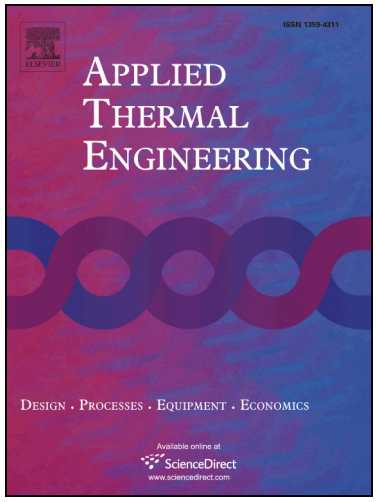

Toward Energy Key Indicators in Ethane Sweetening Process

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Toward Energy Key Indicators in Ethane Sweetening Process

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Abstract:

A rate-based model for analyzing energy key indicators of an industrial ethane sweetening process was developed. The methodology was based on the heat balance around absorber and regenerator columns, in which the total energy demand was partitioned into 'vaporization heat', 'sensible heat' and 'heat of the reaction'. The effects of CO_2concentration, mass fraction of amine solvent and amine temperature on the component profiles in liquid film and the energy key indicators of the process were investigated. The results of developed rate-based model are in a close agreement with those obtained by the simulation software Aspen plus. Finally, it was found that energy of the process under study is greatly influenced by vaporization heat rate.

Keywords: Rate-based modeling, CO_2, heat of evaporation, sensible heat, heat of reaction, MEA

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