CHAPTER 3

OBJECTIVES AND SCOPE OF THE WORK

Quality is the buzz word today in Power Engineering systems. In multi transmission lines, low loss and hence low cost system are much sought after. The thesis aims precisely at this in the sense that it suggests innovative methodologies to improve solid state circuit breaker operations in a commutation circuit, aims to install an error proof graphical based analysis for compensating voltage sags and finally it seeks to better the performance of various fault analysis for solid state circuit breaker based DVR with Varistor in the power system. Hence it addresses all the major parameters of power system generation, transmission and distribution. Methods suggested are non-invasion in that, they can be incorporated smoothly into any existing system and any retrofit can be quickly implemented consuming the minimum of time and cost.

Generous quotes from the existing body of research work in this field have been exhaustively listed in a logical and cogent form. Methodical test data collection have been obtained, tabulated, analysed and their results have been studied assiduously in support of the inferences arrived at. Further, the chapter dealing with the performance of various fault analysis for solid state circuit breaker proposes a strong base hold for further research and findings in the related area. The objective of the thesis are thus the suggestion and implementation of path breaking technology and in today power-hungry world, the scope of the thesis projects well beyond into the future, setting a trail-blazer for further action overhauling of old systems to pave the way for a new, eco-friendly power engineering systems.
Voltage distortions are one of the most important factors that affect the power quality of the system. These voltage distortions affect the system performance and sometimes it causes damages to the system. Metal oxide varistor is mainly used for reducing voltage distortions in the system. Solid-State Circuit Breaker (SCB) is a high power semiconductor device which is used to improve the voltage quality as well as it will also reduce the short circuit current and voltage distortion during a short circuit failure. This will lead to improved performance of SCB in handling short circuit failure. The performance of the proposed commutation circuit will be evaluated.

The intention of this thesis is to examine feasibility, specify necessities and propose execution of various topology conditions and at the similar time standing and procedure of high and intermediate voltage circuit breakers.

Circuit breaker design should enable development of different topology and system-wide switching operation applications. In addition, installation should be as simple as possible to minimize installation time and cost.

DVR is a solid-state D.C to A.C switching power converter, to overcome short duration fault(Al-Hadidi et al 2008).

In addition, installation should be as simple as possible to minimize installation time and cost. System needs to be noninvasive to enable installation without breaker isolation and inexpensive to enable system-wide installation.