Model Based Parametric Controller for the Operation of an Experimental Reactor

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Abstract
The aim of this work is to demonstrate on a pilot-plant-scale partially simulated exothermic reactor the implementation and performance of novel parametric controllers, recently developed at Imperial College London. A first-principles model of the process is used and then the parametric controller for the plant model is derived. The controller is given by a set of piecewise affine functions of the manipulating variables, the reactor input flow and cooling jacket temperature, in terms of the controlled variables, the temperature and concentration of the reactor. These affine functions are stored on a computer, which is interfaced to the plant using PARAGON, 5.3. The on-line model-based control therefore reduces to simple affine function evaluations.

Keywords: Parametric Controller, Pilot Plant, Model Predictive Control, Parametric Programming

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