Simulation based Modeling and Implementation of Adaptive Control Technique for Non Linear Process Tank

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Abstract

Control of nonlinear process is a complicated task in industrial environment. In this work, adaptive control technique is discussed in control of single conical tank level control system is a nonlinear system is identified mathematically. Analytical modeling were implemented and simulated in MATLAB SIMULINK and transfer function is obtained from the simulated response and PI controller parameter were derived for implementing gain scheduling adaptive controller and synthesis based method is used to obtain PI parameters for multiple linear models. The simulation studies were carried out for two controller parameters. From the results based on Performance indices like Integral Squared Error (ISE), it is proved the controller implemented using gain scheduling adaptive control technique out performs well over synthesis method based tuned multi PI controller.

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