

445a Comparison of Pressure-Swing and Extractive-Distillation Methods for Methanol Recovery Systems in the Tame Reactive-Distillation Process

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The process to produce TAME via reactive distillation requires a methanol-recovery section because the presence of C5-methanol azeotropes means that a significant amount of methanol is present in the distillate from the reactive column. The use of pressure-swing azeotropic distillation was studied in a previous paper¹ in which both the steady-state design and the plantwide control of the entire process were developed. This paper presents a quantitative steady-state and dynamic comparison of the pressure-swing process with an extractive-distillation process. Water is the extractive agent. The extractive-distillation process is found to be much more economical (40% lower capital investment and 60% lower energy cost). The plantwide dynamic controllability performances of the two systems are essentially equivalent.