

# FUTURE STEEL FORUM

2026 3-4 JUNE • BOLOGNA • ITALY

How can European research programmes  
contribute to emissions reduction and  
monitoring?



PANEL DISCUSSION

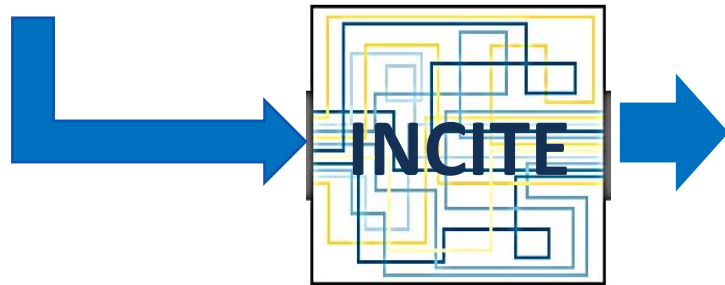
# INCITE

## Role and objectives



### Stakeholders

- EU funded schemes (e.g. Horizon, Innovation Fund, RFCS)
- Industry
- Research & Technology Organisations
- Technology providers
- Member States (MS)



### Outputs / publications

- Web information platform
- Annual report on innovative techniques

### Beneficiaries / Outcomes

#### MS / industry/ Env. NGOs

- Include innovative techniques in BREF / environmental norms
- Support permitting



#### Policy-makers / analysts

- Identify technology gaps
- Advise on R&I priorities (e.g. Horizon / RFCS)



#### Financial institutions / investors

- Steer financial support (public / private)





# INCITE

## Key activities



Site visits to First-of-a-kind industrial installations



Sectoral workshops on innovative techniques



Joint Research Centre

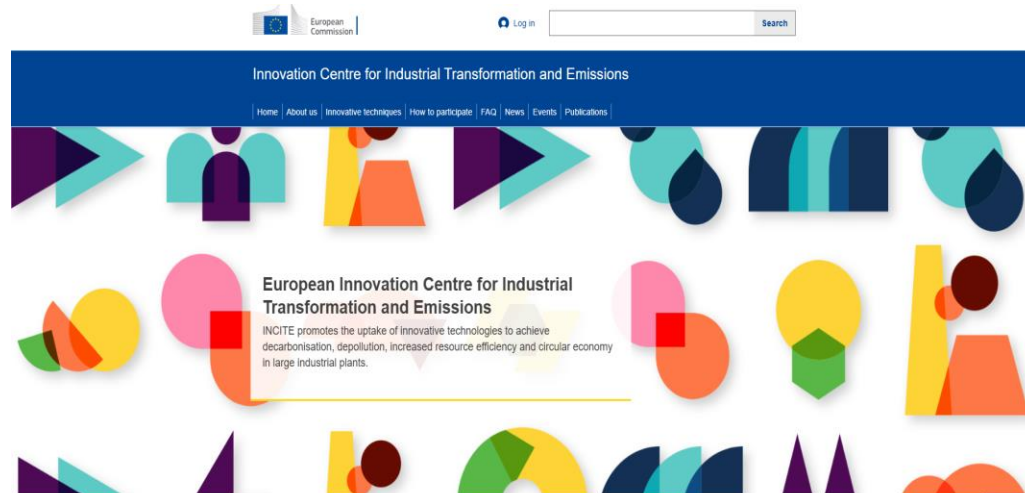
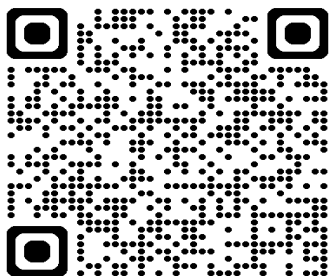
## INCITE - Technical Report on Innovative Techniques (TRIT)

Aries, E., [Lescos, S.](#), [Bellomo, M.](#), [Gonzalez Cuenca, J.](#), [Ferreira De Almeida, V.](#), [Lejedo Sanz, S.](#), [Chronopoulos, G.](#), [Betsoulis, I.](#), [Roudier, S.](#), [Lambert, C.](#)  
2026



