

A New PWM Command for Cascaded H-Bridge Multilevel Increasing the Quality and Reducing Harmonics

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Abstract : Power Quality has been a problem ever since electrical power was invented and in recent years, it has become the main interest of researchers who are still concerned about finding ways to reduce its negative influence on electrical devices. In this paper we aim to improve the power quality output for H- bridge multilevel inverter used with solar Photovoltaic (PV) panels, we propose a new switching technique that uses a pulse width modulation method (PWM) aiming to reduce the harmonics. This new method introduces a sinusoidal wave compared with modified trapezoidal carriers used to generate the pulses. This new trapezoid carrier waveform is being implemented with different sinusoidal PWM dispositions such as phase disposition (PWM PD), phase opposition disposition (PWM POD), and (PWM APOD) alternative phase opposition disposition and compared with the conventional ones. Using Matlab Simulink R2014a the line voltage and total harmonic distortions (THD) simulated and the quality are increased in spite of variations of DC introduced.

Keywords : carrier waveform, phase disposition (PD), phase opposition disposition (POD), alternative phase opposition disposition (APOD), total harmonics distortion (THD)

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