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

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Abstract

Matrix converter control method which is based on the general algorithm of input reactive power control and aims to improve the quality of input currents in conditions of unbalanced load and input voltages has been proposed and studied. For this purpose, the process of formation of the matrix converter space vector input current has been considered as a result of the addition of two independent dynamic modulation methods of the input current reactive component. The first one is based on the determination of the transfer ratio of output current into input current under balanced load and unbalanced power supply taking into account symmetric component of negative sequence of the input voltage, and the second one is under unbalanced load taking into account reactive part of symmetric component of negative sequence component of the

output current. Operating limits, where the proposed modulation methods are fully realized, have been defined. The effectiveness of the proposed approach confirmed by simulation of matrix converter input currents based on actual switching conditions and discrete formation of these currents. References 13, figures 5.

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

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