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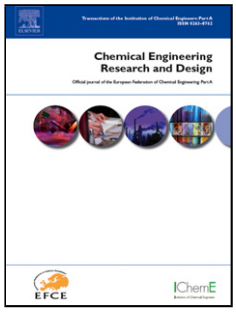

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Process Integration by Application of an Extractive Dividing-Wall Column: An Industrial Case Study

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Highlights

- An industrially operated extractive dividing wall column is presented and explained in detail
- During process development no piloting or mini plant trials were carried out
- Process simulation is based exclusively on predictive thermodynamic models
- Real plant data is compared to simulation results

Abstract

Extractive distillation for the separation of azeotropic or narrow-boiling mixtures has been known for a long time and is well established in the chemical industry. For the separation of zeotropic ternary mixtures, however, dividing wall columns have gained importance for two decades. Both processes incorporate a high degree of intensification, which yields in a considerable reduction of both, capital and operational costs. The trend towards intensified processes is unbroken in the chemical industry, particularly in the industrial nations, since it facilitates the struggle with high energy prices and helps to withstand the increasing competition from low-cost countries. The combination of extractive distillation and dividing wall column allows the separation of narrow-boiling or azeotropic components in one single column tube, using a suitable entrainer. Recently, the Lonza AG has successfully developed and implemented an extractive dividing wall column. The entire equipment design was exclusively carried out based on simulations without carrying out time-consuming pilot or mini plant experiments. This approach considerably shortens the time-to-market cycle and reduces the development costs to a

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