



Direct Control of Matrix Converters Using Asymmetric Strategy (ASVM) to Feed the Double Star Induction Machine

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Abstract: Due to their distinct advantages, the variable speed multi-phase drive systems are seen as serious contender to the existing three-phase drives. However we present in this work the modeling and control of matrix converter feeding a double star induction machine. In order to achieve this goal we present the model of matrix converter, and its control strategy: based on the direct space vector modulation (DSVM). Then we perform simulation tests for the whole converter and machine using *Matlab-Simulink*. The results illustrate the proper functioning of the system.

Keywords: *matrix converter; double star induction machine; space vector; modulation; switching strategies.*

Mathematics Subject Classification (2010): 68Q05, 93B52, 93C25, 93C83.

1 Introduction

To introduce an electric motor in high power applications, such as traction or marine propulsion, it is often necessary to segment the power. To this end, we can intervene at the converter level through multi-level techniques or parallel converters [7].

Another solution is to apply the segmentation level to the set converter-machine using multiphase machines. Indeed, the total power is distributed over a larger number of inverter arms, each of which is fed with a decreased power, which allows for a higher switching frequency and a less important ripple current and torque [2, 11]. One of the

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