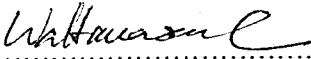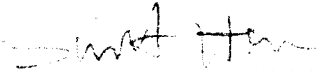THESIS TITLE : LINE HARMONIC REDUCTION IN POWER SYSTEM USING

SHUNT ACTIVE POWER FILTER

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ABSTRACT

This thesis presents a method to reduce current harmonic distortion in an utility system. This is accomplished using a shunt active power filter which comprises a three-phase PWM inverter and an energy-storage capacitor. The control scheme has been developed using an instantaneous power theory. In principle, the ac component of the instantaneous power caused by the harmonic current can be compensated. If the harmonic currents required by the load can be computed and generated into the system by means of the active power filter , the supply current would be sinusoidal with virtually no harmonics. Theoretical and practical results demonstrate that the developed control scheme can effectively reduce harmonic current in the system. In addition, the instantaneous reactive power can be generated which can improve the system power factor.