All Sciences Proceedings
http://as-proceeding.com/

AS-ABSTRACTS
https://as-proceeding.com/index.php/as-abstracts
ISSN: 2980-1834


*All Sciences Abstracts*,
*Volume 1, pp. 12, 1, 2023*


# Space Vector Modulation technique implementation for the control of a Three-Phase Matrix Converter

Fayssal SAIDI*, Elhadj BOUNADJA[2] and Abdelkader DJAHBAR [3]

[1,2,3] *LGEER Laboratory, Faculty of Technology, Hassiba Benbouali University of Chlef, Algeria*

**f.saidi@univ-chlef.dz*

***Abstract*** **–** The Three-Phase Matrix Converter (3ph-MC) is a direct AC-AC converter that employs controlled semiconductor switches to enable a direct connection between the three-phase source and load. This setup enables an unlimited output frequency, thanks to the use of semiconductor switches with controlled turn-off capability. However, the 3ph-MC suffers from the simultaneous commutation of bidirectional switches, which has limited its popularity. Fortunately, several control techniques have been developed to overcome this issue and ensure safe switch operation. Among these strategies, Roy, Venturi, and the Space Vector Modulation (SVM) Techniques are the moste widely used. In this context, the present paper investigates the implementation under Matlab / Simulink of a 3ph-MC using SVM. Unlike conventional PWM converters, the 3ph-MC does not cause switching common mode voltage across the load system terminals, which can lead to common mode current and bearing failure in load drive. The use of SVM can rectify these issues and minimize the effect of harmonic fluctuation in AC output voltage. The paper includes simulation results to validate the proposed system.

*Keywords – Three-Phase Matrix Converter (3ph-MC); AC/AC converter; Space Vector Modulation (SVM), Bidirectional switchs, Control strategies.*