

عنوان مقاله:

Improving the Performance and Stability of DC-DC Converter Efficiency in Photovoltaic Power Generation Systems

محل انتشار:

هشتمین کنگره ملی تازه های مهندسی برق و کامپیوتر ایران (سال: 1400)

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خلاصه مقاله:

The aim of this paper is to improve operation and efficiency stability of first stage DC-DC converter in Photovoltaic (PV) power generation systems. In PV systems it is crucially important to have DC-DC converter with high efficiency, high step up ratio, low ripple in input current and output voltage. Definitely these criteria remind researchers of the interleaved boost converters. Robustness, stability, cost, size and weight are vital parameters usually are neglected in researches which has been done in this area. In this paper with regarding to mentioned features for DC-DC converters a zero voltage switching (ZVS) method for IBC has been proposed. Proposed ZVS circuit does not contain auxiliary switches and has very simple structure, regardless of number of boost converters its basic structure remain similar and just one capacitor for each phase must be added. Reducing switching losses, increase efficiency of IBC also switching frequency can be increased which lead toward smaller weight and size. In order to avoid instability of converter, providing turn-on ZCS condition and decreasing ripple of input current and output voltage three boost converter has been interleaved and operate in DCM. ۰.۵Kw IBC is simulated to verify the effectiveness of proposed .method

کلمات کلیدی:

.DC-DC Converter, Photovoltaic, Boost converter, Interleaved converter, Soft Switching

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