Abstract

This paper presents the three – level neutral point diode clamped inverter is used in a
distribution static compensator (DSTATCOM), making use of the multi-level inverter advantages
of low harmonics distortion and reduced switching losses. The pulse width modulation (PWM)
inverter is employed as DSTATCOM compensating reactive power and eliminates the
harmonics drawn from a non-linear load. A fuzzy gain scheduled proportional and integral
(FGPI) dc voltage controller is proposed for inverter dc voltage control to improve the
performances of three – levels DSTATCOM and fuzzy logic current controller is proposed to
reduce harmonic supply currents for DSTATCOM. The D-Q reference frame theory is used to
generate the reference compensating currents for three -level DSTATCOM. The three-level
DSTATCOM with proposed control schemes is implemented in Matlab/Simulink software
platform. The simulation results show that the system with proposed control schemes provides
a good inverter dc voltage regulation, reduced harmonics distortion in supply current and in phase with line voltage.

Reference

Neutral Point Diode Clamped Multi-Level Control of Dstatcom by Using Fuzzy Gain Scheduling PI and Fuzzy Logic Controllers

- M. Gaiceau, Active power compensator of the current harmonics based on the instantaneous power Theory, The annals of "dunarea de jos" University of Galati FASCLE III. ISSN 1221-454 005, pp. 23-28.

Index Terms

Power Electronics Power Systems
Neutral Point Diode Clamped Multi-Level Control of Dstatcom by Using Fuzzy Gain Scheduling PI and Fuzzy Logic

Key words

DSTATCOM
fuzzy gain scheduled PI controller
fuzzy logic controller
multilevel inverter