

HARMONIC ANALYSIS OF CONVERTER FED DISTRIBUTION SYSTEM

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CERTIFICATE

I admit the research work enclosed in this thesis as a ratification to the essential standard for the partial fulfilment of the degree of MS (EE).

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DEDICATION AND ACHNOLOGEMENT

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DECLARATION OF AUTHORSHIP

I **Tahir Anwar # 01-244151-023** hereby declare that content of this thesis is my own work and that it is the result of work done during the period of registration. To the best of my knowledge, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

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ABSTRACT

During these days, as more electronic devices came into use and the percentage of nonlinear load increases, due to this harmonics have become the basic power quality problem in power system. Just to solve the problem in the power system, we must be aware of the harmonic sources and must prevent its related problem.

In our country Pakistan, with many other crises, energy crisis is also the serious one. This is because of the increasing demand and low supply of the electricity which is other words is known as the load shedding. This is also one of the reason that actually moved many industries while residential consumers have come towards the vast use of energy back up supply, Uninterruptable Power Supplies (UPSs) and Generators to avoid inconvenience. Electronic switches based power converters used in Uninterruptable power supplies (UPSs) generates harmonics which effect the performance and reduce life of power system equipment's.

In this thesis, harmonic distort caused by Uncontrolled rectifier used in Uninterrupted power supply under different loads will be analyzed to measure the total harmonic distortion produced in distribution system. Also passive filter and shunt active power filter are used to limits the harmonics with in IEEE standards. Simulation results will show harmonic distortion caused by different loads with rectifier, compensation with PF and SAPF and effects on grid transformer utilization. Also comparison is made in term %THD which filter does minimized THD effectively. MATLAB SIMULINK will be used to develop and analyze the model.

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ABBREVIATIONS

AF	Active filter
DG	distribution transformer
PCC	point of Common coupling
PF	Passive filter
PI	Proportional and integral
SAPF	Shunt active power filter
TF	Transformer