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Abstract
The study on the permanent magnet synchronous motor (PMSM) and its drive is considered in the thesis. The sinusoidal pulse-width modulation (SPWM) and voltage space vector PWM (SVPWM) are both applied to the voltage source inverter (VSI), respectively. The branch currents and node voltages in the VSI are investigated and obtained by simulation using Matlab Simulink and switching functions. And, their corresponding frequency spectra are also programmed to compare the formulas derived from the wall model.

The DSP TMS320F240 is used to implement the hardware that the inverter operates at 10 KHz switching frequency. And, the simulation by MATLAB Simulink runs at 1 KHz. Finally, the dynamic signal analyzer (DSA) 35670A is utilized to show the spectra.
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