عنوان مقاله:

(Level control using Fuzzy Logic Controller (FLC

محل انتشار:

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خلاصه مقاله:

One of the most important things in any kind of process is controlling the variables the process variables. Almost all real systems exhibit non-linear behavior and conventional controllers are not always able to provide proper results and tolerable error. Fuzzy logic control (FLC) is best utilized in complex ill-defined processes that can be control by a skill human operator without much knowledge of their underlying dynamics. The basic idea behind FLC is to incorporate the expert experience of a human operator to design a fuzzy controller whose input-output relationship is described by a collection of fuzzy IF-Then rules. In this paper the fuzzy logic control of Armfield PCT-9 system is considered. This system uses a motorized control valve to control the flow rate of water which is pumped from a sump tank. Two sensors are available for measuring the level of the tank and also the inlet flow.There was leakage from the motorized control valve because the diaphragm was damaged and therefore we first replaced the diaphragm.The objective of this work is to control the level according to a desired set point. For this purpose two types of fuzzy controller are designed. A fuzzy controller with Error and the Rate of Error as inputs and a fuzzy controller with Error as its only input. Also it is observed that the fuzzy controller with two inputs acts more proper and reliable. In addition, by changing the number of membership functions it is figured out that more membership functions has better performance. Furthermore a PID controller is designed and the results are compared with the fuzzy controller. One of the significant advantages of a fuzzy controller is the absence of overshoot in the step response of the system.

کلمات کلیدی:

PID Controller, Fuzzy Logic Controller, Rule Viewer, FIS, Graphical User Interface, Liquid Level System, MATLAB Simulation

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