



INITIATE

Full Title: Innovative industrial transformation of the steel and chemical industries of Europe

CE-SPIRE-01-2020

Aim:

To support emissions reduction in the iron and steel sector, INITIATE will demonstrate industrial symbiosis by converting carbon-rich residual steel gas into valuable products. This TRL7 demonstration project combines the production of N₂+H₂ and CO₂ streams, with innovative ammonia production as a precursor for urea synthesis. Ultimately, INITIATE will develop a commercial deployment roadmap for technology roll-out.

Concept:

Steel making produces carbon-rich residual gasses that are generally used for power production. The INITIATE project demonstrates industrial symbiosis by using Basic Oxygen Furnace gas from the steel industry as a feedstock for ammonia production: the pre-cursor for urea. The concept sustains the cost of carbon capture, leading to a cost efficient decarbonization strategy. The energy and carbon from the residual stream are transferred to ammonia and urea production while effectively capturing the surplus carbon. The INITIATE consortium consists of major steel and chemical industrial players (ArcelorMittal, SSAB, Stamicarbon and NextChem), material suppliers (Johnson Matthey and Kisuma Chemicals), research organizations (TNO, SWERIM, Politecnico di Milano and Radboud University Nijmegen) and promoters of Carbon Capture and Use (CCU), circularity and industrial symbiosis topics (CO₂ Value Europe). INITIATE demonstrates a novel symbiotic and circular process to transform residual steel gases into urea for subsequent use as a source for fertilizer and products such as AdBlue fuel additives.

Start date:

01/11/2020

End date:

30/04/2025