

A Seven-Phase qZsource Inverter Based on PWM Maximum Constant Boost Control Technique

CHARRAK Naas, ELBAR Mohamed*, DJEDDI Ahmed Zohair and KHALDI Belgacem Said

Faculty of Science and Technology, Applied Automation and Industrial Diagnostic Laboratory, University of Djelfa, Djelfa, Algeria.

**(m.elbar@univ-djelfa.dz) Email of the corresponding author*

Abstract – In the last decade multiphase machines and inverters have attracted much attention from research teams, where excellent overall system reliability and an overall reduction in total power per phase are required, multiphase machines are widely recognized as a promising alternative to traditional three-phase machines. Multiphase inverters are commonly used in various applications, including Electric vehicles (EVs), Renewable energy systems, Motor drives and Aerospace applications. These inverters provide several advantages, including enhanced power quality, lower harmonic distortion, higher power density, and better fault tolerance. By distributing power across multiple phases, these inverters can achieve smoother power delivery, reduced voltage ripple, and higher power transmission capacity.

This paper presents a novel inverter design named two-level Seven Phase qZsource inverter based on maximum constant boost control algorithm, The simulations results obtained in this work prove the quality of the improved performances of the proposed topology.

Keywords – Multiphase Quasi-Zsource Inverter, Tow Level, Qzsource Seven Phase Inverter, Modulation Index, Voltage Gain , PWM.