INCITE annual report on innovative Techniques

## INCITE WEBSITE



# H2Loop - Chemical Looping Hydrogen

## Key Exploitable Results

### • Material

- Long-term stability >10y for industrial Scale

### • Operation

- 1 year with 24/7 closed loop operation, >99% purity, 80% efficiency

### • Process Integration

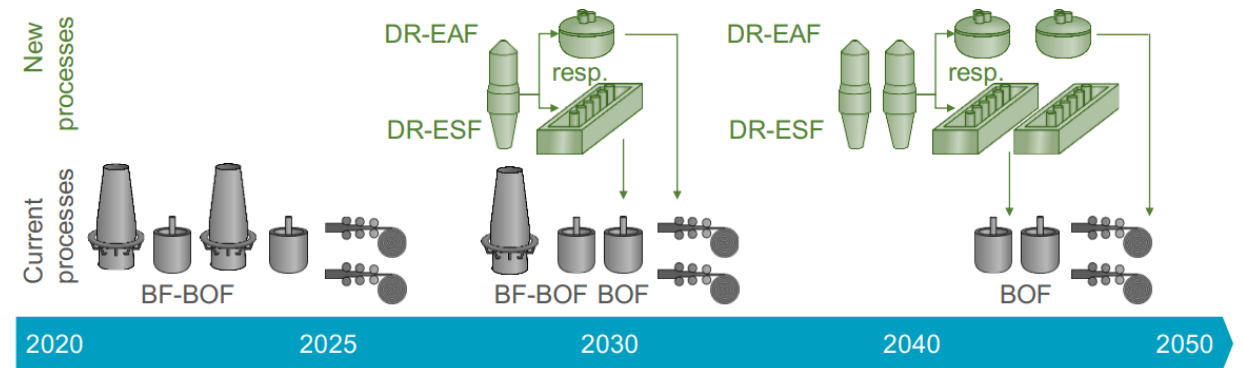
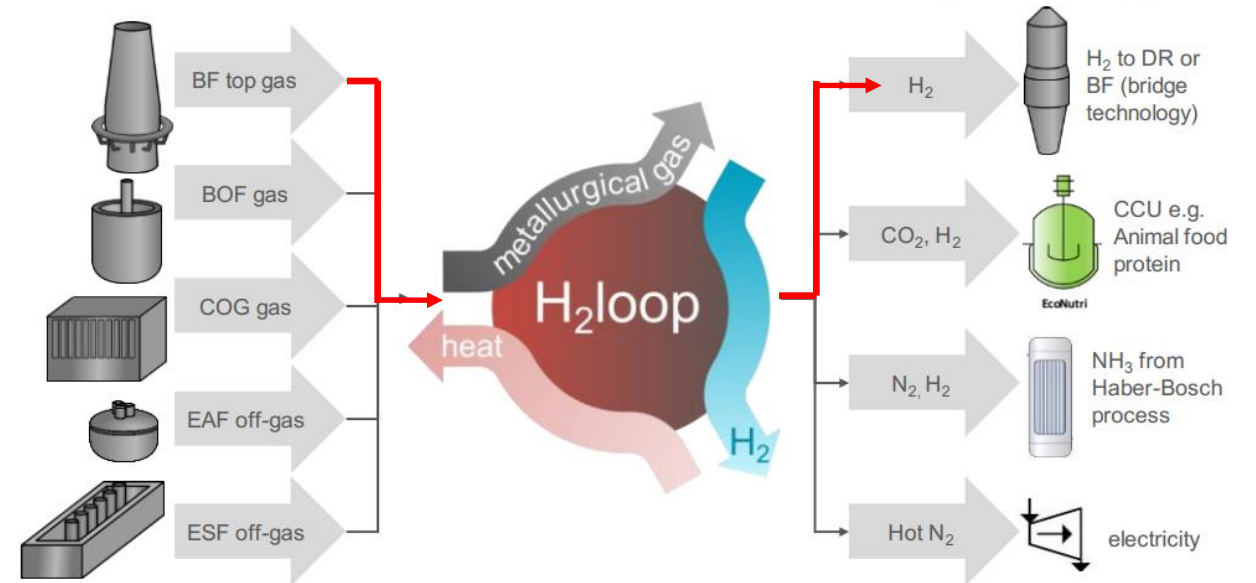
- Scenarios

### • Scale-up

- Business plan 3 cases and full industrial roll-out



Oxygen Carrier



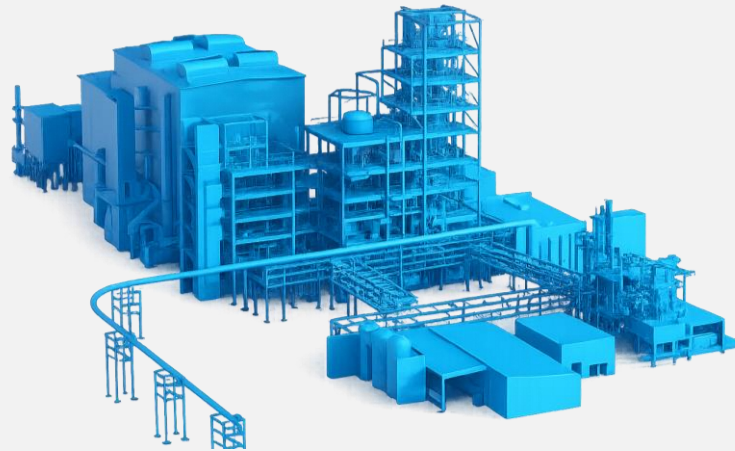
# Hy4Smelt Project - Hydrogen-based fluidized bed direct reduction of ultra-fine iron ores and smelting to green hot metal

