Stripper Analysis of Post Combustion CO_2 Capture Process with Operating Condition Change

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The necessity of heat and energy requirement for the post-combustion capture process causes 20-25% of power de-rate by steam extraction from power plants. Especially, stripper reboiler is the most energy-intensive unit and has been known to use less energy with higher operating pressure. In this study, the optimal operating pressure of the stripper is proposed to minimize power de-rate of power plants. The CO_2 capture process combined with a 550 MW coal-fired power plant was simulated. The results show that intermediate pressure is optimal in case of integrated process, not the highest operable pressure. With optimal pressure, the power de-rate minimization is up to 14.7% relative to the base case.

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