

DSP-based flexible digital hysteresis in switched capacitor active power filter

ABSTRACT

This paper proposes implementation of digital signal processor (DSP) to perform flexible-band digital hysteresis current control in a switched capacitor active power filter (SCAPF). By integrating hysteresis current control with digital-based neural network harmonic detection, the proposed SCAPF forces the supply current to be sinusoidal, to have low current harmonics, and to be in phase with the line voltage. Simulation on MATLAB Simulink verified the controller's algorithm design, and a purpose-built laboratory SCAPF system tested its feasibility.

Keyword: DSP; Hysteresis; Switched capacitor active power filter