

Modeling a bubbling bed process for CO₂ capture from flue gas

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A model has been developed to investigate effects of important operating parameters on performance of a bubbling-bed adsorber and regenerator system collecting CO₂ from flue gas. The particle population balance was considered together with chemical reaction to determine the extent of conversion in both adsorber and regenerator reactors. The calculated CO₂ capture efficiency agreed to the measured value reasonably well. Effects of process parameters - temperature, gas velocity, solid circulation rate, moisture content of feed gas - on CO₂ capture efficiency have been investigated in a laboratory scale process. The CO₂ capture efficiency decreased as temperature or gas velocity increased in the adsorber. However, it increased with moisture content of flue gas fed to the adsorber.