

Comparative Study between Classical P-Q Method and Modern Fuzzy Controller Method to Improve the Power Quality of an Electrical Network

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Abstract : This article presents two methods for the compensation of harmonics generated by a nonlinear load. The first is the classic method P-Q. The second is the controller by modern method of artificial intelligence specifically fuzzy logic. Both methods are applied to an Active Power Filter shunt (APFs) based on a three-phase voltage converter at five levels NPC topology. In calculating the harmonic currents of reference, we use the algorithm P-Q and pulse generation, we use the intersective PWM. For flexibility and dynamics, we use fuzzy logic. The results give us clear that the rate of Harmonic Distortion issued by fuzzy logic is better than P-Q.

Keywords : fuzzy logic controller, P-Q method, pulse width modulation (PWM), shunt active power filter (sAPF), total harmonic distortion (THD)

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