



International Journal on Recent Researches In Science, Engineering & Technology

(Division of Electrical and Electronics Engineering)

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JIR, DIIF and SJIF.

Research Paper

Available online at: www.jrrset.com

Chief Editor : Dr. M.Narayana Rao, Ph.D., Rtd. Professor, NIT, Trichy.

ISSN (Print) : 2347-6729

ISSN (Online) : 2348-3105

Volume 3, Issue 4,
April 2015.

JIR IF : 2.54

DIIF IF : 1.46

SJIF IF : 1.329

Implementation of Dual-Half-Bridge DC/AC Converter Using PV Generation

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Abstract: A dual-half-bridge (DHB) converter is integrated with a half-bridge 50-Hz inverter as a converter/inverter system using PV generation. This topology provides an isolation between the power source and the load with a 10-kHz transformer, and therefore, the system volume is small. By operating the transformer at high frequency the filter size is also reduced. On the other side, it reduces the number of switching devices greatly. However, the halfbridge inverter causes severe capacitor-voltage fluctuations. The unbalanced voltage problem can be solved by controlling the converter switching. This means that the voltage imbalance is corrected by adjusting the switching time of the secondary switches. The usefulness of this method is then validated by simulation results. Thus the hybrid energy is produced efficiently.