

Power to 2 Products

Publieke samenvatting / Public summary

Aanleiding

Coval Energy and TU Delft are involved in a research program to reuse CO₂, where CO₂ in an electrochemical cell is directly converted to formic acid, a valuable product. Formic acid is one of the most interesting products to make from CO₂, with the lowest green electricity input per molecule and a high current efficiency. As such formic acid is a very interesting candidate for large scale re-use of CO₂. So far, formic acid is produced at the cathode side of the electrochemical cell. It would be very attractive to also produce a chemical at the anode side of the cell whilst producing formic acid at the cathode, so called "paired synthesis". The big upside is that the cost of electricity and capex can be divided over both products, which is a potential cost reduction up to 50%!

Doelstelling

The goal of this feasibility study is to identify chemicals that can be produced in combination with formic acid in an electrochemical cell to achieve this 'paired synthesis'. The results of this study can be an important input for the electrification of the (Dutch) industry. It can help the roll-out of innovative electrification options for the industry, supporting the CO₂ reduction ambitions. It can lead to a higher potential profit for CO₂ capture and utilization, thus increasing the willingness of companies to start capturing their CO₂, as they do not have to find a solution for storing the CO₂.

Korte omschrijving

The activities in this study will start with literature review and process simulations to identify potential

Projectinformatie / Project information

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Algemene informatie / General information

Penvoerder / Secretariat
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Publicaties en materialen / Publications and attachments

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chemicals that can be produced in a paired synthesis with formic acid. Hereafter the impact will be determined of (a selection of) these chemicals on the functioning of the anode, the membrane, impact on used materials, and overall cell construction. Finally a limited market study for the selected chemicals will be performed, and all findings will be concluded in a conclusive report identifying the most attractive chemicals for such paired synthesis.

Resultaat

The result of this feasibility study will be the identification of chemicals that can be electrochemically produced in combination with formic acid in a so-called 'paired synthesis'. This will enable cost reductions up to 50% for CO₂ re-use applications, which can support the attractiveness for industry to apply these solutions in their operations to reduce CO₂ emissions. In a follow up project the outcome can be tested in combination with Coval Energy's technology.

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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