CHAPTER FIVE

CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Power system distribution reliability and normal operation of electrical equipment rely heavily upon a clean distortion free power supply devices in power systems results in power quality problems such as harmonics, inter-harmonics . Due to the variety of nonlinear loads and their problems, different compensation systems have been used. Passive filters are conventional solutions to mitigate harmonics. The limitation of passive filters for compensating complex problems such as non-integer harmonics and flicker has made active filters more attractive.

Active harmonic filter become necessary for power system distribution and provides multiple functions such as harmonic reduction, isolation, damping and termination, load balancing, PF correction and voltage regulation .In this project harmonics reduction methods in power systems was provided, shunt active filter was designed to eliminate 5^{th} and 7^{th} harmonic order. In depth analysis is performed and mathematical model and software simulation for active harmonic filter is developed to design inexpensive solution to eliminate the effect of harmonic.

Simulation results using MATLAB/SIMULINK shows that shunt active filter is more effective to reduce harmonics, the total harmonic distortion in system without filter was 20.43% and it reduce to2.19% after using passive filter, and with active filter the total harmonic distortion reduce to0.49%. The comparisons are made between the elimination by passive filters and by active filter, using active filter more effective than using passive filters. Active filters improve the power quality and THD and give us the pure sinusoidal wave.

5.2 Recommendation

1. Design Active filter by using other Control Techniques such as Fuzzy to control the firing angle.

2. Investigation of phase shifting for harmonic cancellation.

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