

Regulated Output Voltage Double Switch Buck-Boost Converter for Photovoltaic Energy Application

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Abstract : In this paper, a new Buck-Boost DC-DC converter is designed and simulated for photovoltaic energy system. The presented Buck-Boost converter has a double switch. Moreover, its output voltage is regulated to a constant value whatever its input is. In the presented work, the Buck-Boost transfers the produced energy from the photovoltaic generator to an R-L load. The converter is controlled by the pulse width modulation technique in a way to have a suitable output voltage, in the other hand, to carry the generator's power, and put it close to the maximum possible power that can be generated by introducing the right duty cycle of the pulse width modulation signals that control the switches of the converter; each component and each parameter of the proposed circuit is well calculated using the equations that describe each operating mode of the converter. The proposed configuration of Buck-Boost converter has been simulated in Matlab/Simulink environment; the simulation results show that it is a good choice to take in order to maintain the output voltage constant while ensuring a good energy transfer.

Keywords : Buck-Boost converter, switch, photovoltaic, PWM, power, energy transfer

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