 2024 #44	ENA	5,0
22	ProcTwin	HEU 2024 #44	ENA	4.8
23	NANO-S-MART	HEU 2024 #46	CE	3.1
24	E-ECO Downstream	HEU 2024 #46	CE	5.0
25	ZEROSTEEL	HEU 2024 #46	CE	5.0
26	MOWSES	HEU 2024 #46	CE	4.6
27	CISMA	HEU 2024 #46	CE	4.5

RFCS

11	MODIPLANT	RFCS BT 2022	PI	8.0
12	FULL2REHEAT	RFCS BT 2022	PI	8.6
13	HYDREAMS	RFCS BT 2022	PI	4.3
14	TWINGHY	RFCS BT 2022	PI	4.5
28	SLAG2BUILD	RFCS BT 2024	CE	4.6
29	Hy4Smelt	RFCS BT 2024	CDA	18.0
30	H2Loop	RFCS BT 2024	CDA	6.2
31	CROSSCUT	RFCS BT 2024	SCU	5.0
32	PRISMA	RFCS BT 2024	ENA	5.1

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Scientific & Organsiation Committee
Agniesczka Morillon
Delphine Snaet
Inge Bellmann
Jaroslaw Marcisz
Michael Kohlgrüber
Woitec Sculz

Agenda of the 2 days: Conference & Plant Tour

PROGRAMME

SESSION 1 & 2

DAY 1 – 5 June (part I)

07:45 – 08:30 Registration
08:30 Welcome & opening *Klaus Peters (ESTEP)*

08:40 Steel policy overview *(title tbc) – Jürgen Tiedje (European Commission DG RTD E3)*

08:55 - 10:55 **1st session: Decarbonisation topics – *Agnieszka Morillon***

08:55 Polish steel sector: main facts – *Marta Zagorska (Polish Steel Association)*
09:10 ArcelorMittal Poland: existing investments and decarbonisation plans – *Aleksandra Kania (ArcelorMittal Poland)*
09:25 Synergies between RFCS Projects on Hydrogen application in the Blast Furnace process – *Hauke Bartusch (BFI)*
09:40 Investigation of the use of hydrogen as reducing agent in the Direct Reduction of low-grade iron ore pellets - *Claudia Sergi (RINA-CSM)*
09:55 MaxH2DR - Maximise H2 Enrichment in Direct Reduction Shaft Furnaces – *Thorsten Hauck (BFI)*
10:10 Production of the highest quality cast steel using the AOD converter process - *Artur Zak (Łukasiewicz – GIT)*
10:25 Turning biowaste into steel-grade biocoal to decarbonize the steelmaking process – *Andrea Salimbeni (RE-CORD)*
10:40 Energy Balanced Technology for Recycling Iron Oxide Waste in the EAF *Process – Alicja Szemalikowska (Łukasiewicz – GIT)*

10:55 – 11:15 Coffee break

11:15 - 12:45 **2nd session: People topics – *Michael Kohlgrüber***

11:15 Empowerment and Recruitment of People in the Steel Industry – *Antonius Schröder (TU Dortmund)*
11:30 SUPER project: Sustainable future steel production and people recruiting and skilling – *Thorsten Hauck (BFI)*
11:45 Hubs for Circularity in Europe: focus on stakeholders – *Karina Maldonado-Mariscal (TU Dortmund)*
12:00 SkillMine : a dynamic AI-Powered Skills Mining Engine with industry specificity to identify emerging trends and changing skills needs – *Andrew Barker (Steeluniversity)*
12:15 Artificial Intelligence in steel production: Questions of augmentation, optimisation and accountability – *Dean Stroud (Cardiff University)*
12:30 Digitalisation: The Universal Environmental Data model - the PRISMA project – *Jerker Delsing (LTU)*

12:45 – 13:45 Lunch break

13:45 Research Fund for Coal and Steel: future funding opportunities – *Sebastiano Fumero (European Commission, REA)*

PROGRAMME

SESSION 3 & 4

DAY 1 – 5 June (part II)

