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WEBINAR

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Dynamic modeling of natural gas drying by adsorption

Natural gas is saturated with water vapor. Dehydration process is used to remove the water vapor from natural gas stream. Solid desiccant materials are used in industrial natural gas dehydration such as molecular sieves which are considered as the most important one. In this study, a dynamic mathematical model was developed to simulate fixed bed adsorption process used for gas dehydration where the fixed bed reactor contains molecular sieves 3A with two layer in different sizes. The top particle diameter was 3.2 mm while the bottom particle diameter was 1.6 mm. The model was simulated to follow up the breakthrough behavior at different operating condition like temperature, flow rate, inlet water content, mass transfer zone and bed height / diameter. The mathematical model obtained results were verified against the ones obtained from Liquefied Natural Gas Company in Egypt.

Speaker Publications

1. Garg DR, Ruthven DM. Linear driving force approximations for diffusion controlled adsorption in molecular sieve columns. AIChE J. 1975;21(1):200-202.
2. Zwiebel I, Gariepy RL, Schnitzer JJ. Fixed bed desorption behavior of gases with non-linear equilibria: Part I. Dilute, one component, isothermal systems. AIChE J. 1972;18(6):1139-1147.
3. Ruthven DM, Ching CB. Counter-current and simulated counter-current adsorption separation processes. Chem Eng Sci. 1989;44(5):1011-1038.
4. Hashimoto K, Adachi S, Shirai Y, Morishita M. Preparative and Production Scale Chromatography. Ganetsos G Bark PE Marcel Dekker N Y. Published online 1993:273-300.

Biography

Ashraf A.K. Hussien is working in Chemical Engineering department, Faculty of Engineering, Alexandria University, Egypt.