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### Performance Analysis of Multiphase High Power Open End Drives Fed from Dual Matrix Converter

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In this paper an open ended seven phase stator winding drive is considered for analysis that is to be fed from matrix converter controlled by space vector pulse width modulation scheme. Open-end winding variable speed drives with dual matrix converter supply have been extensively investigated for various applications in the past, based on a three-phase machine configuration. This topology is relatively simple for practical realization. It offers a higher number of switching states without the need for capacitor voltage balancing algorithms, when compared to the equivalent standard multi-level converter in single sided supply mode. This paper considers a seven-phase open-end winding topology. A relatively simple SVM algorithm, based on already developed seven-phase two level drive SVM method, is used for operation of both converters. The proposed modulation technique is straight forward to implement and is capable of generating pure sinusoidal output voltages, without any low-order harmonic components. The method offers superior harmonic performance when compared to seven-phase topology in single-sided supply mode. The developed scheme is verified by simulation, using a seven phase induction machine operated under V/f control. The proposed drive topology find application in high power ac drives such as in oil & gas industries, electric/hybrid electric vehicles, ship propulsion, traction etc. The simulation results support the proposed idea.

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