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INVESTIGATION OF COST AND ENERGY DEMANDS IN TERNARY DISTILLATION SYSTEMS USING RATE-BASED APPROACH

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Abstract

The separation of a ternary system by means of distillation is investigated with respect to feasible energy savings. For this purpose, a method combining short-cut and rate-based models is used, which allows fast determination of relevant set-up and operating parameters as well as detailed simulation results. Four different distillation sequences were studied and analyzed regarding heat requirement, total investment and operating costs. It is shown that thermally coupled columns can provide significant energy and cost savings as compared to conventional distillation sequences.

Keywords: distillation, short-cut modeling, rate-based modeling, energy consumption, cost calculation, thermally coupled columns, process integration

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