

The prospects of CCUS for EU Refineries and related processes

Abstract:

EU refiners face the challenging task of cutting their direct CO₂ emissions (Scope-1), reducing their indirect environmental footprint (Scope-2) and eventually incorporating cleaner energy products and molecules (Scope-3) in their production output. Although today in the EU, only for the reduction of Scope-1 emissions there is a direct financial incentive through the European Union Emissions Trading Scheme (EU-ETS), Corporates plan to follow strategies that address all the 3 items. This presentation investigates the practical options that EU refiners currently have for reducing Scope-1 & Scope-3 emissions, as Scope-2 emissions are easily addressed by developing large scale power generation projects from RES. It focuses on Cryogenic CO₂ Capture from a typical SMR H₂ Production Unit, on direct CO₂ hydrogenation to e-Methanol and on e-Jet production through the LTFT and MtJ processes. Real data are used to support their important role in the road to the 2050 Net Zero target. Then, a conceptual design of each process is presented and simulation results are used to provide insight for their techno-economic aspects and to conclude on the conditions needed for their wider and faster adoption.