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The Focus Group **"Low Carbon and Energy Efficiency"** of **ESTEP** is pleased to announce the

ESTEP

H2 FOR GREEN STEEL

2nd INTERNATIONAL CONFERENCE

Hydrogen route for a green steelmaking process and applications

Overview, state of the art, recent developments and future trends

Hosted by

Air Liquide

SAINT-GOBAIN

tenova

SMS group

November 29 – December 1, 2022

Key dates

29 November: Full day visit of **Air Liquide Normandie plant (start at 8.00 – end at 18.00)**
30 November: Conference + Dinner
1 December: Conference + Farewell Greetings

Conference Venue
The conference will take place **in person at Innovation Campus Paris Air Liquide**, close to Versailles France

Deadlines

Registration	October 24 – November 18, 2022
Late contribution submission	November 24, 2022
Paper submission for publication (optional)	January 31, 2023

Programme – Day 1

1st Conference Day – Wednesday 30 November 2022			
Time	**Speaker**	**Speaker Organization**	**Title**
08:00	*Registration*		
09:00	Ismael Matino (*conference chairman*)	Scuola Superiore Sant'Anna	Introduction to the first day of H_2 for Green Steel 2nd International Conference
09:10	Anna Pubill Melsio	Air Liquide	Welcome
09:25	Klaus Peters	ESTEP SG	Opening Lecture
09:50	Andrea Gentili	European Commission	Opening Lecture from the public side
10:15	Jean-Pierre Birat	IF Steelman	**Keynote Lecture:** Net-Zero transition in the steel sector: beyond the simple emphasis on hy-drogen, did we miss anything?
10:45	*Coffee Break*		
11:05	Valentina Colla (*session chairwoman*)	Scuola Superiore Sant'Anna	**Session 1 - Hydrogen heating technologies/Part 1**
11:10	Jean Caudal	AirLiquide	Oxy-hydrogen combustion for energy-intensive industrial processes
11:30	Mattia Bissoli	Tenova	Flexible hydrogen heating technologies with low environmental impact
11:50	Sander Gersen	Tata Steel/DNV	Hydrogen as a fuel for the metal industry
12:10	Thomas Echterhof	RWTH Aachen University	Hydrogen use in EAF steelmaking and downstream processes
12:30	*Lunch*		
14:00	Jan van der Stel *(session chairman)*	Tata Steel	**Session 2 - Hydrogen-based steelmaking and related up/down stream processes issues/Part 1**
14:05	Joachim von Scheele	Linde	**Keynote Lecture:** Pathways towards full use of hydrogen as reductant and fuel
14:35	Thomas Wolfinger	K1-MET/Primetals	HYFOR® – Hydrogen-based fine-ore reduction – From an idea to a pilot plant
14:55	Fabrice Patisson	Université de Lorraine	A step-wise approach for modelling iron ore direct reduction in a shaft furnace
15:15	Daniel Ernst	Montanuniversität Leoben	Green steel - The use of hydrogen plasma as a reducing agent
15:35	Valentina Colla	Scuola Superiore Sant'Anna	Paving the way towards the industrialization of Hydrogen-enriched Direct Reduction: a look inside the motivations, ambitions and approach of MaxH_2DR
15:55	Fernand Didelon & Peter Kinzel	Paul Wurth/SMS group	EASyMelt™: flexible process for carbon neutral ironmaking
16:15	*Coffee Break*		
16:35	Filippo Cirilli (*session chairman*)	RINA-CSM	**Session 3 - Hydrogen utilization in CO_2 conversion processes (CCUS): hydrogen role as enabler for carbon capture utilization and storage & Hydrogen safety**
16:40	Ismael Matino	Scuola Superiore Sant'Anna	Valorisation of integrated steelworks off-gases through hydrogen intensified synthesis processes, Part 1: i³upgrade project concept and main outcomes from cutting-edge methane and methanol syntheses reactors
17:00	Stefano Dettori & Amaia Sasian Conde	Scuola Superiore Sant'Anna & K1-MET	Valorisation of integrated steelworks off-gases through hydrogen intensified synthesis processes, Part 2: i³upgrade project outcomes related to control development, economic analysis and business and implementation strategies
17:20	Linda Bacchi	Letomec & University of Pisa	Application of laboratory and on field techniques to determine the risk of hydrogen embrittlement in gaseous hydrogen and relative mixtures transport and storage
17:40	Paul Cobden	Swerim	Pilot facilities related to hydrogen and CCUS in Luleå
18:00	Speakers & steelmakers representatives	Speakers meet steelmakers	
18:30	Ismael Matino (*conference chairman*)	Scuola Superiore Sant'Anna	Closure of the first day
20:00	*Conference Dinner at Chapeau Versailles 1874* (Rue Hoche 7, 78000 Versailles)		

