

Request for Industrial Partners (16/12/2021)

Project title: Techno-economic feasibility of CO₂ conversion into (green) CO using atmospheric plasma

Acronym: BluePlasma

Project ID	
Type	ICON
Period	2 years
Starting date	2022
Total project budget	TBD
Subsidy percentage	According to SBO and O&O regulations
Current industrial partners	Confidential
Catalisti contact	Peggy Fredrickx (pfredrickx@catalisti.be)

Project description

Introduction

Europe has set its long-term objectives to reduce CO₂ emissions reaching a carbon-neutral society by 2050. In the short term, European targets aim to reduce CO₂ emissions by 55%. It is expected that CCU will play a leading role in achieving these goals.

This proposed ICON project deals with the conversion of CO₂ into its building block CO, from which a multitude of value-added chemicals can be produced (e.g., e-fuels, monomers, polymers, ...).

The project proposes the electrification of the conversion of CO₂ into (green) CO, using a technology based on atmospheric plasma. This technology has the advantage over other CCU technologies in that the process is fully flexible to follow trends in the power supply coming from renewable sources. However, the plasma process is just a part in the complete value chain in the production of green CO. Therefore, the BluePlasma project is aiming to form a strong complementary consortium, with partners having their own discipline and role within the value chain.

Goals

Growth within the target area of CO production requires extensive research to better understand the effect of process design and operational variables on energy efficiency and resulting CO output. This includes R&I activities on reactor design and engineering to achieve improved reaction control. This project will improve both the conversion rate as well as the energy efficiency of the conversion process.

The project will result in demonstration of the technology at large scale and in different settings: within the project, a larger R&D unit will be constructed, aiming to increase the TRL of the plasma technology, from TRL1 - basic principles observed, to ultimately reach TRL4 - technology validated in a controlled environment.

The optimal conditions to convert CO₂ into CO using atmospheric plasma will be established by combining theoretical simulations with experimental observations in the R&D unit.

In addition, the plasma technology will be benchmarked with other CCU technologies by means of a techno-economic assessment, combined with the assessment of the potential for scaling up in a subsequent step.

Request

The current industrial consortium consists of:

- An expert firm in atmospheric plasma processing;
- A large steel producer with experience in LCA of the complete value chain
- An engineering company with expertise in engineering and manufacturing of process equipment

To complete the consortium, Catalisti is searching for complementary partners, namely:

- an industrial partner with expertise in gas handling and/or gas separation technology
- an industrial partner with expertise in the production of value-added chemicals based on CO
- an industrial partner with expertise in storage of CO₂, combined with expertise in buffering of green CO
- an industrial partner with expertise in fundamental LCA
- an industrial partner with expertise in the availability and usage of green electricity

How to reply to this request

Please send an **email before 25/01/2022** to Peggy Fredrickx (pfredrickx@catalisti.be) with nverdonck@catalisti.be in CC, and **briefly describe your interest and potential contribution** to the project. Based on all offers, the current industrial partners will determine together with Catalisti which partners can join the consortium. After submission of your offer, you can be contacted by phone to further elaborate your offer. The partner decision will be communicated on February 11th 2022 at the latest.

Important notice: Partners that wish to participate in this project are required to be member of the Flemish spearhead cluster whose domain of activity covers the partner's contribution to the project. For more information, please contact Peggy Fredrickx (pfredrickx@catalisti.be).

Contact

Please contact Peggy Fredrickx (pfredrickx@catalisti.be, +32 499 71 69 89) if you have questions concerning this RfP.

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