14:00 - 16:35 **3rd session: Decarbonisation topics – *Jarosław Marcisz***

14:00 Power4Steel with MemKoWI – CO2- & H2-separation from process gases by advancing membrane technology R&D to pilot testing– *Susanne Bethlehem-Seidel (Dillinger)*
14:15 Resurgence project - Supporting the green and digital transition of the EU processes industries – *Krzysztof Grzybowski (CELSA Poland)*
14:30 TransZeroWaste - Upgrading of low-quality iron ores and mill scale with low carbon technologies – *Gerald Stubbe(BFI)*
14:45 Safe H-DRI - Safe handling and transport of hydrogen-based direct reduced iron for a decarbonisation of the steel industry – *Melanie Leitner (K1-MET)*
15:00 Eyes on Steel: AI-Powered Monitoring for Enhanced EAF Safety and Efficiency – *Marco Vannucci (SSSA)*
15:15 Development of a technology of manufacturing of welding pipes made of multiphase steels CP and DP – *Lukasz Poloczek (Łukasiewicz – GIT)*
15:30 Overview of the first one and a half years of the Horizon EU project H2PlasmaRed – *Henri Pauna (University of Oulu)*

15:45 – 16:05 Coffee break

16:05 Effect of Hydrogen combustion atmosphere on the properties of steel surface scale – *Filippo Cirili (RINA-CSM)*
16:20 HBI C-Flex – Reoxidation behaviour and stability of direct reduced and hot briquetted iron with variable iron and carbon content – *Melanie Leitner (K1-MET)*

16:35 – 17:35 **4th session: Digitalisation topics – *Akhilesh Swarnakar***

16:35 DIGREES - Demonstration of digital twins for a green steel value chain – *Madalina Rabung (Fraunhofer)*
16:50 AI-Driven Copper Detection in Scrap Metal: Advancing Digitalization in Sustainable Steelmaking (PURESCRAP) – *Marco Vannucci (SSSA)*
17:05 Integrated modelling for sustainable and optimized steel manufacturing processes (ProcTwin project) – *Tania Irebo Schwartz (SWERIM)*
17:20 Enhanced Steel Production Efficiency Through Fuzzy Logic Aided Genetic Algorithms – *Marco Vannucci (SSSA)*

17:35 Closing comments & future perspectives – *Klaus Peters (ESTEP)*
17:45 End of conference

