

Evaluation on energy consumption in compact hydro distillation process between MPC and PID control

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ABSTRACT

This paper presents the comparison of the MPC and PID control in compact hydro distillation process. Both of PID controllers and MPC undergone the performances of controller tests such as set point, set point change and load disturbances. The comparative performances of MPC and PID controllers (PIDCC and PIDZN) were evaluated and analysed based on transient responses performance and also in term of energy consumption via simulation. The simulation results show that MPC gives good performances in term of transient responses such as settling time, rise time and percentage of overshoot. Moreover, in term of energy consumption, the integral absolute control signal (IACS) has been used to simulate the energy that have been consumed. The result indicates that, MPC produces lower IACS compared to both PID controllers.

KEYWORDS

ARX model; Model predictive control; PID controller; Integral absolute control signal

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