



RESEARCH ARTICLE

PV System with Virtual DC Bus for Cost Effective Grid Supply for Commercial Purpose

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Abstract: The main objective of this project to control the common mode leakage current by using virtual dc bus with PV systems. The power which we receive form the PV panel is not a constant supply due to various condition. In order to overcome this issue we are using Buck Boost converter for generating constant voltage supply to the inverter. The negative pole of the dc bus is connected directly to the neutral line of grid and the stray capacitance between the PV panels and ground is bypassed. Due to this, the common mode ground leakage can be suppressed completely. The negative voltage level for the negative ac grid current generation is achieved by virtual dc bus. Consequently the required dc bus voltage is same as full bridge inverter. Because of this concept a transformer less inverter is derived in which the virtual dc bus is realized with the switched capacitor technology. It consists of five IGBT power switches for controlling the voltage and two capacitors, single filter inductor and Buck Boost Converter. This PV systems with Virtual dc bus is modulated with unipolar sinusoidal pulse width modulation (SPWM) and the double frequency SPWM to reduce the output ripple current. Magnetic losses are controlled by a smaller filter inductor in this system.

Keywords— Shared approach (SA) current; photovoltaic (PV) system; switched capacitor; transformer less inverter; unipolar sinusoidal pulse width modulation (SPWM); virtual dc bus

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