Conference venue

The conference will be held at Innovation Campus Paris Air Liquide, 1 Chemin de la Porte des Loges - Les Loges en Josas, 78354 - Jouy en Josas - close to Versailles (France)

Conference Website

https://www.estep.eu/events/2ndestep-hydrogen-conference/

Both the webpage and the flyer will be regularly updated with further information

Programme – Day 2

2nd Conference Day – Thursday 1 December 2022			
Time	**Speaker**	**Speaker Organization**	**Title**
08:30	*Registration*		
08:55	Ismael Matino (*conference chairman*)	Scuola Superiore Sant'Anna	Introduction to the second day of H_2 for Green Steel 2nd International Conference
09:00	Mike Grant	AirLiquide	**Keynote Lecture:** Orderly transformation from Blast Furnace/BOF to H2 based DRI for EAF/SAF (BOF) steelmaking - What can we expect?
09:30	Thomas Echterhof (*session chairman*)	RWTH Aachen University	**Session 4 - Hydrogen heating technologies/Part 2**
09:35	Filippo Cirilli	RINA-CSM	Characterization of side burners of reheating furnace
09:55	Andrew Pimm	University of Leeds	Reducing hydrogen requirements for green process heat using ultra high temperature heat pumps
10:15	Bradley Nakanishi	Saint Gobain	Ceramics for enhanced hydrogen heating: challenges and opportunities for improving combustion, energy efficiency, and material compatibility
10:35	*Coffee Break*		
10:55	Bernhard Hiebl *(session chairman)*	Primetals	**Session 5 - Low-carbon Hydrogen production and supply chain**
11:00	Anna Domenech Abella	Celsa Group	**Keynote Lecture:** Hydrogen in steelmaking: huge opportunity and huge uncertainties
11:30	Balan Ramani	Tata Steel	Hydrogen production from coke oven gas using pressure swing adsorption process– A mathematical modeling approach
11:50	Marten Sprecher	HKM	Implementing a Rotterdam – Duisburg hydrogen supply chain for sectoral decarbonisation - an enabling study by Shell, port of Rotterdam, Gasunie, OGE, Thyssenkrupp Steel Europe and Hüttenwerke Krupp Mannesmann
12:10	Speakers & steelmakers representatives	Speakers meet steelmakers	
12:40	*Lunch*		
14:10	Patrick Lafontaine *(session chairman)*	ESTEP	**Session 6 - Hydrogen-based steelmaking and related up/down stream processes issues/Part 2**
14:15	Marielle Dargaud	Saint Gobain	Development of refractory solutions to ensure the sustainable transition to green hydrogen-based steel making
14:35	Robert Millner	Primetals	Direct Reduction Processes based on Green Hydrogen
14:55	Tim Kleier	SMS group	Hydrogen-based flat steel making becoming a reality in scale
15:15	Michalina Kurnatowska	German Aerospace Center (DLR)	Influence of various conditions on the course of the reduction of iron oxide with hydrogen in thermogravimetric studies
15:35	Alexander Redenius (*recordered video*)	Salzgitter	Update on LOW Carbon strategy and steelmaking at Salzgitter
15:55	Antonius Schröder *(recorded video)*	TU Dortmund	Additional qualifications for hydrogen use
16:10	Ismael Matino *(conference chairman)*	Scuola Superiore Sant'Anna	Greetings and next steps
16:20	Klaus Peters	ESTEP SG	Closure of the H_2 for Green Steel 2nd International Conference

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