Active Disturbance Rejection Control of a Heat Integrated Distillation Column

Heat integrated distillation column (HiDC) is the most energy efficient distillation approach making efficient utilization of internal heat integration through heat pump. The rectifying section acts as a heat source with high pressure, while the stripping section operates as a heat sink with low pressure. However, the control of some HiDC processes is generally difficult due to the strong control loop interaction, high purity of the components and undesired disturbances. Active disturbance rejection control (ADRC) is used in this paper to control a simulated HiDC for separating benzene-toluene mixture. The efficiency of the ADRC technique is demonstrated by comparing with the conventional PI controller in terms of set-point tracking and external disturbance rejection capability. The results show that the ADRC gives much improved control performance than the PID control.

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