

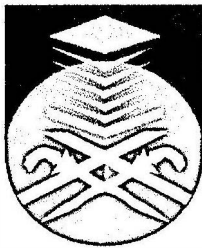
**SINGLE PHASE HALF-BRIDGE INVERTER
USING PIC**

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ABSTRACT

The intent of this thesis is to present the details of half-bridge power inverter via a comprehensive analysis with operation of the circuit and their solving using specific software (PSIM and Matlab). An alternative to the use of circuit-oriented simulators for study of these circuits operating is to describe the circuit and compared with the hardware circuit by using PIC programme. The result must be related and possible states in which the circuit may operate. This operation can be solved by using of software packages specifically designed for this purpose and comparison from hardware.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Inverter is known converter from DC to AC. The output voltage could be fixed or variable at a fixed or variable frequency. On the other hand, if the dc input is fixed and it is not controllable, a variable output voltage can be obtained by varying the gain of the inverter which is normally accomplished by pulse-width-modulation (PWM) control within the inverter [1]. If, in the simulation all of the operating regimes and parasitic components are considered, the simulated solution is closed to the real operation of product. In case of power converter, the parasitic components of electronic devices (transistors, diode, inductor etc) could influence in a major manner the performances of these converters. So, is very important to these components in simulation structure.

The benefit of simulation is based on operation equation versus the circuit-oriented simulators in the study of power inverters. With the great advances of power semiconductor switching devices and their related drive modules technologies, there has been a tremendous increase in the practical usage of electromagnetic induction-heated consumer appliances using high-frequency resonant inverters which are divided into two circuit topologies; voltage-fed type and current-fed type [2].

In addition, with an appropriate modeling of each circuit component, this platform allows analyses of components non-idealities (including package models) and their influence in circuit operation. In the case of PWM control, the phase shift switching method is used to decrease the harmonics on the output voltage of the