

A design of fast-locking without overshoot frequency-locking servo control system by fuzzy control technology

Chen, Liang-Rui; Hsieh, G. C. ; Lee, H. M.

Abstract

In this paper, a Fuzzy Pulse Pump Controller (FPPC) is proposed to realize a Fuzzy-Controlled Frequency-Locked Servo system (FC-FLS) for getting a fast locking response without overshoot. A prototype FC-FLS is designed and built to assess the system performance. In comparison with the Frequency Pump Controller-based FLS (FPC-FLS) and Variable Slope Pulse Pump Controller-based FLS (VSPPC-FLS), the acquisition times of the FC-FLS are improved over 40%. In particular, there is no overshoot in the FC-FLS for any servo distance. This means that a fast-locking FLS, without overshoot, has been successfully implemented as theoretical prediction.

Key words : Fuzzy pulse pump controller;

Fuzzy-controlled frequency-locked servo system