supplied by a capacitor voltage. If the capacitor is kept charged to $V_{dc}/2$, then the output voltage of the H-bridge can take on the values $+V_{dc}/2$ (S1, S4 closed), 0 (S1, S2 closed or S3, S4 closed), or $-V_{dc}/2$ (S2, S3 closed). When the output voltage $v = v1 + v2$ is required to be zero, one can either set $v1 = +V_{dc}/2$ and $v2 = -V_{dc}/2$ or $v1 = -V_{dc}/2$ and $v2 = +V_{dc}/2$. It is this flexibility in choosing how to make that output voltage zero that is exploited to regulate the capacitor voltage.

When only a dc power source is used in the inverter, that is, the H-bridge uses a capacitor as the dc power source, the capacitor's voltage regulation control. During $\theta 1 \leq \theta \leq \pi$, the output voltage is zero and the current $i > 0$. If S1, S4 are closed (so that $v2 = +V_{dc}/2$) along with S6 closed (so that $v1 = -V_{dc}/2$), then the capacitor is discharging ($ic = -i < 0$) and $v = v1 + v2 = 0$. On the other hand, if S2, S3 are closed (so that $v2 = -V_{dc}/2$) and S5 is also closed (so that $v1 = +V_{dc}/2$), then the capacitor is charging ($ic = i > 0$) and $v = v1+v2 = 0$. The case $i < 0$ is accomplished by simply reversing the switch positions of the $i > 0$ case for charge and discharge of the capacitor. Consequently, the method consists of monitoring the output current and the capacitor voltage so that during periods of zero voltage output, either the switches S1, S4, and S6 are closed or the switches S2, S3, S5 are closed depending on whether it is necessary to charge or discharge the capacitor.

3. Simulation Results

In order to verify the performance of the proposed single phase to three phase converter with a Variation-Tolerant Phase Shifting Technique by two phase interleaved PFC Boost Converter. The following are results of proposed concept.

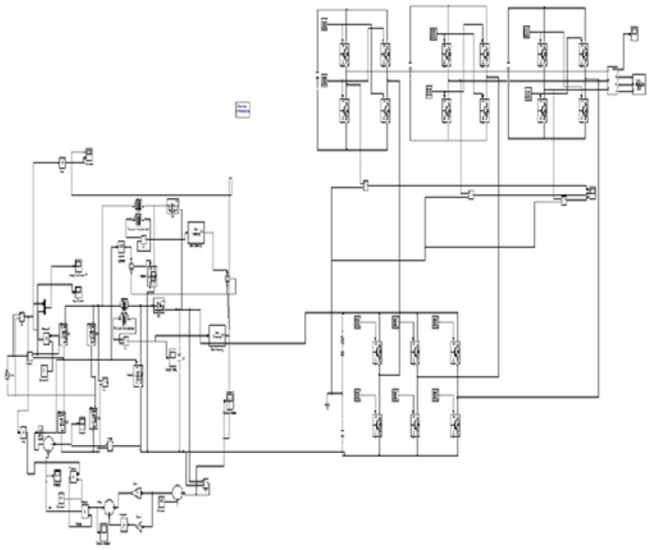

Figure 3: Single phase to three phase converter with a Variation-Tolerant Phase Shifting Technique by two phase interleaved PFC Boost Converter.

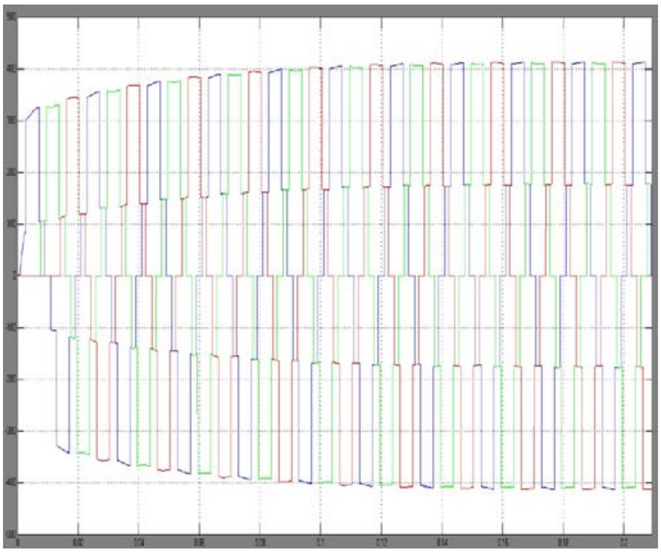

Figure 4: Three Phase output voltage.

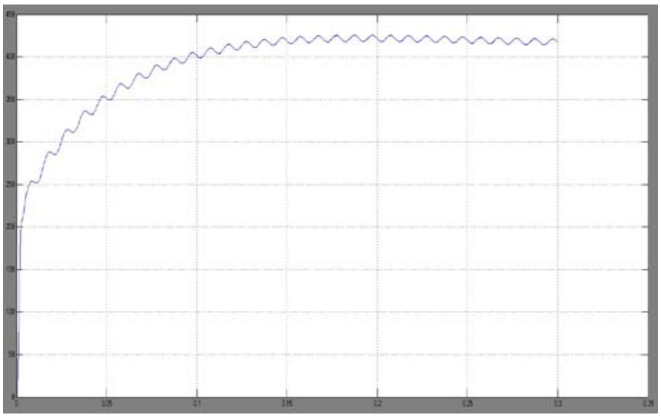

Figure 5: Boost converter DC voltage.

Figure 6: Single phase Power Factor.

Fig.4. shows the three phase output voltage of proposed converter. Fig.5. shows the PFC boost converter voltage. The PFC boost converter provides 410V dc output from the ac input line voltage of 230*1.4142 VRMS. In Fig.6, the PF and power efficiency of the PFC boost converter are shown for the input line voltage of 325.26 VRMS with the proposed VTPS.

4. Conclusion

A simulation model for the Single phase to three phase converter with a Variation-Tolerant Phase Shifting Technique by two phase interleaved PFC Boost Converter hybrid multilevel inverter is developed in MATLAB/SIMULINK. The three phase inverter output is a 5-level phase voltage. The PFC boost converter with the proposed phase shifter shows the lowest input current ripple because the proposed variation-tolerant phase shifter provides the most accurate 180^0 phase shift. From results it is clear about that, single phase to three phase possible with effective power factor, low ripple in DC voltage and better three phase voltage.

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