H2STEEL fact sheet

The project

H2STEEL offers an innovative solution to the European Commission's Net-zero emissions challenge. For this purpose, H2STEEL will combine the conversion of biowaste and bioCH4 through innovative catalyzed pyrolysis with chemical leaching, to fully convert biowastes into Green Hydrogen, Green Carbon (bio-coal), and recovery of Critical (inorganic) Raw Materials (CRMs). This solution supports the **green transition of the metallurgy sector**.

The project utilizes a novel reactor design to carry out **biomethane pyrolysis** on a bed of bio-coal, serving as a low-cost, highly resistant catalyst for methane cracking. The continuous renewal of the catalyst ensures **efficient hydrogen generation**, while the spent **bio-coal** is repurposed as a **substitute for metallurgical coke in steel-making**, contributing to net GHG reduction and EU ETS compliance. This approach eliminates the need for catalyst regeneration, **reducing CO2 emissions** released into the atmosphere.



Objectives

- Contribute to the EU Green Hydrogen economy and the decarbonization of the European steel sector
- Develop efficient energy extraction methods from biomass and methane to minimize waste and environmental impact.
- Develop innovative processes for the efficient and sustainable production of Green Hydrogen from renewable sources.

Core data

Granted by the **European Innovation Council and SMEs Executive Agency (EISMEA)**.

3 years

2,368,910 €

7 partners

5 countries



Consortium

Politecnico di Torino · RE-CORD · Universiteit Leiden · I3P Incubatore Politecnico di Torino · ArcelorMittal · contactica innovation · Imperial College London

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H2Steel Project

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