



# Control of a Shunt Active Power Filter by the Synchronous Referential Method Connected with a Photovoltaic Solar Energy

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**Abstract:** This paper presents a depollution technique for low voltage electrical networks. This technique is based on the control of the shunt active power filter (SAPF) at two levels by the instantaneous power method (Synchronous Reference Frame - SRF) which has allowed us to obtain reference currents by eliminating the harmonic currents generated by the non-linear load (three-phase rectifier). We have thus proposed a DC voltage source from the SAPF by a photovoltaic solar generator while ensuring energy maximization by the MPPT controller. The simulation results under the MATLAB/Simulink environment obtained for the shunt active filtering system clearly indicate the efficiency of the chosen control (SRF) and follow the international standard recommendations IEEE519-92 which require that the Total Harmonic Distortion of the source current be less than 5 %.

**Keywords:** *maximum power point tracking (MPPT), photovoltaic generator (PVG), perturb and observe (PandO), synchronous reference frame (SRF), total harmonic distortion (THD).*

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