Abstract

The objective of the Fuzzy Adaptive Control (FAC) is to tune the scaling factors of the direct fuzzy logic controller (FLC). In this novel approach output scaling factor of Fuzzy controller is tuned through adaptation mechanism. The idea is to have a control system that will be able to achieve improvement in tracking set point change and rejection of load disturbance. In this paper, the proposed Fuzzy Adaptive Controller is applied to a permanent magnet synchronous motor drive (PMSM). High performances and robustness have been achieved by using the FAC. This will be illustrated by simulation results and comparisons with other controllers such as PI; classical and fuzzy adaptive controller based on tuning of input and output scaling factors. The performance criteria selected is quadratic performance criteria in terms of Rise Time (RT), Settling Time (ST), Integral of square error (ISE) and Integral of absolute error (IAE).
Index Terms

Power Engineering

Control Systems

Key words

Adaptive Control

Fuzzy Logic

PMSM Drive

PI Controller