

Integration of the Ca–Cu Process in Ammonia Production Plants

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ABSTRACT:

In this work, the application of a Ca–Cu process into a state-of-the-art ammonia production plant is assessed through process simulations, aiming at reducing the primary energy needs of the syngas production and purification sections. The proposed process has shown to significantly reduce the specific primary energy consumption, even when accounting for the higher electric consumption in the Ca–Cu process. From an environmental point of view, the proposed process has an inherently high CO₂ capture efficiency (about 97%). The encouraging thermodynamic performance along with some simplifications in the syngas conditioning process and the ammonia synthesis loop confirms the potential of the Ca–Cu process as a route for syngas generation in ammonia plants.