

## Model Predictive Controller for Pasteurization Process

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**Abstract :** Our study focuses on developing a Model Predictive Controller (MPC) and evaluating it against a traditional PID for a pasteurization process. Utilizing system identification from the experimental data, the dynamics of the pasteurization process were calculated. Using best fit with data validation, residual, and stability analysis, the quality of several model architectures was evaluated. The validation data fit the auto-regressive with exogenous input (ARX322) model of the pasteurization process by roughly 80.37 percent. The ARX322 model structure was used to create MPC and PID control techniques. After comparing controller performance based on settling time, overshoot percentage, and stability analysis, it was found that MPC controllers outperform PID for those parameters.

**Keywords :** MPC, PID, ARX, pasteurization

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