

### The split-flow ammonia process for the removal of CO<sub>2</sub> from flue gas

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The removal of carbon dioxide from power plant flue gas is a process of substantial industrial importance because of environmental problems. For the existing and new power plants, chemical absorption method, especially the ammonia process, is suitable. However, the issue of ammonia slip is becoming one of the most critical difficulties for the commercial application of ammonia-based CO<sub>2</sub> capture technology. To deal with the NH<sub>3</sub> slip problem, NH<sub>3</sub> abatement system is still needed. Therefore, the conventional ammonia recovery method places an extra energy consumption burden on the entire CO<sub>2</sub> capture system.

In this work, we presented a simple but effective process with the split-flow cycle ammonia process. An accurate, reliable rate-based model using the commercial simulator -Aspen Plus was proposed for process simulation and optimization. The simulation results show the performance of the split-flow ammonia process that achieves high CO<sub>2</sub> removal at lower reboiler duty from stripper column.