

## **EMBEDDED CONTROLLED MULTIPLE OUTPUT DC UPS USING QUASI RESONANT PUSH PULL CONVERTER**

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### **Abstract**

AC UPS external to a personal computer for backup supply during power failure occupies extra space and is bulky. An alternate technique is to replace AC UPS by an internal DC UPS with multiple outputs. An AC/DC quasi resonant converter with push pull topology coupled to a battery results in a DC UPS. Multiple outputs of the UPS with simple buck converters avoid the necessity of SMPS in the personal computer. Soft switching push pull converter with increased power density reduces the switching stress across the switches thereby energy efficient system is developed. Single device voltage drop under ZVS increases the overall efficiency of the UPS. PI controller in the feedback circuit reacts to changes in the input inside, controlling the error output by reducing the settling time. It resembles to a spike arrester in a conventional UPS. Quasi-resonant converters when compared to hard switching increases the overall efficiency of the system. The battery size is a limitation since it is to be incorporated inside the CPU. The changeover from main supply to battery backup supply requires a better intelligent Circuit model developed for internal DC UPS is analyzed and simulated. Experimental results on DC UPS match with the simulation results.

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**Keywords:** DC UPS, ZVS Quasi resonant converter, push-pull technique, multiple outputs and microcontroller.