The quality of the Electrical power is effected by many factors like harmonic contamination, due to non-linear loads, such as large thyristor power converters, rectifiers, voltage and current flickering due to arc in arc furnaces, sag and swell due to the switching of the loads etc. One of the many solutions is the use of a combined system of shunt and active series filters like unified power quality conditioner (UPQC). This device combines a shunt active filter together with a series active filter in a back-to-back configuration, to simultaneously compensate the supply voltage and the load current or to mitigate any type of voltage and current fluctuations and power factor correction in a power distribution network. The present work study the compensation principle and different control strategies used here are based on PI & ANN controller of the UPQC in detail. The control strategies are modeled using MATLAB/SIMULINK. The simulation results are listed in comparison of different control strategies and for the verification of results.
Reference


**Index Terms**

Power Electronics  
Power Systems

**Key words**

Active power filter
Artificial neural network-ANN
Harmonics
Power quality
Unified power quality conditioner