Test DORA@Plant One: lowering the cost of CO2 Capture

Publieke samenvatting / Public summary

Aanleiding

Solvent degradation in amine based CO2 capture processes results in several issues such as corrosion of equipment, loss in plant capacity, increased energy consumption, increased waste treatment and disposal. The issue is much more severe in the case of Post Combustion CO2 capture (PCC), due to the presence of oxygen in the gas stream.

Doelstelling

Within Test DORA@Plant One, TNO will demonstrate DORA at pilot scale. The expected benefits of the technology are: reduced solvent losses, lower emissions, reduced waste and overall lowered CO2 capture cost. Many solvent formulations include degradation inhibitors

Korte omschrijving

Within Test DORA@Plant One, DORA will be retrofitted to the existing CO2 capture plant of Pilot One. The pilot can handle 1500 m3/h of flue gas and captures maximum 250 kg/h CO2. It is operated with industrial flue gas from a pyrolysis plant, which contains from 3 to 10% oxygen, depending on the burner operation. The pilot plant will be modified to allow for the installation of DORA. The necessary equipment will be installed and commissioned. A long term campaign will be performed, in which the benefits of DORA will be demonstrated and quantified. For that, parameters such as solvent loss, emissions of ammonia, dissolved oxygen and the iron content in the solvent will be monitored continuously.

Projectinformatie / Project information

Projectnummer / Project number
TCCU218011
Subsidiebedrag / Grant amount
€ 164.946,00

Algemene informatie / General information

Penvoerder / Secretariat
Plant One Rotterdam B.V.

Publicaties en materialen / Publications and attachments

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  Eindrapport TCCU218011

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Resultaat

With the results of Test DORA@Plant One, the impact of DORA on the CO2 capture plant operation and costs will be determined with a higher degree of confidence. Moreover, the design of DORA will be adjusted to the experimental observations, so that the technology is optimized for industrial full scale applications. The proposed project will bring the DORA technology from TRL4 (tests performed at TNO's lab with synthetic flue gas) to TRL6. As mentioned, the integration of DORA to CO2 capture plants is expected to lower the costs and risks associated with of post-combustion CO2 capture.

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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