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IMPROVEMENT OF THE INPUT CURRENT WAVEFORMS OF A MATRIX CONVERTER IN THE CASE OF BALANCED SINUSOIDAL POWER SUPPLY VOLTAGES AND UNBALANCED LOAD

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Abstract

The matrix converter (MC) control method based on the general algorithm of input reactive power regulation is aimed to improve the quality of the input currents in conditions of unbalanced load when powered by undistorted balanced voltage system has been proposed and studied. For this purpose, the formation of the input current space vector as the sum of its active and reactive symmetrical components has been considered. The scope of the dynamic modulation of reactive component of the input current as converter control parameter depending

on constant and variable components of the instantaneous power or on the degree of unbalance of the load and the output phase shift has been analytically determined. The effectiveness of the proposed approach is approved by the MC input currents simulation taking into account the actual conditions of switching and discrete formation of these currents. References 10, figures 6, table 1.

Key words: matrix converter, input current, reactive power, unbalanced load.

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