APPENDIX-E COMPARISON OF RESULTS WITH EXISTING RESULTS

[66 of chapter-4] employs DSP based sinusoidal PWM generation for three phase inverter with switching frequency 10KHz is shown for DSP 2812, the D.C. voltage input to the inverter is 115V and with delta connected RL load and the output voltage was measured while in the proposed VSI based Induction motor drive system using PWM & SPWM approach control signals were generated with high performance TMS 320F28335 DSP controller.

- The switching frequency is 10KHz and input to the inverter is 100V DC and with star connected induction motor load. The high resolution six PWM output were generated to drive IGBTs of three phase Voltage Source Inverter. High frequency drive signals were given to Inverter stack through ePWM modules and PWM isolator module with programmable dead band.
- Six IGBT (SKM150GB12V) are used for this experiment, the rise time with turn on delay and fall time with turn off delay of each IGBT is 290 nsec and 450 nsec respectively.
- The switching frequency is 10 KHz, therefore to reduce switching loss the dead band between two inverter arms were programmed up to 11.4micro sec for optimum performance which is clearly visible in Fig.5.4.
- The existing results produced by [66 of chapter-4] is also of 10KHz switching frequency therefore in extension of previous work, here in the proposed work the PWM and SPWM outputs are programmed for 6.9 %, 25.2%,50.2%,75.2% and 93.6 % duty cycle along with programmable dead bands.(Fig.A.28-A.32).
- THD and Creast factor for PWM output is also measured and verified with simulation output and hardware implementations (Table 5.2).
- For 85% peak duty cycle the dc input voltage variation was performed from 50V to 100V and peak to peak ac output voltage were measured from 97V to 192V for hardware setup and also verified with simulation output from 100V to 200V variations. These variations in the results are because of switching and conduction losses present due to switching circuits in the hardware implementation.

[52-55 of chapter-3] employs Incremental motion controller or multi segment sliding mode controller of synchronous reluctance motor, induction motor, permanent magnet synchronous motor and smart controller for synchronous reluctance motor servo drive specified with trapezoidal profile were shown and implemented using PC-based prototype system.

- In the proposed system multi segment sliding mode controller for induction motor drive is implemented using SIMULINK tool box of the MATLAB software.
- The proposed method includes design of constant acceleration, constant speed and constant deceleration segment. Desired control object to rotate the rotor 6π radian in 0.6sec with speed and position control for trapezoidal profile is obtained with the proposed Multi Segment sliding mode controller is shown in Fig.3.20 and Fig.3.21 respectively and validated with the existing results.
- Genetic Algorithm and fuzzy logic approach is also incorporated in the MSMC controller design for speed and position control. Results of speed and position control for MSMC and GA optimized Fuzzy based MSMC are shown in Fig.3.25 and Fig.3.26 respectively.
- The prototype testing of the MSMC controller is also performed using PIL Technique for DSP 320F28335 controller.