

Basic Oxygen Furnace Gas to Urea

Publieke samenvatting / Public summary

Aanleiding

Carbon capture at 0 €/t CO₂ – A reality when value generated through CO₂ utilisation exceeds capture costs. In the BOF2UREA project this is achieved through the combination of Sorption Enhanced Water Gas Shift as the CO₂ capture technology and the production of high value urea from low value residual gases of the steel industry as the valorisation method. The demand for construction materials, like steel, and fertilizers, like urea, will grow. The BOF2UREA project leverages the unique Dutch knowledge and market positions to contribute to these challenges through the development of a cost efficient process leading to a significant reduction of the total carbon footprint.

Doelstelling

The project objective is to contribute towards the reduction of the impact on the climate of industrial activity through the production of urea from the energy and carbon in residual gases in integrated steel plants, using process- and cost-efficient technologies, while simultaneously delivering storage ready CO₂ at no extra costs. This one year project aims to:

- Optimise a process to produce urea from basic oxygen furnace gas at a cost level lower than that based on natural gas
- Determine the CO₂ footprint reduction potential of commercial scale urea plant integrated with a steel plant
- Form a lasting value chain to enable implementation within 5 year after conclusion of the project.

Korte omschrijving

The main activities are subdivided into three components: Process development, environment

Projectinformatie / Project information

Projectnummer / Project number
TKITOECCUS2018-WP32_BOF2UREA
Subsidiebedrag / Grant amount
€ 72.402,00

Algemene informatie / General information

Penvoerder / Secretariat
TNO/ECN

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impact analysis and commercial implementation plan. The process development is led by ECN and involves combining information from Stamicarbon, Processi Innovativi, AcelorMittal and Kisuma to generate a new integrated process design. The performance required by the novel CO₂ valorisation system is targeted through process research and process design is used to integrate unit operations for an optimised BOF2UREA system. The environmental impact analysis is led by Radboud University and will be done through generation of a Life Cycle Inventory (LCI) with input provided from the process development work. Subsequently, operational life cycle impact assessment factors will be applied and a sensitivity study is performed to evaluate the impact of uncertain parameters and assumptions. The definition of the implementation plan involves all partners and is led by Stamicarbon. The implementation plan is prepared to address elements of the TECOP model , i.e. Technical, Economic, Commercial, Organisational and Political.

Resultaat

The result of the project will be an optimised BOF to Urea process, assessment of urea production economics (e.g. cash cost of urea), environmental impact analysis and a commercial implementation plan.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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