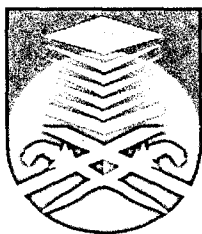


**PWM SWITCHING METHOD FOR SINGLE PHASE
CONVERTER AND HARMONIC MITIGATION
TECHNIQUE**

**This is presented in partial of fulfillment for the award of the Bachelor of
Engineering (Hons) Electrical
UNIVERSITI TEKNOLOGI MARA**



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ABSTRACT

In this project, the implementation of a single phase AC/AC converter will be discussed. An IGBT single phase converter is built using MATLAB/Simulink. Pulse Width Modulation (PWM) switching is applied to the IGBT gates. A nominal voltage of 240V with 50Hz frequency is applied to run the converter. The simulation results show that PWM switching caused high THD to the circuit. Power Active Filter is used as an attempt to mitigate the harmonic components by compensating the unwanted signal at the resulting waveform. The power active filter is implemented to reduce the THD of the converter. The simulated single-phase AC/AC converter will be beneficial for further studies in improving the performance of electrical mechanism such as the AC machine.

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CHAPTER 1

INTRODUCTION

1.1 POWER ELECTRONICS

The definition of power electronics is to convert electric power. Specifically it means the flow of electric power is processed and controlled by supplying voltage and its currents in a form that is suitable for user loads. The goal of electronics power conversion system is to convert electrical energy from one form to another, whereby the electrical energy from source is converted with highest efficiency, high availability, and high reliability to the load. The cost, size and weight are also considered. Obtaining the lowest cost, smallest size and weight for the energy conversion is desirable.

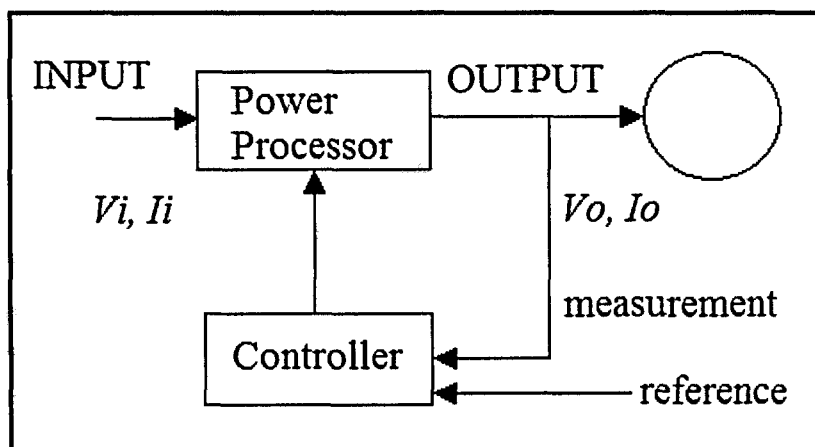


Figure 1.1: Basic Block Diagram of Power Electronics Conversion