

**DEVELOPMENT OF AC-DC CONVERTER INCORPORATING
WITH ACTIVE POWER FILTER FOR BATTERY CHARGER
APPLICATION**

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ABSTRACT

This thesis present a smart AC-DC converter for battery charger application using boost rectification technique for power factor correction (PFC) to compensate the harmonics generated and to achieve a power factor near to unity. In this technique, the system used proportional-integral controller as a medium to reshape the current waveform to sinusoidal and in phase with the supply voltage waveform. The simulation of this circuit was done by using MATLAB simulink software and hardware prototype was built according to this circuit design. The result shows that the current is operating in phase with the voltage, hence improve the power factor and reduces the THD level.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

A power converter is normally used in power electronics system as an interface between load and supply. It can be generally classified in terms of basic function, namely AC-AC conversion, AC-DC conversion, DC-DC conversion and DC-AC conversion [3].

With very few exceptions, distribution of electric power is in AC format. AC-DC conversion at the end-use point is a necessary operation in many applications. The need for DC power may be ancillary, such as use in computers, gadgets, televisions, audio sets, battery charger and others [1]. In this century, we mostly hear many new things about gadgets. Nowadays, the gadget is assumed as one of the needs in this technology world.

The technology of the gadgets keeps increasing and more benefits are installed. The problem emerges when the needs of the amount of electricity also keep increasing. We can say that, the amount of electricity is proportional to the increasing of the technology.

Therefore, the efficiency of the system must be increased in order to reduce the amount of the electricity needed, hence reducing the cost of the electricity. This paper is presenting high efficiency of AC-DC converter for battery charger application.