

ABSTRACT

METHOD FOR AUTONOMOUS LEARNING OF MODELS FOR PREDICTIVE CONTROL IN PROCESS INDUSTRY

The present invention discloses a method for autonomous learning of models for predictive control in the process industry. The method is implemented by using a multi-input single-output system as a basic subsystem, and includes: step 1: model setting and self-selection of to-be-learned parameters; step 2: parameter distribution modeling; step 3: data collection and processing; step 4: learning of model parameters; step 5: parametric tests on the models; and step 6: comparison of model prediction errors. According to the present invention, dynamic characteristics of a process can be autonomously learned online; types of the to-be-learned parameters can be automatically selected based on preset model parameters, so that the to-be-learned parameters have actual physical significance, and during learning, a preset model has a constraint effect on model learning results to improve reliability of the model; the parameter learning results are tested, and prediction results are evaluated to further improve the reliability of the model; and parameter dead zones are used to increase stability of the model parameters and reduce fluctuations in a control effect that are caused by frequent changes in the model parameters.

FIG. 1