**ABSTRACT**

The paper describes the Design and Implementation of a closed loop control in PSFB topology using Artificial Intelligence. In Power Electronics converter raw input power is processed based on control input, generating the output power. The control input may be differentiated based on various topologies like PFC, LLC, and PSFB depending upon application. Precisely, the paper talks about the control algorithm that controls this power. Same can be done by analog components or digital controllers. Digital Controllers have effectively replaced Analog components due to its advantages like Flexibility, cost, space. Digital controllers work better on closed loop control for accuracy and to automatically adjust based on the change in output.

The topology being used here is PSFB (Phase Shift Full Bridge) which consists of 4 Switches/MosFets driven by PWM. The output power yield depends on phase shift between the PWM’s. There are various dynamic factors that affect the stability of the control system like load, input, noise, operation mode etc.

The controller used is PID (Proportional Integral Differential) which is often manually tuned to achieve an optimum stability. This effectively meaning converter stability will not be same at all conditions. In embodiments within we are using Reinforcement Learning to solve this problem and achieve best possible control coefficients. Reinforcement Learning is a method in which Software can learn through the factors that have given best output for a given period of time. It works on getting rewards when the output reaches closer to the expected value. Different reward functions may be defined to achieve a single tuned combination with all possible outcomes like less overshoot, lesser ringing etc.

Overall, the proposed solution helps automating the tuning of control loop thus reducing the time and efforts and giving higher accurate results as well.