

Application of thermally coupled distillation system for mitigating the remixing effect

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This study has a major objective to mitigate the remixing effect, as applied thermally coupled distillation systems to a lactic acid recovery process. Previous lactic acid recovery processes referenced in many papers have a problem with the remixing effect. In the upper section of the hydrolysis column, the mole fraction of water go through a maximum then decrease in the distillate. This phenomenon causes a large demand of energy to repurify the mixture. One of the way to overcome high energy consumption is using thermally coupled design to mitigate the remixing effect. There are several types of designs for thermally coupled distillation columns. This work suggests thermally coupled dividing wall column (DWC) for the lactic acid recovery process. The equilibrium stage model based on the RADFRAC module of Aspen Plus is employed for simulation of thermally coupled designs. Simulation result shows that DWC can save much more energy than previous lactic acid recovery processes.