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Blue Hydrogen

PEP Review 2022-07

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Abstract

Hydrogen (H_2) is considered to be a potentially disruptive technology for energy transition. Because of this, considerable attention has been directed to carbon capture as applied to large-scale hydrogen production via steam methane reforming (SMR) of natural gas. This is known as "blue" hydrogen.

In this report, we examine the economics of SMR-based hydrogen production at capacity of 90 million standard cubic feet per day (MMscf/d) with and without carbon capture. Our carbon capture scenario assumes 90% capture of carbon dioxide (CO_2) emissions from the SMR flue gas. The carbon capture unit uses an amine-based solvent blend of 27 wt% 2-amino-2-methyl-1-propanol (AMP) and 13 wt% piperazine (PZ) in water.

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