

ANN Based Simulation of PWM Scheme for Seven Phase Voltage Source Inverter Using MATLAB/Simulink

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Abstract : This paper analyzes and presents the development of Artificial Neural Network based controller of space vector modulation (ANN-SVPWM) for a seven-phase voltage source inverter. At first, the conventional method of producing sinusoidal output voltage by utilizing six active and one zero space vectors are used to synthesize the input reference, is elaborated and then new PWM scheme called Artificial Neural Network Based PWM is presented. The ANN based controller has the advantage of the very fast implementation and analyzing the algorithms and avoids the direct computation of trigonometric and non-linear functions. The ANN controller uses the individual training strategy with the fixed weight and supervised models. A computer simulation program has been developed using Matlab/Simulink together with the neural network toolbox for training the ANN-controller. A comparison of the proposed scheme with the conventional scheme is presented based on various performance indices. Extensive Simulation results are provided to validate the findings.

Keywords : space vector PWM, total harmonic distortion, seven-phase, voltage source inverter, multi-phase, artificial neural network

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