

THE ROLE OF HyBECCUS IN INDUSTRIAL DECARBONIZATION. APPLICATION TO REFINING AND BIOMETHANOL PRODUCTION

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Abstract

Renewable (green) hydrogen is usually identified with hydrogen from renewable electrolysis. However, other routes are possible. This presentation is focused on steam methane reforming (SMR) of biomethane with CO₂ capture. If the captured CO₂ is geologically stored (CCS), negative emissions are achieved; if this CO₂ is used (CCU), a renewable chemical (RFBO) can be produced.

Following a presentation on HyBECCUS (production, logistics, regulation and cost model), two applications are summarized. First, the feasibility of achieving net-zero hydrogen production via SMR in Spain (over 500 kt/year) by combining gray hydrogen with HyBECCS is evaluated. Second, different routes to produce biomethanol by means of HyBECCU are analyzed, with a focus on CO₂ self-sufficiency. In both cases, the required resources and costs are evaluated.

References

- <https://doi.org/10.1016/j.ijhydene.2026.155447>
- <https://dx.doi.org/10.2139/ssrn.6833481>