

## Simulation of 3Bed PSA Process for H<sub>2</sub> Separation in Layered Bed

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Adsorption dynamics and PSA process for quaternary (H<sub>2</sub>/CH<sub>4</sub>/CO/CO<sub>2</sub>) system were also studied theoretically in layered bed. A three bed and seven step process using a layered bed with two different adsorbents which are activated carbon and zeolite 5A in one bed was employed to produce high purity hydrogen. The optimum adsorption pressure and feed flow rate were 9 atm and 9.4 LPM. The purity and recovery of product were affected by adsorption pressure, feed flow rate and composition on the breakthrough curve were identified carefully. The effects of separation performance on the simulation were investigated using a 3-column PSA process packed with activated carbon and zeolite 5A. Dual-Site Langmuir model be used to predict the numerical simulation results for hydrogen purification of H<sub>2</sub>/CH<sub>4</sub>/CO/CO<sub>2</sub> quaternary mixture gas.