عنوان مقاله:

Steady-State and Dynamic Simulations of Gas Absorption Column Using MATLAB and SIMULINK

محل انتشار:

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خلاصه مقاله:

Separation is one of the most important process in all the chemical industries and the gas absorption is the simplest example of separation process which is generally used for the absorption of dilute components from a gaseous mixture. In the present work, a dynamic system of mathematical equation (algebraic and differential) is modeled to predict the behavior of the absorption column using matrix algebra. The dynamic model was programmed using MATLAB/SIMULINK and S – function was used for building user define blocks to find out the liquid and the gas composition using the standard MATLAB ode۴۵ solver. As a case study, fermentation process is taken as an example to separate CO۲ from a mixture of alcohol and CO۲ in a tray gas absorber using water as absorbent. The steady state solution was first solved to give the initial condition for the dynamic analysis. Dynamic outcomes for stage compositions was figure out for step changes in the vapor and liquid feed compositions. The model results show good agreement with the practical situation and also compared favorably with results obtained by Bequette. With this work, we are able to provide a readily available simulation that can be used as a test bed for advanced process monitoring.

کلمات کلیدی:

Sieve Tray, MATLAB, SIMULINK, Mathematical Modeling, Absorption Column

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