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ANALYSIS OF MATRIX CONVERTER USING MATLAB / SIMULINK

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Abstract

Matrix converter is a most versatile converter without any limit of the output frequency and amplitude. It replaces the multiple conversion stages and the intermediate energy storage element by a single power conversion stage. Matrix converter is an array of controlled bidirectional switches connecting directly between the source and the load to create variable output voltage and frequency. This paper attempts to presents the basic operating principle of a single phase to single phase matrix converter, three phase to single phase matrix converter, and then three phase to three phase matrix converter. This paper includes a novel topology for all above types of matrix converter and also simulation studies have been carried out using MATLAB / SIMULINK software. The output voltage of all different combination of matrix converter has been analyzed and from the simulation result it has been proved that the operation of matrix converter can be used as variable voltage and frequency changer.

Keywords: Matrix converter, Single phase and three phase modeling, simulation.