19:30 Dinner at Galaxy Hotel

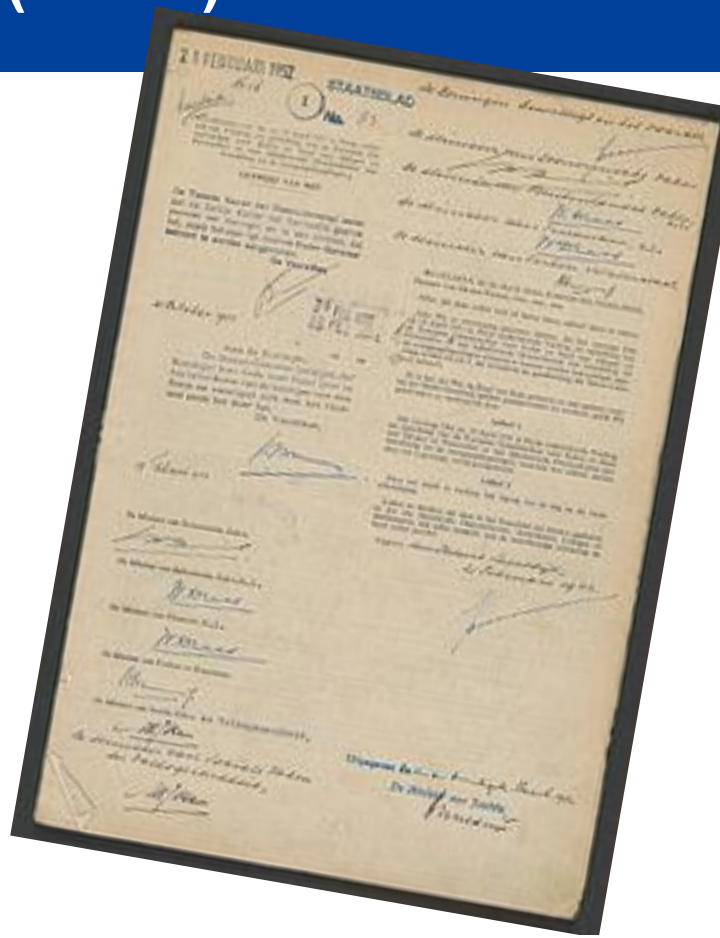
DAY 2 – 6 June

08:00 – 13:00 Optional visit of the Ogniochron factory (Przemysłowa 42, Andrychów, Poland))

A bus will depart from the Galaxy Hotel at 8h, and will be back around 13h at the Galaxy Hotel.
The maximum number of participants for the plant visit is up to 45 people. The participants will be divided into 3 groups of 15 people. Duration of the visit approximately 2h (from 9h30 - 11h30).

Origin of the Research Fund for Coal and Steel (RFCS) = ECSC

- In the year 1952 the first “European Union” in the form of the “European Coal and Steel Community (ECSC)” had been founded, starting with 6 member states (treaty of Paris)
- The ECSC had been financed by money from the steel producers in Europe. The money was collected as special levy on steel production.

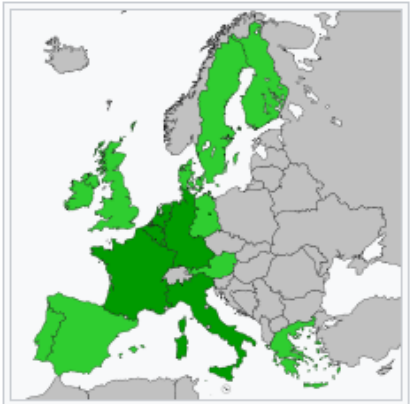


Funding aspects

- The ECSC's **budget** was funded by **levies on coal and steel production** and by contracting **loans**. The levies were intended to cover administrative expenditure, non-repayable aid towards retraining workers, and technical and economic research (which needed to be encouraged). Money received from borrowing could only be used to grant loans.
- In the field of **investment**, in addition to granting loans, the ECSC could guarantee loans contracted by companies with third parties. The ECSC also had the power to provide guidance on investments which it did not fund.

Source: https://eur-lex.europa.eu/EN/legal-content/summary/treaty-establishing-the-european-coal-and-steel-community-ecsc-treaty.htm

- Beneath financing many economical and social topics, the common research was an important aspect of the ECSC.
- The ECSC treaty expired on 23rd July 2002 and needed a successor.



The 15 ECSC (EU) members in 2002

Date	Members	Members added
23 July 1952	6	The *Inner Six*: Belgium, France, West Germany, Italy, Luxembourg and the Netherlands
1 January 1973	9	Denmark, Ireland and the United Kingdom
1 January 1981	10	Greece
1 January 1986	12	Portugal and Spain
1 January 1995	15	Austria, Finland and Sweden

Source: https://en.wikipedia.org/wiki/European_Coal_and_Steel_Community

RFCS

- After expiring of the ECSC treaty in 2002 it had been decided, to use the still **existing assets** (around 2 billion €) as basis for a new research programme
- RFCS = **R**esearch **F**und for **C**oal and **S**teel
- Use the **interest rates of these assets** of the ECSC (now ECSC in Liquidation =ECSC i.L.) to finance the new fund. Worked well for the first years until the financial crisis 2008/2009 and low interest rates.
- Deviation of budget between steel and coal: 72,8% to 27,2%
- 2021 Modernisation of RFCS
  - Using interest rates and part of the assets
  - Period of Horizon Europe (2021-2027)
  - 40 million € annual budget for coal and steel
  - 52 million € annual contribution to the EU Clean Steel partnership
  - Strong uptake by steel industry in 2025:
    84 proposals in annual Call – 6 selected for funding
- 2025 Steel and Metal action Plan announces the reform of RFCS

Enrico Gibellieri

Presidente del Comitato consultivo CECA

27.6.2002

23.7.2002

Research Fund for Coal & Steel