World Academy of Science, Engineering and Technology
International Journal of Mechanical and Mechatronics Engineering
Vol:9, No:09, 2015

AC Voltage Regulators Using Single Phase Matrix Converter

Authors : Nagaraju Jarugu, B. R. Narendra

Abstract : This paper focused on boost rectification by Single Phase Matrix Converter with fewer numbers of switches. The conventional matrix converter consists of 4 bidirectional switches, i.e. 8 set of IGBT/MOSFET with anti-parallel diodes. In this proposed matrix converter, only six switches are used. The switch commutation arrangements are also carried out in this work. The SPMC topology has many advantages as a minimal passive device use. It is very flexible and it can be used as a lot of converters. The gate pulses to the switches are provided by the PWM techniques. The duty ratio of the switches based on Pulse Width Modulation (PWM) technique was used to produce the output waveform of the circuit, simply by turning ON and OFF the switches. The simulation results using MATLAB/Simulink were provided to validate the feasibility of this proposed method.

Keywords : single phase matrix converter, reduced switches, AC voltage regulators, boost rectifier operation
Conference Title : ICEME 2015 : International Conference on Electrical and Mechatronics Engineering
Conference Location : Los Angeles, United States
Conference Dates : September 28-29, 2015