Control system design based on various feed conditions for a dividing wall column

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Distillation process is the most important and energy-intensive process in the petrochemical and refinery industries. It consumes 30~60% of the total energy in chemical processes. The energy consumption in a chemical process can be effectively reduced by using the advanced distillation process. The most promising alternative to a conventional distillation process is a DWC (Dividing Wall Column) when separating tertiary mixtures. A DWC can save energy by more than 30% compared with a conventional distillation process since the DWC is built in only one shell and a vertical wall divides its core in two parts that work as the prefractionator and the main column respectively. However, although many researchers worked on the control structures of the DWC, there are not any general criteria which can be applied for practical applications. In this work, we suggest criteria for selecting control structures of the DWC depending on various feed conditions by inspecting dynamic features of the DWC. This work was supported by 2006 Energy•Resource Technology Development Program from KEMCO.