## OUR GOALS

- Demonstrate continuous green hot metal production
- Validate HYFOR® and Smelter technologies at industrial scale
- Achieve maximum flexibility in iron ore feedstocks
- > 90 % reduction of Scope 1 CO<sub>2</sub> emissions compared to blast furnace hot metal
- Enable circular slag utilization for cement industry

## HY4SMELT DEMONSTRATION PLANT

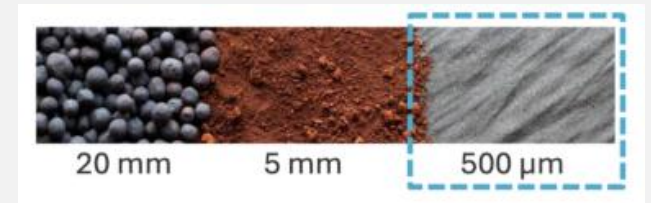
Installed at voestalpine Linz (Austria), bridging pilot scale to industrial operation (TRL 7 – 8)



- 2-3 t/h Hot Metal
- 1.200 m<sup>3</sup>/h Hydrogen
- 6 MVA Smelter power
- < 1 t/h Slag

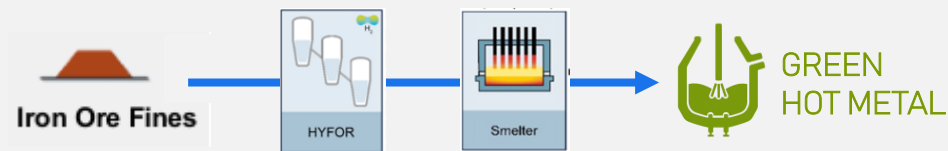
## ADVANTAGES OF TECHNOLOGY

- Uses ultrafine iron ores



- No agglomeration or pelletizing required
- High flexibility: Wide range of iron ore grades
- 100 % hydrogen-based direct reduction
- Integration into existing steel plant infrastructure

## OUR PROCESS – FROM IRON ORE TO GREEN HOT METAL





# EAF working with polymers (BLUAIR®) derived from plastic residue in substitution of fossil fuel

Call: *RFCS-2019*

GA number: 899415

Start date: 01/09/2020

End date: 31/08/2023



## Context

EAF relies on fossil carbon (coal, coke)  
High CO<sub>2</sub> emissions and waste generation

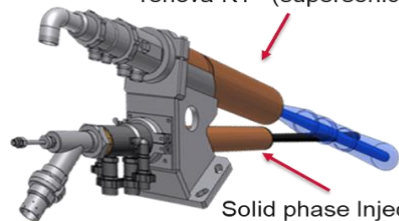


## Innovation

100% fossil carbon substitution  
Polymers from plastic waste (BLUAIR®)  
Validated at industrial scale (TRL 8)



Tenova KT® (supersonic O<sub>2</sub>)



Solid phase Injector



## Impact

CO<sub>2</sub> reduction: -16%  
Cost savings: -1.6% to -1.8%  
Enables circular economy



## Regulatory Barriers

Lack of EU-wide classification as EOW  
Concerns on dioxins and VOC emissions



Slag obtained or created during the InSGeP project from DRI/HBI EAF, Smelter and HPSR



-  Chemical composition
-  Mineralogy
-  Physical properties
-  Environmental aspects

**TREATMENT**  
(Metallurgical)



Metallurgical treatment to modify chemical composition

**COOLING**

**DRY GRANULATION**  
(PELLETIZING)



- ✓ No water
- ✓ Lower energy

**WET GRANULATION**  
(PELLETIZING)




- ✓ With water
- ✓ High effectivity

**SLOW/FAST**  
(COARSE)



- ✓ Optimized properties

 Physical & mechanical properties  
(strength, density, abrasion...)

 Hydraulic / reactivity  
(latent hydraulicity, pozzolanic activity...)

 Leaching & environmental performance

**APPLICATIONS**  
Turning slag into value

