

RESEARCH PAPERS

反置式间歇蒸馏塔的设计程序(I)多组分理想物系

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摘要 Inverted batch distillation column(stripper) is opposed to a conventional batch distillation column(rectifier). It has a storage vessel at the top and products leave the column at the bottom. The batch stripper is favourable to separate mixtures with a small amount of light components by removing the heavy components as bottom products. In this paper, we are presenting a shortcut procedure based on our earlier work for design and simulation of the inverted batch distillation column, which is equivalent to the Fenske-Underwood-Gilliland procedure for continuous distillation. Given a separation task, we propose to compute the minimum number of stages(Nbmin)and the minimum reboil ratio(Rbmin) required in a batch stripper,which are the stages and reboil ratio required in a hypothetical inverted batch distillation column operating in total reboil ratio or having an infinite number of stages,respectively. Then, it is shown that the performance of inverted batch columns with a finite number of stages and reboil ratios could be correlated in Gilliland coordinates with the minimum stages Nbmin and the minimum reboil ratio Rbmin.

关键词 [inverted batch distillation column](#) [stripper](#) [shortcut procedure](#)

分类号

Shortcut Procedure for Inverted Batch Distillation Column (I) Multicomponent Ideal System

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Abstract

Inverted batch distillation column(stripper) is opposed to a conventional batch distillation column(rectifier). It has a storage vessel at the top and products leave the column at the bottom. The batch stripper is favourable to separate mixtures with a small amount of light components by removing the heavy components as bottom products. In this paper, we are presenting a shortcut procedure based on our earlier work for design and simulation of the inverted batch distillation column, which is equivalent to the Fenske-Underwood-Gilliland procedure for continuous distillation. Given a separation task, we propose to compute the minimum number of stages(Nbmin)and the minimum reboil ratio(Rbmin) required in a batch stripper,which are the stages and reboil ratio required in a hypothetical inverted batch distillation column operating in total reboil ratio or having an infinite number of stages,respectively. Then, it is shown that the performance of inverted batch columns with a finite number of stages and reboil ratios could be correlated in Gilliland coordinates with the minimum stages Nbmin and the minimum reboil ratio Rbmin.

Key words [inverted batch distillation column](#) [stripper](#) [shortcut procedure](#)

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