



ABSTRACT

Three Phase Four leg Active power filter consists of: Power circuit and a control circuit. The power circuit consists of 3-phase PWM inverter, while controller generates the eight control signals for eight switches of PWM inverter.

The controller needs to compute, generated 3- ϕ compensating current and generate eight signals from these compensating currents using dynamic hysteresis current control.

Instantaneous reactive power theory (p-q theory) may be used to implement the control signal generator unit of APF. The p-q theory compensates the current of a non-linear load such that the compensated current shall draw a constant active power from the network, even if the system voltage is already distorted. It provides constant real power to the source. The active filter compensating currents are obtained from the instantaneous active and reactive powers p and q respectively of the non-linear load.

Survey of research work has inspired the author to explore applications of DSP processors as better alternatives for implementation of controller.

The aim of the project is the Design, Simulation and implementation of control signal generator unit using TMS320C6711 DSP for Three Phase Four Wire Shunt Active Power Filter which generates the firing Pulses, which can be given to the power circuit of Active Power Filter.

Two alternatives embedded configurations: Hybrid or mixed embedded controller employing analog components and software (High resolution Setup) and Software based Embedded Controller (Low Resolution Setup) are proposed and developed. Voltage and current harmonics as well as the non symmetric component of the load current cancellation based on specialized DSP 320C671X series developed by Texas Instruments provides an inexpensive solution.