ANALYSIS AND DESIGN OF HALF BRIDGE DC/DC SERIES PARALLEL LOADED RESONANT CONVERTER FOR UNDERGRADUATE TEACHING LABORATORY (UTL)

This project thesis is presented in partial fulfillment for the award of the Bachelor in Electrical Engineering (Hons)

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ABSTRACT

This paper proposed to design the DC power supply using half bridge LCC series parallel loaded resonant converter (HBSPRC) application for undergraduate teaching laboratory. The DC power supply input voltage is 20 - 12V and DC output voltage is maintained at 10V. The converter is design based on output power 2.0W and the starting switching frequency, *fs* is 50 kHz. The operation above resonance is preferred, because the power switches turn on at zero current and zero voltage. The experiment result should be compared between theoretical and computer simulation based on the application and desired output power. The operating theory and equation are also developed. Theoretical, simulations and experiments are come out to complete the analysis and design of study.

In addition, MATLAB-SIMULINK can produce several performance measures such as peak voltage, overshoot, rise time, settling time and steady state waveform. The purpose is to make sure the circuits of dc-dc buck chopper converter operate successfully. Besides that, design and the calculation component in the circuit of boost converter has been done to ensure the converter operate in continuous mode. The precious calculation of the parameters will guide to the maximum performance of the system.

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