



Mitigation of Harmonics in Distribution System using STATCOM

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ABSTRACT

Voltage distortions, flicker and unbalances are the major synchronization problems in grid connected photovoltaic system leads to power quality issues. Also, sudden changes of load, application of non-linear loads and switching conditions causes power quality issues. To overcome these problems the proposed distributed system is implemented with custom power device (Distributed STATCOM). Load and source current parameters are used to generate the reference signal required for PWM generator. The reference signal required for DSTATCOM is controlled with PI Controller. This proposed system is to be implement and tested in MATLAB/Simulink and results to be verified with different controllers under different load conditions.

KEY WORDS: DSTATCOM, Phase Angle Controller, Current Controller and Harmonics.

1. INTRODUCTION:

Generally, with increase in the power demand due to increase in population, utilization, the Generation of power was really a challenge now a day. Due to high utilization of non-conventional energy sources [1] as a one of the distribution energy sources, may causes the stability problems such as voltage regulation and other power quality problems. Therefore, the power electronic based forced commutated converters are preferred in distribution system for maintaining the system stability, reliable performance and efficient work and also improving the quality of power at coupling junction point.

The current distortions in non-linear load may result same distortions in the system voltages and in some cases also shows the serious effect on power system. Generally, the problems in power system are more complicated and also have difficult to identify the problem when integrating the wind energy system with grid connection [2]. If these problems continuous, it's mainly causing the damage of system and also reduces the system efficiency. By controlling the system parameters such as magnitude of voltage, transmission impedance and load angle to maintain the power flow. The power flow controlling device is a device which is used for varying and controlling the system parameters [3].