Improved multi-model predictive control to reject very large disturbances on a distillation column

Abdul Wahid, author

Abstrak

A multi model predictive control and proportional-integral controller switching (MMPCPIS) approach is proposed to control a nonlinear distillation column. The study was implemented on a multivariable nonlinear distillation column (Column A). The setpoint tracking and disturbance rejection performances of the proposed MMPCPIS were evaluated and compared to a proportional-integral (PI) controller and the hybrid controller (HC). MMPCPIS developed to overcome the HC's limitation when dealing with very large disturbance changes (50%). MMPCPIS provided improvements by 27% and 31% of the ISE (integral of square error) for feed flow rate and feed composition disturbance changes, respectively, compared with the PI controller, and 24% and 54% of the ISE for feed flow rate and feed composition disturbance change, respectively, compared with HC.