

عنوان مقاله:

Integration of a Commercial CO₂ Capture Plant with Primary Reformer Stack of an Ammonia Plant

محل انتشار:

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خلاصه مقاله:

The safety of primary reformers is essential to a safe operation of large-scale petrochemical processes, especially when carbon dioxide is going to be recovered from an ammonia plant. In this study, a preliminary assessment is made to model an industrial stack as the stack gases are introduced into CO₂ capture plant, during ammonia production. A CFD model was first developed in the absence of a commercial Carbon Dioxide Recovery (CDR) unit to validate the model against industrial data under normal operation. Then, it was applied in combination with post-combustion, as part of the process, to verify the process safety constraints in reformer furnace. The effect of starting up and shutting down of CDR plant was explored in the event of emergency operation. From an operational view, in the event of startup or unplanned failure of the CO₂ capture plant, the pressure fluctuations do not exceed the maximum allowable pressure of the firebox. Upon reaching the required operating conditions, both subsystems can be integrated operationally to continue production, safely.

کلمات کلیدی:

CO₂ capture, Post Combustion, Ammonia plant, Emergency

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