

Abstract

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Supervisory fuzzy logic controller used for process loop control in DCS system

In this paper, the designed schemes for two Mamdani fuzzy controllers, employing the scaling factor tuning are proposed. The first fuzzy logic controller, is a normalized controller used to control the process loops, the tuning for its input and output-scaling factors is done through the second fuzzy controller (the supervisory controller). The supervisory fuzzy controller tunes the normalized fuzzy controller based on the variation of the loop response. The normalized fuzzy controller and the supervisory fuzzy controller are organized with specific experience information about a nonlinear thermal process. The proposed fuzzy controllers are applied practically to control the thermal process. That controller is applied to another process (level control process), where the controller gains are Selected based on the process conditions and limitations. The great advantage of that contribution is the ability to be generalized for different process variable loops in Multi-input/output system any DCS system. The supervisor here make a decouple between the process.