

**INDUSTRIAL INSTRUMENTATION FOR CONTROL OF CHEMICAL PROCESSES**

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## Resumo

Automation and instrumentation are of extreme importance for industrial processes, as these require control in the manufacture of their products. The milk pasteurization process presents challenging control problems, including non-linear dynamic behavior and multivariable interaction, making it very difficult to control milk and water temperature by conventional on-off controllers, since temperature is an important variable for ensure the quality of milk. To improve the milk pasteurisation process, the model predictive control (MPC) non-linear is suggested. This model show superior performance in keeping milk and water temperatures at the desired set points without any oscillation and overshoot compared to other controllers, as is the case of generic model control (GMC). Another very common problem in the chemical industry are the processes with a large time delay. In view of, that the proportional-integral-derivative (PID) controller does not present good performance due to the large time delay and model/plant mismatches, it is recommended to use a new controller, which consists of the combination of dynamic matrix control (DMC) algorithm with the PID control, to control the residual oil outlet temperature of an industrial coke furnace. This combination supports the DMC control performance and the simple structure of PID control. The method performance is achieved in terms of set point tracking

and disturbance rejection. Many control algorithms are tested to eliminate this problem, but are limited by the cost, hardware and complexity.

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