# CHAPTER 6

# CONCLUSION AND FUTURE WORK

## 6.1 CONCLUSION

Nowadays, several topologies were introduced to generate the power for driving many apparatus used for industrial applications. But due to the increased harmonic distortion and less power factor, the methodologies introduced, gets fail to satisfy the power needs of the apparatus. This problem has been addressed in this research work.

The bridgeless PFC boost Converter fed Asymmetrical seven level cascaded multi-level inverter using submulti-level inverter was proposed. By the concept of the bridgeless PFC boost Converter, the power factor gets corrected and an increased power factor of 0.985 is obtained with an output DC voltage of 602 V. By utilizing Asymmetrical seven level cascaded multi-level inverter to the bridgeless PFC boost Converter, an improved voltage THD of 0.82 % and the current THD of 0.57% is obtained compared to the conventional methods. This makes it useful for medium and high power applications with improved power factor, THD with reduced conduction losses and thereby the efficiency is increased.

The challenging issue seen generally in DC-DC converter can be avoided by using hybrid posicast technique to DC-DC buck- boost converter. It uses both posicast compensating technique and integrator compensator within the feedback loop to reduce the undesirable sensitivity to parameter

variations. Thus, it results in reduction of sensitivity, ripple content, eliminates overshoot, stable output and regulates constant DC output voltage. By adopting this hybrid posicast technique to DC-DC buck-boost converter, the regulated output voltage can be used for applications requiring wide voltage ranges.

For high power applications, multi-level inverters are used but when the level increases the harmonics also increases. Thus by the implementation of novel multi-level inverter for thirteen levels, component stresses are greatly reduced with the voltage harmonic distortion is 16.32% and current harmonic distortion is 8.78%. Of various PWM control strategies, the phase disposition scheme shows better performance.

Thus, the general problems associated with the power conversion devices such as inverters and converters for high power applications are analysed and they are rectified. Thus this research work, results in improving the quality of the power supply such as improving power factor, reducing total harmonic distortion, reducing the sensitivity to parameter variations, eliminates the overshoot, producing steady state output, etc.,

## 6.2 SCOPE FOR FUTURE WORK

The future development of this research work focuses on the following.

- In this work, DC-DC Converter that has been used operates under continuous conduction mode(CCM). In future, the operation of DC-DC Converter under discontinuous continuous mode (DCM) will be analyzed.

- The topologies that have been introduced in this work is suitable for single phase. In future, the same concept as well as the topology can be applied for three phase.

- The multi-level inverter that has been employed in this research work is of seven and thirteen levels. In future, steps can be taken to increase the level with the minimization of harmonic content.

- Along with the posicast control technique, PID control technique also be applied in the forward path, so that effective control can be obtained.

- The implementation of posicast control can be applied to other DC-DC converters like sepic converters, cuk converters.