Abstract

This paper represents a novel design and control architecture of a non-linear stirred tank heater based on its mathematical equivalent modeling of the physical system. The method involves both single and two manipulated of four input variables mainly the temperature of the fluid through the jacket and the flow rate of the fluid through the jacket where the others are considered as unmeasured disturbances. A Model Predictive Controller (MPC) is used over PID based controller to maintain the tank temperature at 1500F using MATLAB simulations. Finally, a comparative tabulated result is presented for both MPC and PID based controllers for single manipulated input variables and offered MPC based control considering the operating decisive factor as a MISO system(single output and two manipulated input variables) for optimum control process.
A Simulink Modeling to Develop a Control System of Stirred Tank Heater with Multifarious Operating Conditions


Index Terms

Computer Science

Control Systems
Keywords

PID controller  Model Predictive Controller  Temperature Control  MISO control