

## ABSTRACT

The thesis deals with the simulation and implementation of a speed controlled permanent magnet brushless DC motor drive. The speed control is achieved by adjusting the current duty cycle based on the principle of current regulated PWM control. Commutation of the brushless DC motor is accomplished by electronically switching the current in the stator windings. The proper stator winding polarities at each instant are derived from the rotor position, as read from Hall sensors. Discrete type PI controllers are used for speed and input DC current control. The brushless DC drive is simulated using Power Simulation (PSIM) software version 5.0. The drive has been successfully implemented using Texas Instruments Digital Signal Processor TMS320LF2407 DSP. The control software for the DSP is written in C language. The drive performance obtained from simulation and experimental work are compared and found to be in closed agreement. It was demonstrated that the closed loop control of the drive using current control strategy can provide precise speed regulation under various operating conditions.

