

SHUNT HYBRIDACTIVE POWER FILTER IN BASED ON TWO COMPENSATION STRATEGIES WITH PI AND FUZZY LOGIC CONTROLLERS

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ABSTRACT

In the last decade, the nature of industry design has changed rapidly and it's nonlinear and time variation loads in power frameworks spectrum has expanded beyond expectations. This radical revolution leads to growing quality control problems such as voltage and current harmonics, current unbalance, flicker and poor power factor in control frameworks. This paper aims to address this issue by developing synchronous reference frame and Reactive Power (SRF and P-Q) control systems. Proportional-Integral (PI) and fuzzy logic controllers were used to regulate the dc voltage to its set reference and provides the current reference. The results show that the fuzzy logic control achieve an adequate optimization of the energy storage of the DC capacitor, the sinusoidal type of the current and the change of the power factor. The proposed framework has achieved a low Total Harmonic Distortion (THD) which meets the IEEE-519 standard suggestions on symphonious levels.

Keywords: Total harmonic distortion, Shunt hybrid Active power filter, p-q control strategy, SRF control strategy, PI controller, fuzzy logic controller.