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CLOSED LOOP CONTROL OF ZVS, ZCS INTERLEAVED BOOST - CONVERTER WITH PID CONTROLLER

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ABSTRACT

An enhanced soft switching technique for an interleaved boost converter has better performance characteristics when compared to conventional boost converter. As IBC operates under soft switching the main devices do not have any additional voltage & current stress on the auxiliary devices are at low level. Where main switches operates out of phase and share the output current while providing soft switching condition for each other IBC with ZCS&ZVS during ON&OFF conditions of the main switches, that can drive large load operated in duty cycle greater than 50% & less than 50% is proposed in this study. In this paper an improved switching technique for an closed loop interleaved boost converter with PID controller and open loop interleaved boost converter is proposed. IBC which effectively reduces the ripple current in input current & output voltages as function of duty cycle. Which also increase in efficiency, greater reliability and also increase in stability of the system due to closed loop control and comparison between the IBC with PID and IBC and conventional boost converter had done for various duty cycles.

KEYWORDS: Interleaved Boost Converter, Soft Switching, ZVS, ZCS, Ripple, PID Controller, Reliability, Efficiency, Stability